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Perceptions of quality in e-learning: a case study

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Sob orientação do
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Preface

Three years and three months after starting my PhD, I find myself more motivated than ever with it. It has been a surprise to realize that I never experienced the periods of depression that PhD students usually report and that I had been able to do it on schedule.

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Rosário Cação
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Abstract

Departing from an online survey targeted at trainees of e-learning courses intended for professional training, which was preceded by an exploratory qualitative study, we propose future utility as an important dimension in the appraisal of the quality of e-learning. Our results show that future utility is the second most important dimension of quality in e-learning for professional training, following satisfaction. We also conclude that three major factors explain the perception of quality: training attitudes, training process, and training utility. Additional conclusions are that final motivation and perceptions of quality are affected by the length of the course, that professional certification courses lead to higher perceptions of immediate and future utility, and that perceptions of value are also related to utility. These findings are particularly useful for those who plan or design e-learning courses and are interested in the impact of the training processes.

Keywords

Education, fitness for use, perceptions of quality, quality in e-learning, value, utility.

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Chapter 1
Introduction

While companies want talented resources who can cope with the strategic objectives of the company, workers, students, and the general population are eager to know more, to be and have more, to become better in life, or just to survive. E-learning is seen as a solution for that and has becoming more and more popular. But, as in every business, the long-term survival and the competitiveness of e-learning companies depend on their ability to satisfy and retain their customers, which depends on their ability to offer courses with quality. These companies face two major challenges: the first is to deal with open markets that allow consumers to access a whole range of suppliers and e-learning products; the second is that consumers are becoming more sophisticated, more informed than ever, and more aware and demanding in terms of quality. Quality is not objective, as it depends on the perceptions of the customers. Moreover, it is a multi-dimensional variable, as several factors can contribute to it. Therefore, evaluating the quality of a product is not an easy task. When services are being considered, the task becomes harder: services are entangled and are influenced by the customer, who participates and affects the service. In addition, unlike products, the results of the service are as important as the process of providing them. When the service is an educational service, an additional problem is introduced, as one of its major outputs, learning, is the result of a process carried out be the customers, and not so much by the company that offers the service (Ehlers, 2004). E-learning services are mainly an educational service, but the quality of an e-learning course can also be influenced by several factors, such as the technology used or the psychological and geographical distance between the trainer and the trainees.

The problem is, therefore, what is an e-learning course with quality. What are the most important dimensions of quality? And how can companies measure the quality of their e-learning courses in order to improve them? We believe that if we are able to answer these questions we will able to help e-learning companies to deliver services with more quality and improve their long-term competitiveness.

Our aim is to investigate the *contemporary phenomena* of quality in e-learning within its *real-life context* (Yin, 1994, p. 13). We use *mixed methods* (Creswell & Clark, 2007; Tashakkori & Teddlie, 2003) and focus our attention on trainees, as "of all the dimensions and aspects of e-learning quality, the perspective of the learner is probably the most important" (Ehlers, 2004). Our research is held at EVOLUI.COM, a Portuguese provider of asynchronous e-learning for professional training, with ten years of experience in the consumer e-learning market and 50.000 clients from 26 countries. EVOLUI.COM offers more than 160 short-term courses that range in length from 1 to 9 weeks. We first used a qualitative study conducted at the online forums of the courses, and in this study we combined *participant observation* (Angrosino, 2005, p. 732) and some elements of interview (Creswell, 2002, pp. 178-181) and digital ethnography (Patton, 1990, pp. 265-266; Ruhleder, 2000). Based on the main conclusions of this study, we then conducted a quantitative study to explore the dimensions of quality in e-learning. For that purpose, we used the satisfaction survey that the trainees normally answer at the end of the course. At the same time, we conducted a second quantitative study to explore the motivational drivers of the trainees, their perceptions of value, and

the influence of the presence or absence of training events in the motivation of the trainees.

This document is structured in four parts.

Chapter 2 is dedicated to a review of the literature. After a general introduction to the challenges of quality in business performance, section 2.2. gives an overview on what quality is and what the philosophy of total quality management means. Among the major approaches to quality, we focus our attention on Juran's (1951, Section 2-2) definition of quality as *fitness for use*, which he described as the extent to which the product or service serves the purposes of the user, during usage. This section ends with the discussion of the conceptual approach to quality proposed by Garvin (1987, 1988).

Section 2.3. is focused on e-learning as a service. It starts by discussing the idiosyncratic characteristics of services, the relation between *quality* and *satisfaction*, and the influence of *expectations*. It then presents the major dimensions and models of quality in services, namely Juran's (1951 pp.2-4) dimensions of quality in services, Grönroos' (1982, 1988, 1990, 2007) model of perceived quality, SERVQUAL (Parasuraman, Zeithaml, & Berry, 1985, 1988), and other relevant models of quality in services. This section ends presenting the leverage role that technology has in the quality of the service.

Section 2.4. is dedicated to quality in education. It brings together all the concerns that exist in education in general and in higher-education in particular, in vocational education and training (VET), and in e-learning. It also presents an extended discussion of the models of training evaluation and the role of the accreditation and standards, as well as other instruments of quality assurance and several proposals for a common framework of quality in e-learning.

In section 2.5. we approach two major concepts that are related to quality, namely *motivation* and perception of *value*. Motivation reflects a desire to learn and to *use* the acquired knowledge, skills, and attitudes. If there is a *stimulus to use*, there must be a perception of *fitness for use* (Juran, 1951, Section 2-2), which, in turn, suggests that *motivation* is somehow related to *quality*. Even so, we present a higher-order construct, *value*, to better understand *quality*. After presenting the several existing approaches to *value*, we focus our attention on value as *an interactive relativistic preference experience* (Holbrook, 1999c, pp. 5-9) and on a special type of value: *utility*. This section ends presenting the role of utility in education, the contribution of Holton (1996) and Noe and Smitt (1986) to that discussion, and the difference between *immediate* and *future utility*.

Chapter 3 details our choices in terms of research approach and presents EVOLUI.COM as our case study and the units of analysis that we used. It also presents our research questions and the statements of purposes, as well as some details concerning the research, such as the subjects of study, the sample concerns that we had, the process of research, and our research cronogram.

In Chapter 4 we explain the three studies that we have carried out. The first, was a qualitative study that was held at EVOLUI.COM's online forums and which was used to explore the kind of issues that the trainees referred to when asked what quality in e-learning is. The conclusions of this study suggested utility as a *node* that we should

explore. The second study, a quantitative one, was based on an online survey, also targeted to trainees of EVOLUI.COM. This study shows that future utility is the second most important dimension of quality in e-learning for professional training, following satisfaction. It also shows that there are three major factors that explain the perception of quality: *training attitudes*, *training process*, and *training utility*. Additional conclusions of this study are that the perceptions of *quality*, *motivation*, and *immediate* and *future utility* are affected by the length of the course and by the type of course. The last study, also quantitative, concludes that the motivations of the trainee's are mostly related to *ends-in-view* (Dewey, 1939) but that there are differences in the motivation regarding who had the idea of attending the course and who paid for it. This latter study shows that perceptions of value are mainly self-oriented, active, and extrinsic, and mostly related to *utility* and *job opportunities*. It also shows that *immediate utility* is a factor of comfort for the trainee when her company provides the training courses. Yet, the absence of *future utility* is a factor of discomfort when the training is not provided: when the company disregards the provision of training courses, the trainees perceive a loss of *future utility* that makes them feel unmotivated.

We end up with general conclusions and suggestions for further research, and a discussion on the limitation of our research.

Chapter 2
State of the Art

2.1. Training, Quality and Business Success

Customer satisfaction and company profitability are linked closely to service quality. Most arguments supporting the quality movement are tied to profits, competitiveness and long-term survival. Although the relationship with profits is not perfect, quality, along with permanent innovation (Prajogo & Sohal, 2006) and other strategies (Schneider & White, 2004, pp. 22-23), is pointed out as one of the most effective ways to ensure corporate long-term sustainability. Yet, quality is the only strategy consistent with the consumers' higher demand on quality (Leonard & Sasser, 1982; J. H. Rabin, 1983).

The link between service quality and corporate profitability has been studied by Broh (1982), Phillips, Chang and Buzzell (1983), Anderson & Zeithaml (1984), Buzzell & Gale (1987b), Deshpandé, Farley and Webster (1993), Narver & Slater (1990), Schneider (1991), Heskett, Sasser and Schlesinger (1997), Zeithaml (2000) among others. The financial impact of investments in quality has also been able to attract the researchers' attention. Return on investment on quality has been approached by Rust, Zahorik and Keiningham (1994, 1995) who defend that service quality is an investment that should generate a positive return. For Garvin (1983; 1988, pp. xiv, 21, 78, 92), quality is an aggressive competitive weapon as it can lead to decreasing costs, improvements on productivity, market share profits and long-term competitive advantage.

Other studies (Boulding, Kalra, & Zeithaml, 1993; Christopher, Payne, & Ballantyne, 1991; Dick & Basu, 1994; Rust & Zahorik, 1993; White & Schneider, 2000) have been providing support to the relationship between service quality and such behaviours as retention/loyalty, word-of-mouth, and satisfaction – which, in turn, lead to decreasing costs and/or increasing revenues, and, consequently, to outstanding performances. Returns tend to increase due to repeated purchases and steady stream revenues, decreasing price sensitivity, and encouraging free and credible publicity that brings new customers to the company. Moreover, repeating customers can be better served, since the rules of their affiliation have been clarified, and this avoids the effort and extra cost of acquiring new customers. They also provide an excellent base for cross-selling and a valuable source of new ideas (Congram, 1991) and let us focus attention on long-term relationships and relationship marketing.

Quality has also been pointed out as the best assurance of customer allegiance, the strongest defence against foreign competition, and the only path to sustained growth and earnings (Welch, 1982, quoted in Kotler, Armstrong, Saunders, & Wong, 1996, p. 456).

2.2. Total Quality Management

2.2.1. Traditional Approaches to Quality

Quality concerns go back to ancient civilizations and have been used for centuries in multiple scenarios, all over the world (Juran, 1995). Nevertheless, the word "quality" has multiple meanings and has been used in several different ways. Senge's (1994, p. 446) fifth dominant mental model of quality (Table 1) is an expressive example.

Mental Quality Model	Description
Status Quo	"Quality is not an issue at our organization. We hire only the best people, and our products are as good as anyone else's. We keep them up to our usual standards"
Quality Control	"Quality is the process of inspecting and catching mistakes before they get shipped and our customers have to deal with them. We hold people accountable for their actions. Modern quality control techniques make it easier to track down their mistakes"
Customer Service	"Quality is listening to the customers and solving their problems as quickly as possible at no extra charge. Mistakes and *bugs* can't be avoided, so we have an 800 number and field service personnel ready to go twenty-four hours a day. We will do anything to satisfy our customers"
Process Improvement	"Quality is using statistical process control, reengineering, and other quality tools to understand and eliminate unacceptable variation in our processes, products, and services. We believe people, particularly in teams, are a resource for learning about inefficiencies and making changes. We are constantly engaged in improving how we operate"
Total Quality	"Quality is a transformation in the way we think and work together, in what we value and reward, and in the way we measure success. All of us collaborate to design and operate a seamless value-adding system, which incorporates quality control, customer service, process improvement, supplier relationships, and good relations with the communities in which we operate – all optimizing for a common purpose".

Table 1: Senge's five dominant mental models of quality
Source: Senge *et al.*, 1994, p. 446

Likewise, the way companies approach quality evolves with time. Companies do grow and mature in terms of their perception of quality, over time. Crosby's Quality Management Maturity Grid (1996, pp. 32-35) details the way quality is approached at each moment in time. He defined five stages of maturity: uncertainty, awakening, enlightenment, wisdom, and the final one, certainty. For each, Crosby identified a major measurement tool (Table 2). Besterfield (1979, p. 23) has a similar approach and compares the substantial changes between former quality approaches, the *little Q* as Juran defines it (1993, pp. 6-7), and total quality management, the *Big Q*, which are synthesized in Table 3.

Measurement categories	Stage I: Uncertainty	Stage II: Awakening	Stage III: Enlightenment	Stage IV: Wisdom	Stage V: Certainty
Definition	Goodness	Delight the customer	Continuous improvement	Satisfy customer	Conform the requirements
Measurement	Opinion	Benchmarking	Customer complaints	Complete transaction rating	The price of non-conformance

Table 2: Some elements from Crosby's quality management maturity grid
Source: Adapted from Crosby, 1996, pp. 32-35

Quality Element	Previous State (Little Q)	TQM (Big Q)
Definition	Product-oriented	Customer-oriented
Priorities	Second to service and cost	First among equals of service and cost
Decisions	Short-term	Long-term
Emphasis	Detection	Prevention
Errors	Operations	System
Responsibility	Quality control	Everyone
Problem solving	Managers	Teams
Procurement	Price	Life-cycle costs
Manager's role	Plan, assign, control and enforce	Delegate, coach, facilitate and mentor

Table 3: New and old quality cultures
Source: Besterfield, 1979, p. 23

As the word *quality* triggers a multitude of meaningful, both overlapping and complementary, definitions, Table 4 presents an array of selected definitions from most relevant authors. Other approaches, although not so well known but also elucidative, are shown in Table 5. As we will discuss later, Juran's definition ended up being the one that received most of our attention, on account of the empirical findings we have obtained in our qualitative research. This author (1951, Section 2-2) defined quality as *fitness for use***,** which he described as the extent to which the product or service serves the purposes of the user, during usage.

Author(s)	Approaches to Quality
Shewhart (1931, pp. 37-38)	*The goodness of an object.*
Juran (1951, Section 2-2)	*Fitness for use.*
Feigenbaum (1961, p. 13)	*The best for certain customer conditions. These conditions are (a) the actual use and (b) the selling price of the product.* *The composite product characteristics of engineering and manufacture that determine the degree to which the product in use will meet the expectations of the consumer.*
Edwards (1968)	*The capacity to satisfy wants.*
Crosby (1979, p. 9; 1996, p. 15)	*Conformance to the requirements.*
Taguchi & Wu (1979)	*The loss a product imposes on society after it is shipped.*
Deming (2000, p. 5)	*The consumer is the most important part of the production line. Quality should be aimed at the needs of the consumer, present and future.*
ISO (2008)	*Degree to which a set of inherent characteristic fulfils requirements.*
American Society for Quality (2007)	*In technical usage, quality can have two meanings: 1. The characteristics of a product or service that bear on its ability to satisfy stated or implied needs. 2. A product or service free of deficiencies.* *The totality of features and characteristics of a product or service that bears on its ability to satisfy given needs.*

Table 4: Main definitions of quality

Besides the different approaches to the concept of quality, it is consensual that quality is "a subjective term for which each person has her own definition" (American Society for Quality, 2007). Inspired by Grönross (1990a; 2007, p. 73), who claims that "what counts is quality as it is perceived by customers*"*, and Ehlers (2004, p. 3), who defends that, "of all the dimensions and aspects of e-learning quality, the perspective of the learner is probably the most important", our empirical research focuses on quality as perceived by final external customers, although we recognize that the view of other stakeholders would also be valuable (and is implicit in some of the above definitions),

and that the consideration of other types of customers makes sense. In fact, as Juran & Gryna (1993, p. 3) alert, the definition of customer refers to "anyone who is impacted by the product or process" and includes, not only e*xternal customers* (which includes, besides ultimate users, intermediate mediators, merchants and everyone who has some connection to the product), but also i*nternal customers* (which includes other divisions of the company, such as accounting, procurement, or customer support).

Author(s)	**Approaches to Quality**
Abbott (1955, pp. 126-127)	*Differences in quality amount to differences in the quality of some desired ingredient or attribute.*
Broh (1982, p. 3)	*The degree of excellence at an acceptable price and the control of variability at an acceptable cost.*
Buzzell & Gale (1987a, p. 111)	*Whatever the customer perceives it to be.*
Dortman & Steiner (1954, p. 831)	*Quality is any aspect of a product, including the services included in the contract of sales, which influences the demand curve.*
Garvin (1983; 1988, pp. 40-46)	There are five principal approaches to define quality: - Transcendent definition: *quality is synonymous with 'innate excellence', is universally recognizable*; - Product-based definition: *quality is a precise and measurable variable. Differences in quality reflect differences in quantity of some product attribute;* - User-based definition: *Quality lies in the eyes of the beholder. It is fitness for intended use; the precise combination of product attributes that provide the greatest satisfaction to a specified consumer;* - Manufacturing-based definition: *Quality is conformance to specifications; its focus is on the supply side and is concerned with engineering and manufacturing practices;* - Value-based definition: *Quality is defined in terms of costs and prices. A quality product is one that provides performance at an acceptable price or conformance at an acceptable cost*.
Gilmore (1974)	*The degree to which a specific product satisfies the wants of a specific consumer; The degree to which a specific product conforms to a design or specification.*
Kano, Seraku, Takahashi and Tsuji (1984)	*Quality has two dimensions: "must-be quality" and "attractive quality". The former is near to the "fitness for use" and the latter is what the customer would love but has not yet thought about.*
Keuhn & Day (1954, p. 831)	*In the final analysis of the marketplace, the quality of a product depends on how well it fits patterns of consumer preferences*.
Leifler (1982)	*The amounts of the unpriced attributes contained in each unit of the priced attribute.*
Maynes (1976, p. 542)	*The extent to which a specimen [a product-brand-model-seller combination] possesses the service characteristics you desire.*
Pirsig (1974, pp. 185-213)	*Neither mind nor matter, but a third entity independent of the two, even though Quality cannot be defined, you know what it is.*
Tuchman (1980, p. 38)	*A condition of excellence implying fine quality as distinct from poor quality … Quality is achieving or reaching for the highest standard as against begin satisfied with the sloppy or fraudulent.*
Webster (quoted in Sower, 1999)	*An inherent or distinguishing characteristic; a property. That which makes something what it is; characteristic element; basic nature; kind; the degree of excellence of a thing; excellence, superiority".*
Sittig (1963, 1964)	*The problem of quality is a problem of adjustment of the properties of a product to the situation of demand. This adjustment is made all the more difficult by the fact that the same product has to comply with the demands of potential customers, whose requirements differ.*

Table 5: Other definitions of quality

2.2.2. TQM Philosophy

Total Quality Management (TQM) is, today, the ultimate stage of the quality 'mentality'. It means that all the members of an organization are committed, educated, and led to deliver quality to customers. The main concern is to maintain and improve the situation in a spiral progressing way (Juran & Gryna, 1993, pp. 5-6). A quality culture is everywhere in the company, and guides each step that is taken. The scope of quality activities has been expanded to all processes and to both internal and external customers, and includes three fundamental quality processes, to provide a methodical approach to address quality (Juran & Gryna, 1993, p. 9). Each of these processes can be defined within a universal sequence of activities, as Table 6 describes.

Quality Planning	Quality Control	Quality Improvement
- Establish quality goals - Identify customers - Discover customer needs - Develop product features - Develop process features - Establish process controls, transfer to operations	- Choose control subjects - Choose units of measure - Set goals - Create a sensor - Measure actual performance - Interpret the difference - Take action on the difference	- Prove the need - Identify projects - Organize project teams - Diagnose the causes - Provide remedies, provide that the remedies are effective - Deal with resistance to change - Control to hold the gains

Table 6: Universal processes for managing quality
Source: Juran & Gryna, 1993, p. 9

The ISO standards on quality management are based on eight quality management principles (2007). These principles (which have their key benefits and implications described in more detail in Appendix 1) are presented as a framework to guide organizations towards improved quality, and include: *customer focus, leadership, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision making, and mutually beneficial supplier relationships.*

Not surprisingly, TQM is commonly associated with relations and not only transactions. For this reason, the concept of quality is a *relationship* construct. Every business consists of transactions and relationships, and the former are the foundations of relationships, which, in turn, represent long-term constructs. For Crosby (1996, pp. 57-71), the purpose of quality management is to build an organizational culture in which transactions are accomplished completely, efficiently, and at the first time, in order to feed healthy relations. The debate 'transactional/short-term' versus 'relational/long-term' is central in TQM, and can also be found in the marketing literature devoted to the differentiation between quality and satisfaction.

2.2.3. Quality As The Right Set of Characteristics

The concept of quality is not absolute. As Feigenbaum (1961, p. 13) emphasises, "the word quality does not have the popular meaning of 'best' in any absolute sense. To industry, it means *best for certain customer conditions*". Among these customer conditions, Feigenbaum identifies two important ones: the actual end use and the selling price of the product. In turn, these conditions are reflected in five additional conditions that he also identifies:

- The specification of dimensions and of operating characteristics;
- The life and reliability objectives;
- The manufacturing and engineering costs;
- The production conditions under which the article is manufactured;
- The field installation and maintenance objectives.

In other words, perfection is not the final aim. "The aim is rather the level of quality that establishes the proper balance between the cost of the product and the service it renders" (Feigenbaum, 1961, p. 13).

Quality has been defined as a set of characteristics and as a single factor concept. In this sense, quality is a composite of several characteristics that must be combined in the right way. These individual characteristics are those that make up the composite of product quality. Shewhart (1931, p. 38) exemplifies this idea when he argues that, although water is defined as a chemical combination between hydrogen and oxygen, its quality is expressed in terms of its chemical and physical properties. Feigenbaum (1961, p. 14) goes further, emphasizing the importance of providing the right combination: "the key requirement in establishing what is to be the 'quality' of a given product requires the economic balancing of these various individual quality characteristics". When all the characteristics are "balanced in, the *right* quality becomes that composite which provides the intended function with the greatest over-all economy… and is the total concept of 'quality' that must be controlled'. Shewhart (1931) has a similar idea that is revealed when he defends that "the quality of a thing is that which is inherent in it, so that we cannot alter the quality without altering the thing. It is that from which anything can be said to be such and such and may, for example, be a characteristic explainable by an adjective admitting degrees of comparison" (p. 38). He, therefore, concludes that "a thing has qualities and not a quality" (pp. 39-40). For instance, a piece of material has weight, density, dimensions, length, velocity, resistance and so on, and these qualities can even be geometrically positioned [$P= f(x_1\ x_2,\ x_{3...})$], where P is the product or service and x_i are the qualities.

Yet, the magnitude of these characteristics is not the only important factor. The relationships between them are also significant. Shewhart (1931, p. 49) also alerts to the importance of the relationship among these characteristics. "In trying to define the quality of a thing in terms of those characteristics which make it what it is, we called attention to the fact that we make use of what are perhaps secondary characteristics. For example, in expressing the quality of a thing in respect to strength we make use of measures of ductility, brittleness, and hardness – characteristics which are likely dependent to a certain degree upon some common factor more elemental in nature".
These characteristics allow us to define the quality of a product or service in such a way that well defined quantitative and qualitative measures can be reached. In turn, these measures serve two purposes:

- To make it possible to see whether or not the quality of a product for a given period of time differs from that from other period, taken as a basis of comparison;
- To make possible the comparison of qualities for two or more products.

As we will discuss later, one of the objectives of our empirical research was to look for these characteristics or dimensions of quality in the case we were exploring.

2.2.3.1. Garvin's Quality Dimensions

David Garvin (1987, 1988, pp. 49-61) developed a meaningful conceptual view of quality. He suggests that eight dimensions compose the quality of a product or service. Products and services can be ranked high on one of those dimensions, while being low on another. Dimensions are usually interrelated, and sometimes an improvement in one may be achieved only at the expense of another. Other times, two dimensions, like *reliability* and *conformance*, may move together (Garvin, 1988, p. 50).

Those dimensions are:

- *Performance*: The primary characteristics of a product/service (for example, the acceleration of a car, the clarity and colour of a TV picture, or the speed of service in fast foods and airlines).
- *Features*: Add-ons, supplements, or secondary characteristics that supplement the product's basic functioning (for example, the study guide for a course, or automatic tuning on a TV set).
- *Reliability*: The probability of malfunctioning or failing within a specified period of time.
- *Conformance*: There are two distinct approaches to conformance. The first relates conformance to the degree to which the design and operating characteristics of a product meet specifications and established standards. For example, a product's part must be within 0,05 inches of the standard. This approach has a *tolerance stack-up,* as there can be a matching problem even if parts meet specification. For example, if one part falls at the lower limit of its specification and its matching part is at the upper limit. In this situation, a tight fit is unlikely. The other approach equates conformance with the degree of variability (inversely, the degree of uniformity) around the target dimension or central line.
- *Durability*: A measure of a products' life. Durability has both economic and technical dimensions. Technically, durability is the amount of use that one gets from a product before it physically deteriorates. If repair is possible, durability becomes the amount of use that one gets from a product before it breaks down.
- *Serviceability*: The speed, courtesy, competence, and ease of repair. Consumers are concerned not only about a product breaking down but also about the elapsed time before service is restored, or the timeliness with which service appointments are kept. Reactions to downtime, for instance, can be quite complex, and rapid response can become critical in certain circumstances (for example, the downtime of repairing equipment during the harvest season).
- *Aesthetics*: The look, feel, sound, taste, and smell of a product. It is a matter of personal judgment and a reflection of individual preferences.
- *Perceived quality*: Quality as viewed by a customer, client, or student.

2.3. Quality of Services

2.3.1. The Idiosyncratic Characteristics of Services

The literature on marketing of services provides a handful of insights on the quality of services, which, in turn, can help us understand better what quality is in one specific service: the e-learning service.

Marketeers assume that services "are – in the extreme – different from goods" (Schneider & White, 2004, p. 4) and are "deeds, processes and performances" (Zeithaml, Bitner, & Gremler, 2006, p. 4). Because services are performances rather than objects (Parasuraman *et al*., 1985), they differentiate themselves in their *threshold, range, and order* (Lamprecht, 1994, pp. 61-62). They also have idiosyncratic *search*, *experience*, and *credence* properties (Bloom & Pailin, 1995; Darby & Karni, 1973; Nelson, 1974). Although services are also *perishable* and *lack ownership*, the literature is frequently focused on three main features of services: intangibility, heterogeneity, and inseparability of production and consumption (Parasuraman *et al.,* 1985; Rathmell, 1966; Regan, 1963).

Appendix 2 presents an extended analysis of these characteristics of services and discusses its consequences to e-learning services.

2.3.2. Quality *versus* Satisfaction: An Ambiguous Relation

The literature on service quality develops an extended discussion around the difference between perceived quality and customer satisfaction, but no general consensus has been achieved, except for the fact that the two concepts are related and that they correspond to distinct constructs (Bitner, 1990; Bolton & Drew, 1991a, 1991b; Cronin Jr. & Taylor, 1992; Parasuraman *et al*., 1985, 1988).

Juran and Gryna (1993, p. 3) mention a dictionary definition of quality as "*customer satisfaction"*, which makes unclear the difference between the two concepts. However, there seems to be some tendency to agreement, in the literature, as Oliver (1981), Bitner (1990), Bolton and Drew (1991a; 1991b), and Parasuraman *et al.* (1985, 1988) concur that perceived service quality is a form of *attitude*, a long-run overall evaluation, whereas consumer satisfaction is transaction-specific, a transitory judgment made on the basis of a service encounter (Cronin Jr. & Taylor, 1994; Oliver, 1981). More specifically, satisfaction is a transaction-specific measure and just a "summary psychological state, resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience" (Oliver, 1981, p. 27).

Satisfaction is presented as "an evaluation of the surprise inherent in a product acquisition and/or consumption experience" (Oliver, 1981, p. 27), while the quality is a form of overall evaluation, similar to *attitude*. Oliver (1981) summarizes the differences between service quality and customer satisfaction as follows: "attitude is the consumer's relatively enduring affective orientation for a product, store, or process (e.g., customer service), while satisfaction is the emotional reaction following a disconfirmation experience which acts on the base attitude level and is consumption-

specific. Attitude is therefore measured in terms more general to product or store and is less situationally oriented".

Parasuraman *et al.* (1985, 1988) also suggest that the difference between these two constructs lies in the way disconfirmations are operationalized. They argue that there are differences in terms of what is measured: when measuring perceived service quality, one must measure what a consumer *should* expect, whereas in measures of satisfaction it is more accurate to measure what a consumer *would* expect (Oliver, 1981; Woodruff, Cadotte, & Jenkins, 1983).

Besides the problems in the distinction between the two constructs, there are also problems in the *relationship* between them and the *directionality* of that relationship. Parasuraman *et al.* (1988) recall that customers can be satisfied with a specific service but not feeling that the service is of high quality. Some literature (Cronin Jr. & Taylor, 1992; J. L. Heskett, 1987; Parasuraman *et al*., 1985, 1988) defends that higher levels of perceived service quality result in increased consumer satisfaction, while other authors suggest that satisfaction is an antecedent of service quality (Bitner, 1990; Bolton & Drew, 1991a; 1991b), and that satisfaction judgments will collapse into overall service quality judgements over time.

Bolton and Drew (1991a) defend that perceived service quality depends on the consumers' perception of the quality of the service, from a *previous period*, and their level of (dis)satisfaction with the current level of service performance, suggesting that satisfaction is a distinct construct that mediates previous and current perceptions of service quality. Yet, their empirical evidence revealed that perceived service quality is strongly affected by *current performance* and that disconfirmation has little impact. This influence of experience and past experience is also stressed by Oliver (1980), who suggests that attitude is initially a function of expectations and, in further experiences, a function of *prior attitudes* and *current levels of satisfaction*. In the absence of prior experiences with a service provider, expectations will define the attitude and the level of perceived service quality. According to Bolton and Drew (1991a), customer satisfaction is only the mediator between the previous perception of service quality and the revised perception of service quality.

Perceived service quality and customer satisfaction are also different in terms of their *impact on purchase intentions*. For Heskett (1987), service quality affects consumer satisfaction, which in turn affects buying intentions. Cronin and Taylor (1992, 1994) argue that managers should focus on customer satisfaction over service quality strategies, as the former exerts a stronger influence on purchase intentions than service quality. In fact, consumers do not necessarily buy the highest quality service, since convenience, price, or availability may enhance satisfaction, while not necessarily affecting consumers' perceptions of service quality. Cronin and Taylor (1994) also defend that consumer satisfaction is a richer construct for use in predicting purchase intentions.

This relationship between customer satisfaction and perceived quality, as well as the directionality of the relationship, has been statistically tested in our empirical research.

2.3.3. Quality Perceptions and Service Expectations

2.3.3.1. Perceived Quality

The traditional literature on quality distinguishes between p*erformance quality* and *conformance quality* (Kotler *et al.*, 1996, pp. 456-457):

- *Performance quality* refers to the level at which a product or service performs its functions (for example, Mercedes cars provide higher performance quality than Volkswagen: they ride more smoothly, handle better, and last longer);
- *Conformance quality* refers to freedom from defects and the *consistency* with which a product delivers a specified level of performance (for examples, Mercedes and Volkswagen can offer equivalent conformance quality if they consistently deliver what their market expects).

In the services industry, the evaluation of *performance quality* (and, therefore, the evaluation of service quality) is commonly based on *perceived* quality: consumers do not always have complete information about the attributes of a product or service, and, frequently, they rely on indirect measures, cues, and other signalling devices to draw inferences about quality (Lambert, 1980, quoted in Garvin, 1988, p. 59). Images, advertising, and brand names – perceptions of quality rather than the reality itself – can be critical in the creation of a judgment of quality (Garvin, 1988, p. 60). *Perceived* quality is, therefore, the consumer's judgment about an entity's overall excellence or superiority (Zeithaml, 1987), and it is quite different from *objective* quality (Parasuraman *et al*., 1988).

Corporate image acts as a filter of perceived quality (Grönroos, 2007, p. 74), and brand name, and even price, can be seen as quality indicators (Brucks, Zeithaml, & Naylor, 2000). Corporate reputation is pointed out as one of the primary contributors to perceived quality, and its power comes from an unstated analogy: that the quality of products manufactured by a company today is similar to the quality of products it manufactured in earlier periods. Reputation is valued as it anticipates a reliability and durability that may take years to demonstrate (Garvin, 1988, p. 60).

Gummesson was probably the first service marketing researcher to talk about service quality as *perceived* quality, when he concluded that quality "becomes a matter of subjectively *perceived* quality" (1979, p. 9). He also introduced the *relationship quality* concept while studying Ericsson's quality program (Gummesson, 1987), where he made clear that relationships are part of the customers' *perceived* quality.

2.3.3.2. Quality as Confirmation of Expectations

The perceived quality of the service is the result of the confrontation between the consumer's expected service and the perceived service.

The idea of having products and services that meet or exceed customers' expectations is based on Kano's (1984; Kano *et al*., 1984) two-dimensional model of quality: the *must-be quality*, quite close to Juran's *fitness for use,* and the *attractive quality*, something that the customer would love but has not yet thought about.

Expectations, in the literature on quality, are viewed as desires or wants of consumers – what they feel a service provider *should* offer. On the contrary, in the literature on satisfaction, *expectations* are defined as probabilities of the occurrence of positive or negative events when the consumer engages in some behaviour, and are viewed as what consumers feel a service provider *would* offer (Oliver, 1981; Woodruff *et al*., 1983).

In evaluating the quality of the service, consumers compare the service they expect with perceptions of the service they receive (Grönroos, 1982), and the perceived quality of the service is the *degree* and *direction of discrepancy* between consumers' perceptions and expectations(Parasuraman *et al*., 1988). This idea of meeting the expectations also emerged in the literature on product quality: Feigenbaum (1961, p. 13), for instance, defines product quality as "the composite product characteristics of engineering and manufacture that determine the degree to which the product in use will meet the *expectations* of the consumer". This idea is based on the *disconfirmation paradigm* (Churchill & Surprenant, 1982; Oliver, 1980), according to which the comparison between expectations and perceptions results in satisfaction if there is a confirmation or a positive disconfirmation of expectations, and perceived service quality is the result of the consumer's comparison of expected service with perceived service. When expected service is better than perceived service, the perceived quality is less than satisfactory, and will tend toward totally unacceptable quality as the discrepancy between expected service and perceived service increases (Parasuraman *et al*., 1985).

Some literature (Liljander & Strandvik, 1993; Nadiri & Hussain, 2005; Parasuraman et al., 1993; Parasuraman, Zeithaml, & Berry, 1994a; Teas & DeCarlo, 2004) has been suggesting the existence of a *zone of tolerance* for service quality, as the difference between someone's view of how an excellent organization should perform and the minimum she is willing to accept. The concept of *zone of tolerance* suggested by Berry & Parasuraman (1991) assumes that customers do not have expectations of a service attribute at a given level, and that they can tolerate a variation and still consider them acceptable according to their expectations.

Appendix 3 presents an extended analysis of how expectations are conceptualized and measured, and discusses related issues such as the *zone of tolerance* in expectations, the contributions proposed in the literature on *service recovery* and *moments of truth,* and the *critical incidents* approach to measure the quality of services.

2.3.4. Service Quality Models, Attributes, and Instruments

Services have different characteristics from products (appendix 2) and specific models have been suggested to measure the quality of services. The measurement of service quality typically builds on the assumption that it is a *multidimensional construct* (Gummesson, 1992; Parasuraman *et al*., 1985; White & Schneider, 2000) where service quality is expressed as *perceived* quality. Most of the models on quality of services are focused on the process aspect of service *delivery,* much more so than on the technical *outcomes* associated with the services (Schneider & White, 2004, p. 30).

As perceived service quality is a global judgement relating to the superiority of the service (Parasuraman *et al*., 1988), every tools designed for the measurement of service quality, as SERVQUAL and SERVPERF, measure a specific long-term attitude at a *single moment in time* (Cronin Jr. & Taylor, 1994). This means that these models (for

example, Grönroos' *perceived service quality model,* SERVQUAL, and Gummesson's model) are static models that make a snapshot of the customer quality perception at a certain moment of time. Even so, some dynamic approaches to perceived quality have emerged, as Holmlund's *relationship quality model* (1997) and Svensson's *Interactive Service Quality Model* (2001, 2004, 2006a, 2006b), which take into account the changes in the customers' perceptions of quality over time, as the relationship evolves.

British Airways carried out one of the earliest studies of perceived service quality, in the 1980s. The purpose of this study was to find out what airline passengers considered most important in their flying experiences. The following key aspects of service were identified (as reported by Albrecht & Zembre, 2002, pp. 53-54):

- *Care and concern*: the customer wants to feel that the organization, its employees and its operational systems are devoted to solving her problems;
- *Spontaneity*: contact employees demonstrate a willingness and readiness to actively approach customers and take care of their problems. They show that they can think for themselves and not just go by the book;
- *Problem solving*: contact employees are skilled in taking care of their duties and perform according to standards. The rest of the organization's employees are also trained to give good service;
- *Recovery*: If anything goes wrong, or something unexpected happens, there is someone who is prepared to make a special effort to handle the situation.

Table 7 describes the major contributions found in the marketing of services' literature regarding quality. While some models confront expectations with performance (e.g. SERVQUAL), others focus only on perceptions of performance (e.g. SERVPERF). Some service quality models have studied the service quality attributes, but only a few have created measurement instruments. The majority of these measurements instruments are attribute-based: they rely on a number of attributes that attempt to describe service quality features or dimensions (e.g., the SERVQUAL). Attribute-based models usually start with *qualitative approaches* and change to quantitative approaches, namely *factor analysis*, later. Yet, fully qualitative measurement instruments have already been used. In these qualitative approaches, respondents are asked to describe their perceptions of the service. The most frequently used qualitative model is the *critical incidents method* (Bitner, Booms, & Tetreault, 1989, 1990).

These studies have influenced the way in which we have conducted our empirical research, which, as discussed later, is based on a mixed method that started with a qualitative approach. In this approach, critical incidents related to the quality of e-learning have been one of the discussion items, and they have influenced the choice of factor analysis as a means to determine the primary dimensions of quality in e-learning.

Ghobadian, Speller and Jones (1994) point out that service quality models have elements in common. Most of the dimensions proposed by Grönroos (1982, 1984) are similar to those represented in SERVQUAL: they both have a reliability dimension; Grönroos' *reputation* and *credibility* are similar to the SERVQUAL dimension of *assurance*; and her *attitudes* and *behaviour* dimensions reflect the idea of caring for the customer, as the SERVQUAL's *empathy* dimension does. Yet, Grönroos gives more emphasis to the *accessibility* and *flexibility* dimensions and to *service recovery* (Schneider & White, 2004, pp. 33-34).

Contributions
Service performance dimensions (Sasser, Olsen, & Wyckoff, 1978)
Technical and functional quality model (Grönroos, 1984)
Perceived Quality Model (Grönroos, 1982, 1984)
4Q Model of Offering Quality (Gummesson, 1979, 1987, 1993)
Gap Model, SERVQUAL and Weighted SERVQUAL (Parasuraman *et al.*, 1985, 1988)
Synthesised model of service quality (Brogowicz, Delene, & Lyth, 1990)
SERVPERF (Performance Only Model) (Cronin Jr. & Taylor, 1992, 1994)
Ideal value model of service quality (Mattsson, 1992)
INTSERVQUAL (Internal Service Quality Model) (Frost & Kumar, 2000, 2001)
Internal service quality DEA model (Soteriou & Stavrinides, 2000)
Evaluated performance and normed quality model (Teas, 1993)
Model of perceived service quality and satisfaction (Spreng & Mackoy, 1996)
PCP attribute model (Philip & Hazlett, 1997)
Retail service quality and perceived value model (Sweeney, Soutar, & Johnson, 1997)
Service quality, customer value and customer satisfaction model (Oh, 1999)
Antecedents and mediator model (Dabholkar, Shepherd, & Thorpe, 2000)
Critical Incident Model (Bitner, *et al.*, 1989, 1990)
Relationship Quality Model (Holmlund, 1997)
Interactive Service Quality Model (Svensson, 2001, 2004, 2006a, 2006b)

Table 7: Some contributions from the literature on service quality

2.3.4.1. Juran's Quality Dimensions

Among traditional authors dedicated to quality issues, Juran (1951, p. 2.2) is one of the few that proposed a set of parameters or dimensions to evaluate quality, defending that the concept of *fitness for use,* is a universal concept applicable to goods and services. According to Juran (1951, pp. 2.4-2.9) "*Fitness for use*" is defined by customers and is the resultant of four parameters, called *quality characteristics*: 1) *quality of design,* 2) *quality of conformance, 3) the abilities* and 4) *field service.*

Quality of design is a composite of three steps: *quality of market research*, *quality of concept* (Masing, 1966, quoted in Juran, 1951 (1974 edition), p. 2.5) and *quality of specification*. It starts with the identification of what constitutes *fitness for use* to the user. The choice of the concept of a product or service to respond to the identified needs of the user is the next step. Finally, there is a translation of the chosen concept into a detailed set of specifications to be executed (Juran, 1951, p. 2.5).

Quality of conformance, also known as "quality of production" or "quality of product", refers to the extent to which the product conforms to the design, and is the result of technology, resources, and management abilities.

The *abilities* are especially important for long-lived products and include (Juran, 1951, pp. 2.6-2.8):

- *Availability,* which is the extent to which the user can secure service when she wants it;
- *Reliability*, which was defined by Juran as *freedom from failure* and can be measured by the probability of performance without failure for a specified period of time and under given and known conditions;
- *Maintainability*, which refers to the need for continuity of service, and can either be the ease of conducting preventive and scheduled inspections and servicing (also known as *serviceability*) or the ease of restoring service after failure (also

known as *repairability*).

Field service relates to activities that are carried out after sale, either formally contracted or not. All the other three foregoing parameters are influenced mainly by what goes on prior to the sale of the product or service to the user. Field service is also known as *customer service*, *sales service*, or just *service*, and it relates to activities that are carried out after, rather than before, the sale. *Promptness*, *competence*, and *integrity* are important parameters of field service.

2.3.4.1.1. Juran's Fitness For Use in Services

Juran and Gryna (1993, pp. 3-5) defend that quality means *customer satisfaction,* which, in turn, is achieved through two components: *product features* and *freedom from deficiencies*, which have dramatic differences within manufacturing industries and within services (Table 8):

- *Product features* have a major effect on sales income (through market share and premium prices, for example) while *freedom from deficiencies* has a major effect on costs (through the reduction in scrap, rework, complaints, and other deficiencies, such as errors, defects, failures, and off-specification);
- *Freedom from deficiencies* refers to quality of conformance: higher conformance results in lower costs and increased customer satisfaction.

	Manufacturing industries	**Service industries**
Product features	Performance Reliability Durability Ease of use Serviceability Aesthetics Availability of options and expandability Reputation	Accuracy Timeliness Completeness Friendliness and Courtesy Anticipating customer needs Knowledge of server Esthetics Reputation
Freedom from deficiencies	Product free from defects and errors at delivery, during use, and during servicing. Sales, billing, and other business processes free of errors.	Service free of errors during original and future service transactions. Sales, billing, and other business processes free from errors.

Table 8: Product features and freedom from deficiencies in manufacturing and service industries
Source: Adapted from Juran & Gryna, 1993, p. 4 (Juran & Gryna, 1993, p. 4)

For Juran (1951, pp.2-4), service providers have to identify what constitutes *fitness for use* for their clients, choose a design concept that is responsive to the identified needs, and translate this concept into specifications, as industrial manufacturers do. But service providers have additional considerations in the four *parameters* of *fitness for use*: q*uality of design, quality of conformance, abilities*, and *field service* (these last two, described above).

Regarding *quality of design*, the services companies must take into account four additional factors (Juran, 1951 pp. 47.4-47.7): 1) *design for many consumers*, 2) *time* as

a service parameter, 3) *design for consumer "well-being"*, and 4) *design for continuity of service*.

In terms of *design for many consumers*, Juran alerts that service companies must give special emphasis to several aspects of design related to the fact that they deal with a clientele of many consumers. He identifies four important aspects: *"made to order" designs*, *technical assistance*, *simplicity*, and *auxiliary services*:

- *Made to order designs* is an attempt to respond to a wide spectrum of needs of human beings, to which services companies can respond creating a range of choice (as a menu in a restaurant), providing modular systems, or providing assistance to tailor-made services (as a special order in a restaurant);
- *Technical assistance* is used to diagnose needs, and provide explanations or general information;
- *Simplicity* is a master need, as many customers are unable to understand complex rules or are unwilling to take the time to learn;
- *Auxiliary free services* are provided to clients as a part of the quality of design. Free windshield cleans or oil status checks at service stations are an example of auxiliary free services. These auxiliary services are designed to meet competition and meet the special need of consumers for *well-being*.

The *time* required to provide a service is an important parameter of service quality and several notions of *time* can be distinguished (Juran, 1951, p. 47-5):

- *Access time*: the length of time that elapses from the client's first effort to gain the service company's attention until she gets that attention. Access time, also known as *accessibility*, can be expressed, for example, as '80% of the incoming calls should be answered within 15 seconds after the first ring';
- *Queuing time* can also exist, and the consumer is concerned with a) the length of the queue and, therefore, the waiting time and the integrity of that queue, that is, the adherence to the principle of first-come-first-served;
- *Action time*, defined as the interval between taking the customer's order and providing the service. Juran even distinguishes *action time* from the customer's perception of *elapsed time*, as well as possible differences between criteria to define the starting and ending moments;

Time is important, not only because it is a scarce resource, but also because service time is the cumulative effect of all the delays. Service providers must establish standards for each component of service time and control them, and they must aim at service improvement through the design of components that can reduce service time (Juran, 1951, p. 47-6).

The third parameter of service quality design is *consumer well-being,* which is affected by several aspects of the services (Juran, 1951, p. 47-6):

- The *atmosphere*, which has to meet the tastes of the clientele;
- The *feeling of importance* that must be created in the relationship with the consumer, and meets the expectation of attention, courtesy and respect;
- *Information*, which gives the customer the opportunity to choose between alternatives and know what to expect;
- *Safety*, since people need to trust the service provider.

The last element Juran (1951, p. 47-7) considers important regarding service quality design is *design for continuity of service*. Alternatives must be planned in order to provide continuity of service in situations of failure, as they seldom can be compensated for the loss of time (Juran, 1951, p. 47-4). Alternatives, such as upgraded offers at the guaranteed price or loans during the service period, should be considered.

Quality of conformance, the second quality parameter of *fitness for use* also has to be analysed carefully in the service industry, as there is the need to distinguish between two different problems in the control of conformance (Juran, 1951, p. 47-7, 47-8):

- *Internal conformance*, which is related to the conformance of the internal process to the standards of the process. Customers cannot see this conformance, but internal conformance can have an impact on external conformance. Internal conformance is measured with the traditional control tools used in manufacturing processes;
- *External conformance*, which is the conformance to the service design, as seen by the clients. It is the conformance to those features of service quality that can be sensed by consumer. External conformance includes, not only obvious elements of design, but also features that contribute to timeliness and well-being. Consumer comments and claims forms, as well as satisfaction surveys, are used to measure external conformance.

The optimum level of conformance is very difficult to find, and Juran (1951, p. 47-9, 47-10) suggests two approaches to solve this problem: The first, is to use a "market" standard based on the analysis of performance attained by multiple members of the same large service organization; the second is to study the performance of competitors.

2.3.4.2. Grönroos' Model of Perceived Quality

2.3.4.2.1. Technical *versus* Functional Outcomes in Services

Grönroos (1990a) made an important contribution to the study of service quality by distinguishing between the *technical* or *outcome* component of services and the functional or process-related component (see Figure 1). The technical dimension is *what* the customer is left with when the service production process and the buyer-seller interaction are over; it is what customers receive in their interactions with the firm. It can be measured objectively by the customers, because of its characteristics as a technical solution to a problem (Grönroos, 2007, p. 74). This technical dimension of quality is often thought of as the quality of the *service delivered*.

However, the outcome or end result of the process does not count for the total quality that customers perceive as received, as it is just one *dimension of quality*. The customer is also influenced by the way the technical quality is transferred to her: she is also influenced by *how* she receives the service, and how she experiences the simultaneous production and consumption process. This functional component of services - the *how* of the service - concerns the service delivery itself.
The accessibility to the service, the appearance of the staff and how the service employees perform their tasks, what they say, and how they do it, also influences the view of the customer about the service. The *how* of the service is "the processes involved in being seated, in ordering the meal, the meal being brought to the table and

served, the attention accorded the patrons while they consume the meal" (Schneider & White, 2004, p. 5). This functional quality of the process is closely related to how the *moments of truth* of the service encounters are taken care of, and how the service provider functions. Yet, it cannot be objectively evaluated (Grönroos, 2007, p. 75).

Too often, considerations about *technical quality* are thought of as the paramount of quality issues, and a strategy about the technical quality is successful if the company succeeds in achieving a technical solution that competitors cannot match (Grönroos, 2007, p. 75). This situation is rare, as other companies can produce approximately the same technical quality in a short period of time. In services, creating a technical advantage is even more difficult than in manufacturing. A good technical quality alone does not mean the customers perceive that the service quality is good. Yet, if customers are to consider total service quality as good, *functional quality* will not be enough, as a good *technical quality* is required. Although both technical and functional outcomes are important contributors to the perceptions of total service quality, the process of service delivery has been the focus of most service quality literature. That does not mean that the functional dimension (i.e. delivery) is the most important one – for example, in a surgery, the technical competence of the surgeon is probably more important to most people than her bedside manner, and their relative importance will vary from case to case (Schneider & White, 2004, p. 5).

Grönroos also includes in his model the *company image,* which is how customers see the service firm, its resources, and its operating methods and processes. Company image can affect the perception of quality: minor mistakes will be forgiven if the company has a favourable image; if these mistakes occur frequently, the image will be damaged; and if the image is negative, minor mistakes will be considered greater that they otherwise would be. Image is, therefore, a filter of perceived quality.

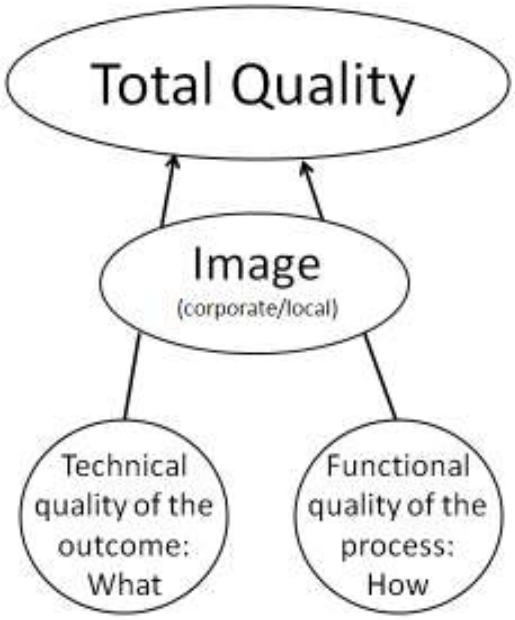

Figure 1: Grönroos' two dimensions of service quality
Source: Grönroos, 2007, p. 74 (Grönroos, 2007, p. 74)

2.3.4.2.2. Grönroos' Perceived Service Quality

Grönroos (1982) introduced the *perceived service quality model*, where he defends that the quality of a service, as it is perceived by the customers, has two dimensions: a technical or outcome dimension, and a functional or process-related dimension. In this model, the level of total *perceived quality* is not determined simply by the level of technical and functional quality dimensions, but rather by the *gap* between the *expected* and *experienced quality* (Grönroos, 2007, pp. 72-76) (Figure 2):

- The *perceived* quality approach is based on its disconfirmation construct, i.e., the measurement of how well experiences of the service process and its outcome meet expectations; Good *perceived* quality is obtained when the *experienced quality* meets the expectations of the customer, that is, the *expected quality*;
- *Expected quality* depends on several factors, as marketing communications, word of mouth, company image, price, the customer needs and values, among others. Unrealistic advertising campaigns, for example, can lead to a low perceived quality by creating unrealistic expectations. This means that if expectations are unrealistic, the total perceived quality will be low, even if the experienced quality measured objectively is good.

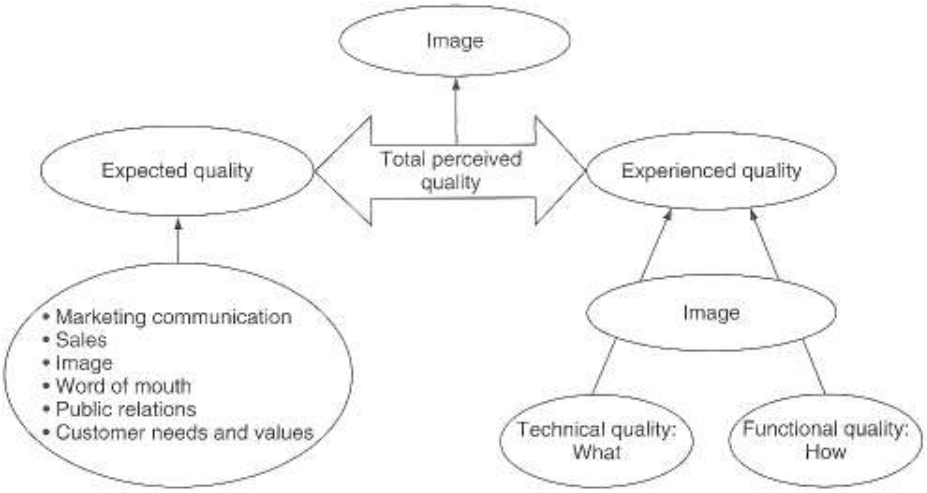

Figure 2: Grönroos' total perceived quality
Source: Grönroos, 2007, p. 77

2.3.4.2.3. Additional Contributions to Grönroos' Perceived Quality Model

Some authors have been suggesting an extension to Grönroos model in order to include other elements as additional dimensions of service quality (Table 9). One of these elements is the physical environment – the *where* element of service quality:

- Rust and Oliver (1994) defend the need for explicitly recognizing the physical environment of the service encounter as service quality. Service processes include the environment of the process; thus, the functional quality perceptions are influenced by elements of the physical environment. The perception of the process depends on the context of that process; thus, the technical dimension of quality is also influenced by the physical environment;

- Bitner (1992) used the term *servicescape* to describe several elements of the physical environment of the service. The *servicescape* consists of the physical resources, technology, and other physical elements surrounding the service process. These elements help creating the ambience of the service process; thus, it is expected to have an impact on the way service employees and customers behave and interact in service encounters.

The inclusion of the *economic* consequence in the perceived service quality model has also been suggested (Holmlund, 1997): Economic quality would denote the perceived economic consequences of a certain solution. This economic dimension is not directly related with the price or other kinds of sacrifice for a customer, but rather with the perception of the possible economic consequences of a solution. Brogowicz *et al.* (1990, quoted in Grönroos, 2007, pp. 78-80) created a technical quality gap and a functional quality gap, which then merge into a total service quality gap (Figure 3).

Additional dimension
Physical environment (*where*) (Rust & Oliver, 1994)
Physical environment (*where*): *servicescape* (Bitner, 1992)
Economic quality (Holmlund, 1997)
Total service quality gap (Brogowicz *et al*., 1990)

Table 9: Additional contributions to Grönroos' *perceived* service quality model

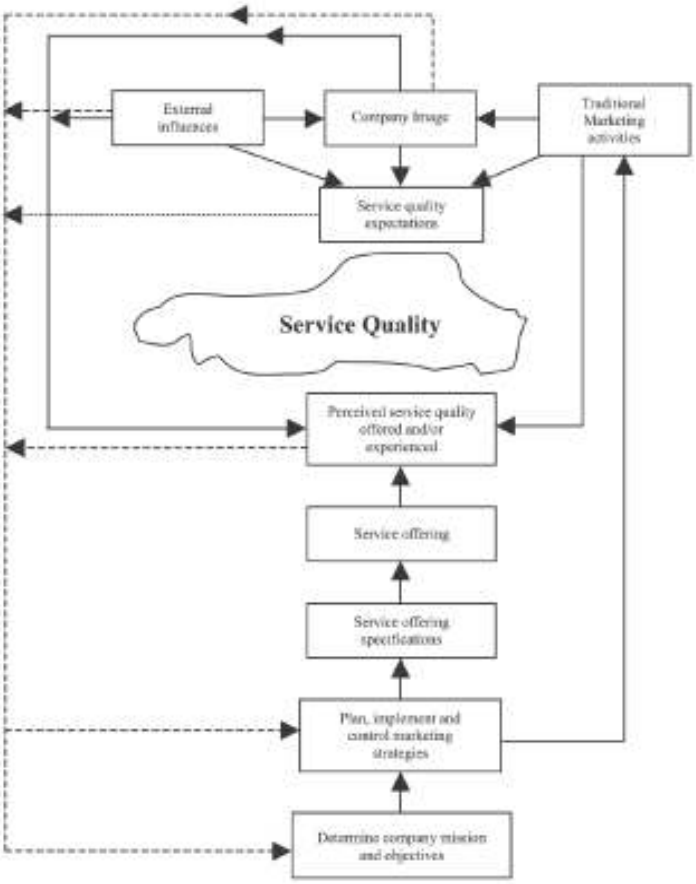

Figure 3: Brogowicz's synthesized model of quality
Source: Brogowicz, Delene, & Lyth, 1990 (Brogowicz, *et al.*, 1990)

2.3.4.2.4. Grönroos' Dimensions of Service Quality

Grönroos (1988) derived six criteria for experienced service quality, mostly dedicated to the functional (delivery) rather than technical (service product related) issues: 1) *professionalism and skills* (technical, outcome related), 2) *reputation and credibility* (image related), 3) *attitudes and behaviour*, 4) *accessibility and flexibility* , 5) *reliability and trustworthiness,* and 6) *service recovery* (all functional, process related) (Table 10).

Dimension	Definition
Professionalism and Skills	Do the employees, physical resources, and operational systems of the organization have the knowledge and skills to solve customer problems in a professional way?
Attitudes and Behaviours	Do the service employees (contact persons) show concern for customers and interest in solving their problems in a friendly and spontaneous way?
Accessibility and Flexibility	Is the service provider (e.g. its location, operating hours, employees, operational systems) designed so that customers can access the service easily and so that the provider can adjust to the demands and wishes of a customer in a flexible way?
Reliability and Trustworthiness	Do the customers know that they can rely on the service provider, its employees, and its systems to keep promises and perform with the best interest of the customer at heart?
Recovery	Do the customers realize that whenever something goes wrong or something unpredictable happens the service provider will immediately take steps to keep the customer in control and to find an acceptable new solution?
Reputation and Credibility	Do the customers believe that the operations of the service provider can be trusted and give adequate value for the money, and that it stands for good performance and values, which can be shared by customers and the service provider?

Table 10: Grönroos's dimensions of perceived service quality
Source: Grönroos, 1988, adapted by Schneider & White, 2004, p. 34 (Grönroos, 1988, adapted by Schneider & White, 2004, p. 34)

2.3.4.3. The Gap Model and the SERVQUAL

SERVQUAL is probably the most popular and widespread service quality model. Parasuraman *et al.* (1985, 1988) started their study talking to customers and executives and conducting a qualitative research. The authors identified "a set of discrepancies or gaps [that] exists regarding executive perceptions of service quality and the tasks associated with service delivery to consumers" and expected *versus* perceived service gap (Parasuraman *et al*., 1985) (Table 11 and Figure 4).

Gap	Description
1	Consumer expectation – management perception gap
2	Management perception – service quality specification gap
3	Service quality specifications – service delivery gap
4	Service delivery – external communications gap
5	Expected service – perceived service gap

Table 11: Parasuraman *et al.*'s description of the gaps
Source: Parasuraman *et al.*, 1985 (Parasuraman *et al.*1985)

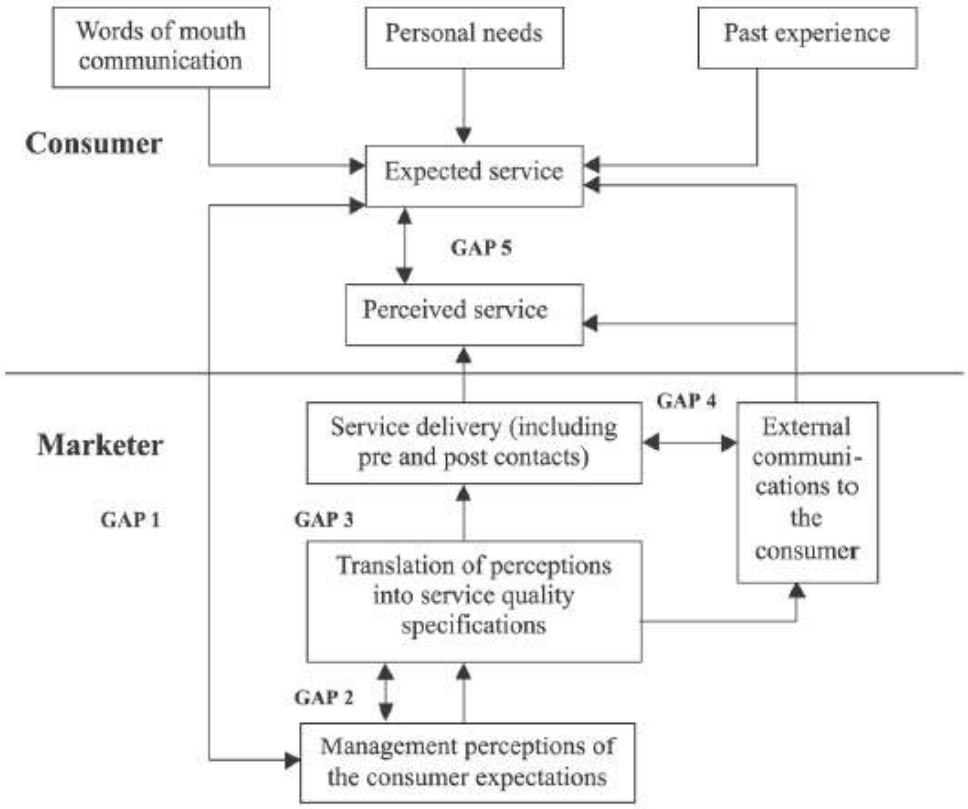

Figure 4: Gap model
Source: Parasuraman *et al.*, 1985 (Parasuraman *et al.*1985)

In their qualitative research, Parasuraman *et al.* (1985) identify ten dimensions, all of them focused on service delivery, through which customers evaluate service quality in general: *reliability*, *responsiveness*, *competence*, *access*, *courtesy*, *communication, credibility*, *security*, *understanding the customer, and tangibles*. These dimensions, which they labelled as *service quality determinants,* and their definitions, are presented in Table 12.

As empirical evidence revealed considerable correlation among these original constructs (Parasuraman *et al*., 1988; Zeithaml, Parasuraman, & Berry, 1990, p. 25), the investigation led to the consolidation of seven dimensions into two broader dimensions labeled *assurance* and *empathy:* The *assurance* dimension contains items initially represented by *competence*, *courtesy, credibility,* and *security,* while the *empathy* dimension includes *access*, *communication,* and *understanding the customer*.

Based on the initial ten dimensions, and after consolidating some of them into these two new dimensions, the authors presented the SERVQUAL survey measurement instrument, a 200-item survey, which, after factor analysis and item elimination, was reduced to a 22-item, five-factor version (Parasuraman *et al.*, 1988; Parasuraman, Zeithaml, & Berry, 1984a, 1984b, 1985; Zeithaml, Berry, & Parasuraman, 1993; Zeithaml *et al*., 1990). These final dimensions and their definitions are presented in Table 13.

Dimension	Definition
Reliability	Involves consistency of performance and dependability.
Responsiveness	Concerns the willingness or readiness of employees to provide service. It involves timeliness of service.
Competence	Means possession of the required skills and knowledge to perform the service.
Access	Involves approachability and ease of contact.
Courtesy	Involves politeness, respect, consideration and friendliness of contact personnel.
Communication	Means keeping customers informed in language they can understand and listening to them.
Credibility	Involves trustworthiness, believability, and honesty. It involves having the customer's best interests at heart.
Security	Is the freedom from danger, risk, or doubt.
Understanding the customer	Involves making the effort to understand the customer's needs.
Tangibles	Includes the physical evidence of the service.

Table 12: Parasuraman *et al.*'s initial ten dimensions of service quality
Source: Parasuraman *et al.*, 1985

Dimension	Definition
Reliability	Ability to perform the promised performance dependably and accurately.
Tangibles	Appearance of the organization's facilities, employees, equipment and communication materials.
Responsiveness	Willingness of the organization to provide prompt service and help customers.
Assurance	(Combination of items designed originally to assess Competence, Courtesy, Credibility and Security). Ability of the organization's employees to inspire trust and confidence in the organization through their knowledge and courtesy.
Empathy	(Combination of items designed originally to assess *access*, *communication* and *understanding the customer*). Personalized attention given to a customer.

Table 13: SERVQUAL dimensions and definitions
Source: Parasuraman *et al.*, 1985

SERVQUAL's overall quality is based on the disconfirmation gap, as proposed by Oliver (1980; 1993), that suggests that consumers make a better-than-expected/worse-than-expected (disconfirmation) judgement, and that their satisfaction evaluation was based on a comparison of product performance with expectations. A weighted SERVQUAL was also suggested, as SERVQUAL can be used to determine the relative importance of each of the five dimensions in influencing customers' overall quality perceptions (Parasuraman *et al*., 1988). Overall quality should then reflect the relative importance of each of those dimensions. That empirical study also revealed that *reliability* is consistently the most critical and important dimension, followed by *assurance*, while *empathy* is the least important dimension (Parasuraman *et al*., 1988).

Further empirical tests to SERVQUAL dimensions revealed eight major conclusions (Zeithaml *et al*., 1990, pp. 25-33):

- All five dimensions are critical;
- Tangibles is the least important dimension;
- And reliability is the most critical dimension, regardless of the service being studied;

- The average relative importance of SERVQUAL dimensions is:
  - Reliability: 32%
  - Responsiveness: 22%
  - Assurance: 19%
  - Empathy: 16%
  - Tangibles: 11%;
- The mean SERVQUAL scores (i.e., perception-expectation scores) by dimension was negative for every dimension except *tangibles*, suggesting that companies included in the studies exceeded customers' expectations on this dimension, and that there was a mismatch between the priorities expressed by customers and the levels of quality delivered by companies;
- Weighted scores by company were even more negative than unweighted scores which indicate that companies were performing most poorly on dimensions that are critical to customers;
- If companies handle customers' complaints right, they can improve customers' quality perceptions, and the company significantly improves customer-retention rates. That is to say that, although the most important a company can do is to be reliable, that is, perform the service dependably and accurately – do it right the first time – performing it right the second time is very rewarding;
- Improvements in customers' perceptions are critical for customers make word-of-mouth recommendations: a higher customer's service-quality perception increases the likelihood of having her recommending the company to prospective customers. Zeithaml quotes Marcus (1985) paper that revealed that word-of-mouth recommendations play a much greater role in customers' purchases of services that in their purchases of goods.

2.3.4.4. Service Quality after SERVQUAL

The literature on service quality has changed after SERVQUAL, and while some authors propose modifications to the SERVQUAL model, others have developed their own approaches. It has been acknowledge that SERVQUAL's methodology can help determine where, and how, serious the gaps are, and it is probably the most worldwide used service quality instrument, but it has also been widely criticized (for example, Cronin Jr. & Taylor, 1992; Oliver, 1993; Patterson & Johnson, 1993; Peter, Churchill, & Brown, 1992).

Parasuraman *et al.* (1988) refer that with appropriate adaptation, SERVQUAL can be used to evaluate service quality among different industries. They also suggest that SERVQUAL can be used by companies with several points of sale to track the level of service provided by each store in their chain. And, in fact, SERVQUAL has been applied, for instance, to internal services, leading to a model called INTSERVQUAL (Frost & Kumar, 2000), which is probably the most appropriate model for e-learning services that are delivered by a company to its own employees, i.e. internal training. Other adaptations of SERVQUAL for specific industries have also been made: for example, Paraskevas (2001a, 2001b) adapted it to Hotel's internal service chains.

Parasuraman, Berry and Zeithaml (1991a) later found that *tangibles* was splitting into two factors (*physical facilities/equipment* and *employees/communication materials*), while *responsiveness* and *assurance* were merging into one dimension.

Other empirical applications of SERVQUAL (Babakus & Boller, 1992; Cronin Jr. & Taylor, 1992; White & Schneider, 2000) suggest only one or two factors as relevant to service quality. Others argue that the reduction from ten to five factors was excessive, defending that it is easier to discuss the original ten dimensions (Gummesson, 1992) or that they should have been reduced only to seven or eight (Carman, 1990).

Factor instability has also been suggesting that a one-fit-all factor model is not possible and most probably there is no universal set of factors that are relevant across service industries (Babakus & Boller, 1992; Brown, Churchill, & Peter, 1993; Carman, 1990; Cronin Jr. & Taylor, 1992). Parasuraman *et al.* (1991a) alert that SERVQUAL dimensions may be too broad for some service industry, but two narrow for another, and that it must be modified before applying to a service industry. Several industry-specific instruments of measurement of service quality have been developed to cope with SERVQUAL factor instability and critics, as DINERSERV for restaurants (Stevens, Knutson, & Patton, 1995), LODGSERV for lodging services (Knutson, Stevens, Wullaert, & Yokoyoma, 1990), LibQUAL for libraries (Association of Research Libraries, 2007; Georgetown University, 2007), and other specific models dedicated to retail stores (Dabholkar, Thorpe, & Rentz, 1996) and airline transportation (Lioua & Tzeng, 2007).

2.3.4.5. SERVPERF

Cronin and Taylor (1992) do not agree with the conceptualization of service quality on the basis of the expectancy-disconfirmation paradigm, as proposed by Parasuraman *et al.* (1985, 1988). Their main critique (1994) to SERVQUAL is that Parasuraman *et al.* make an abusive generalization of Oliver's (1980, 1993) disconfirmation paradigm to service quality, which was created to evaluate customer satisfaction, not service quality. They argue that the performance *minus* expectation is an inappropriate base for use in the measurement of service quality, and that the expectations-performance gap theory, upon which SERVQUAL was based on, has little theoretical or empirical evidence support. For that reason, these authors suggest a performance-based only paradigm, called SERVPERF, over the disconfirmation-based model (SERVQUAL). Their point of view was supported by Mazis, Ahtola, and Klippel (1975), Churchill and Surprenant (1982), Woodruff *et al.* (1983), Carman (1990), Bolton and Drew (1991a, 1991b), Babakus and his colleagues (Babakus & Boller, 1992; Babakus & Mangold, 1992), and also by Brown, Churchill and Peter (1992), but, even so, SERVPERF exhibits the same factor instability across service industries as SERVQUAL (Cronin Jr. & Taylor, 1994).

2.3.4.6. Gummesson's 4Q Model of Offering Quality

Gummesson's (1993) model helps tracking back to the design table all kinds of quality problems and includes the long-term outcomes of service offerings (Grönroos, 2007, p. 81).

Gummesson (1993) identifies two *sources* of quality (Figure 5):

- *Design quality*: how well the service and goods combination elements into a functioning package are developed and designed;

- *Production and delivery quality*: how well the package and its elements are produced and delivered compared with the design.

And two concepts are *results* of quality:

- *Relationship quality*: how the customer perceives quality during the service processes. This variable is closely related to Grönroos' functional quality dimension;
- *Technical quality*: refers to the short-term and long-term benefits of a package.

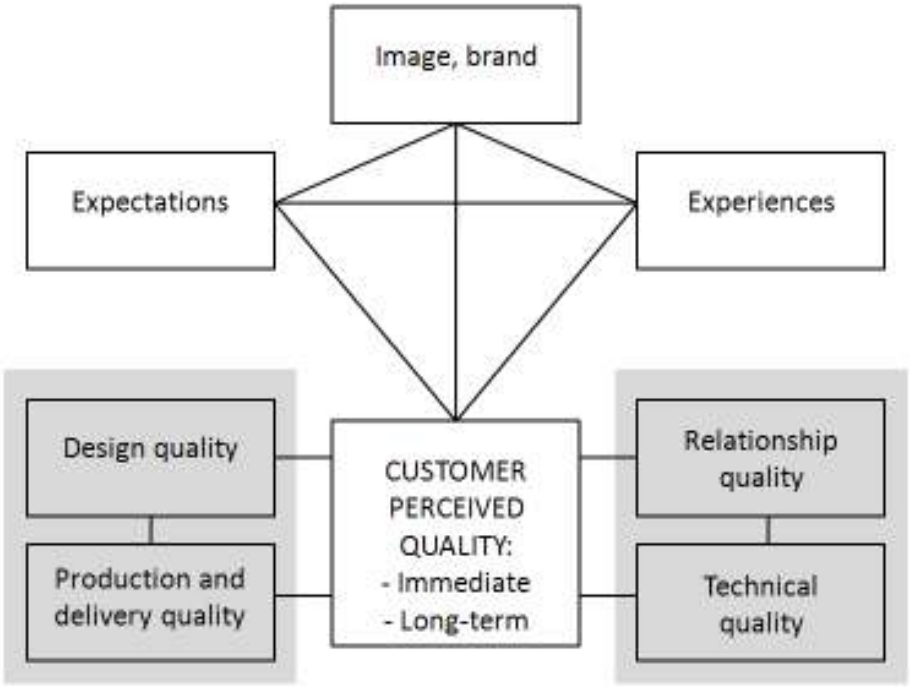

Figure 5: Gummesson 4Q model of offering quality
Source: Gummesson, 1993, adapted from Grönroos, 2007, p. 80

While Grönroos (1988) focus much of his work in service recovery, Gummesson (1993) emphasizes the tangible and the technical aspects of services. Services offerings can be evaluated in terms of three elements: the *service* element, the *tangible* element and, increasingly, the *software or information technology* element. Based on these three elements, Gummesson (1993) created a list of dimensions that customers might use to evaluate each of the elements of the service experience (Table 14).

The model includes a separate *software* element to service delivery evaluation, based on the argument that many service providers are dependent on computer systems and that customers often interact with computers and software in obtaining service. It also includes SERVQUAL's dimensions of *reliability*, *responsiveness*, *assurance*, and *empathy* but the *tangible* element is, however, broken in numerous dimensions on which customers might evaluate the tangible element of their service experience. Tangible elements have three dimensions: the *manufacturing/goods* perspective, which is based on Garvin's (1987, 1988) work, a *psychological* perspective concerned with tangibility issues that affect the consumers' ability to interact with products in everyday life, and an *environmental* perspective that addresses the impact of the larger physical environment of the service experience on the evaluation of it. The model combines *expectations* and *experiences*, *image* (as in the perceived service quality model) and

brand. *Image* variable is related to customers' view of the firm, while the brand is related to the view that is created in the minds of customers (Grönroos, 2007, p. 81). The customers' perception of the total quality influences the *image* of the firm and contributes to the *brand* that is emerging in the minds of the customers.

For service elements		
Reliability Responsiveness Assurance Empathy		
For tangible elements		
Goods perspective	Psychological perspective	Environmental perspective
Reliability (probability of mal functioning)	Visibility (seeing all important aspects of a product properly)	Ambient factors (background features customers may or may not be aware of)
Performance (primary characteristics of core product)	Mapping (relation between a control and the reaction to the control)	Functionality (factors contributing to use of product)
Features (extras)	Affordance (the purposes the product allows)	Aesthetics (factors contributing to appearance of product)
Conformance (match between specifications and performance)	Constraints (factors limiting what can be done with a product)	Service personnel (e.g. the number, appearance, and behaviour of people)
Serviceability (easy of repair and maintenance)	Customer control (control over product's functioning)	Other customers
Aesthetics (exterior design, task, smell, touch, etc.)	Knowledge needed (information necessary to use product)	Other people
	Feedback (confirmation of results of actions)	
For software elements		
Reliability (ability to function correctly under different circumstances) Extendability (ability of software to adapt to new specifications) Integrity (ability to protect against unauthorized access) User friendliness (ease of learning to operate software)		

Table 14: Gummesson's typology of service dimensions
Source: Gummesson, 1993, adapted from Schneider & White, 2004, p. 37

2.3.4.7. Other Relevant Contributions

Sasser *et al.* (1978) are among the first authors that discussed service performance dimensions. They identified three different dimensions of service performance: *levels of materials*, *facilities,* and *personnel*, revealing the *delivery* part of service quality.

Four years later, Lehtinen and Lehtinen (1982) propose three quality dimensions: *physical quality* (which includes physical aspects of the service as the building or the equipments), *corporate quality* (which includes the company's image or profile) and *interactive quality* (that derives from the interaction between service personnel and the customer, and between the customer and other customers).

Lehtinen and Lehtinen (1982) contend that "service quality" has three dimensions:

- *Physical quality*, which includes such items as the condition of buildings and enabling equipment;
- *Corporate quality*, which refers to the organization's image and profile;
- *Interactive quality*, which derives from the interaction between service organizations' personnel and the customer, as well as the interaction between customers.

While most service quality models define and measure service quality from the customers' point of view, Rust *et al.* (1994, 1995, 1996), although starting by asking customers about the received service, argue that the dimensions of service to be measured must be defined in terms of *business processes*. Their point of view is based on the idea that, this way, it is easier to make changes in business processes in response to customers' data. For instance, no one is responsible for *empathy,* but someone is responsible for customer care. By measuring customer perceptions in terms of business processes, it is very clear who is responsible for the suggested changes, and no suggestions are left over. Rust *et al.* (1994) focus their work in three main quality dimensions: *technical* quality, *functional* quality and the *environment*.

Our empirical research was strongly influenced by the literature on services, not only regarding the qualitative approaches that most of the models use, but also in terms of quality dimensions that could be explored in terms of our research context.

2.3.5. Quality in Technology-Based Services

Services that are based on technology have additional concerns that are related to the quality of the technology. The more technology-oriented the firm is, the bigger is the risk to define quality too narrowly, and to consider technical specifications of the service the only or the most important feature of perceived quality (Grönroos, 2007, p. 73). E-learning services are, mostly, and educational services. Yet, they are based in technological infrastructures, and, therefore, additional considerations have to be made, to include this technological side, namely the fact that technology can help or injure the customer's perception of the quality of the service.

It has been claimed (S. McConnell, 2002) that technology, namely software, can have quality characteristics that the user is aware (the external characteristics) and others (the internal ones) that she will never notice. Quality models of information systems include not only quality concerns with the software, but also with the infrastructure, the data, the administrative procedures, and the service itself. And for services that are provided online, such as e-learning services, there are additional concerns that include the *usability*, *accessibility, communication, credibility, and appearance* of the website.

In Appendix 4 we provide an extended review of the leverage role that technology has in perception of quality and the concerns with quality that can be found in software development and in information systems. In this Appendix, we also review the most relevant approaches to quality for web-based services.

2.4. Quality in Education, VET, and e-Learning

2.4.1. Quality in Education

Knowledge, skills, and attitudes – the output of education - can occur without a quality educational system – the process, as individuals do not need a formal educational system to learn (J. Cross, 2007). However, whenever a formal educational system exists and is being used by a person, the educational process is planned in order to provide a quality output.

Quality in education may even be more difficult to define than in most other sectors, as the *output* and the *process* are intimately connected and even more dependent on the trainee. Moreover, quality concerns in education are expressed in many ways, ranging from accreditation to best practices, and different approaches and concerns may be found, namely in higher education and in vocational and educational training (also known as VET).

Most of the literature of quality in education is dedicated to higher education. Even so, all kinds of educational institutions have quality concerns. The literature on quality in higher education provides a robust starting point for the study of quality in e-learning, not only because higher education institutions are also offering courses in e-learning, as graduation, masters, and PhD programs, and their quality concerns are also applicable to these, but also because vocational e-learning aims to reach quality performances that higher education institutions have already reached, in order to deal with recognition issues that has been facing (Association of Public and Land-Grant Universities & Sloan National Commission on Online Learning, 2009a, 2009b).

2.4.1.1. Education Stakeholders and Their Perceptions of Quality

In the educational context, quality is also a relative term: It means different things to different people, which raises the issue of in *whose* quality should we focus whenever researching about quality in education (Harvey & Green, 1993).

One common approach to quality in higher education is the stakeholder approach, which recognizes the potential for a number of different perspectives of quality, which reflect the views of a variety of stakeholders who, as Vroeijenstijn (1991) claims, have legitimate authority to voice their perspectives. Burrows & Harvey (1992, quoted in Harvey & Green, 1993) identified a variety of stakeholders in higher education, including students, employers, teaching and non-teaching staff, government and its funding agencies, accreditors, validators, auditors, and assessors (including professional bodies), and each one of these stakeholders has a different perspective on quality.

Having in mind these different perspectives on quality, Green (1994) argues that it is necessary to define as clearly as possibly the criteria that each stakeholder uses when judging quality and take all these competing views into account:

- *Providers (funding bodies and community at large)* interpret quality as "value for money", as they are looking for a good return on investments;
- *Users of products (e.g. current and prospective students)* interpret quality as of excellence, as they want to ensure a relative advantage in career prospects; The

interpretation of quality as excellence is the interpretation that best describes the student's view of quality (Lagrosen, Seyyed-Hashemi, & Leitner, 2004);
- *Users of outputs (e.g. the employers)* see quality as "fitness for purpose", as they are looking for competencies matching the functions, and reduce the gap between current skills and the minimum competences needed to perform the tasks involved in a given job function;
- *The employees of the sector (academics and administrators)* see quality as perfection (or consistency), where the behavioural and ethical values are met, in order that job satisfaction can be achieved.

Although recognizing the existence of several stakeholders, Telford (2005) attenuates the potential problems that may exist since "while many values are shared, there are significant differences between the stakeholders, and there is generally no student dissatisfaction on issues where the stakeholders do not share the same values". Entin (1993) and Ewell (1993), both quoted in Lamprecht (1994, p. 69), share a different opinion as they argue that adopting total quality management in education represents a serious disjunction between market forces and the academic enterprise.

Among students, there may also be differences in terms of quality evaluations. Lagrosen *et al.*'s (2004) cluster analysis proved that there was one group for which tangible resources, such as computers and libraries, are especially important, and another group for which these elements have little importance. There are differences between students' beliefs (what is currently occurring) and their attitudes (what ought to be) (Watty, 2005), which means that there is space for improvement, and resources should be allocated in specific issues, where quality perceptions are negative, which is very close to *disconfirmation paradigm* found in the literature on quality of services.

Customer's interaction can have an important impact on education quality. Lehtinen and Lehtinen (1982) (page 45) call it *interactive quality*, which derives from the interaction between service organizations' personnel and the customer (the student), as well from the interaction between customers. A similar idea is present in the *responsibility matrix* created by Wagner *et al.* (2008), who differentiated seven groups of stakeholders in e-learning in higher education that include students, instructors, educational institutions, content providers, technology providers, accreditation bodies, and employers. This matrix summarizes the responsibilities of each stakeholder group, and outlines the cooperation between those groups and their shared responsibility in the success of e-learning.

2.4.1.2. What is Quality in Education?

The first approaches to create a definition of quality in higher education began with de Groot (1983, quoted in Vroeijenstijn, 1991), who defends that quality is determined by the degree to which previously set objectives are met, and with Ball's (1985) definition of quality as 'fitness for purpose'. Later, Barnett (1988) and McClain, Krueger, & Taylor (1989) approached quality in terms of a notion of value-added.

Discussing quality in higher education, Harvey and Green (1993) propose five interrelated ways of thinking about quality:

- *Quality as exceptional*: Quality is regarded in terms of excellence, which means something distinctive, special or, in a weaker perspective, exceeding high standards;
- *Quality as perfection or consistency*: The focus is on processes and specifications that are aimed to be perfectly met. Excellence, in this case, means zero defects and getting things right at the first time;
- *Quality as fitness for purpose*: Quality has meaning only in relation to the purpose of the product or service. It means the extent to which a product or service meets the specifications of the customer and the needs that will exist in the future. The notion of *fitness for purpose* as "meeting customer requirements" in education is problematic, due to the contentiousness of the notion of customer" and the difficulty students have in specifying what is required. The tricky issue of determining who are the customers of higher education, and what their requirements are, leads Harvey & Green to suggest defining fitness for purpose in terms of the institution fulfilling its own stated objectives, or mission.
- *Quality as value for money*: Quality is related to value and, in particular with cost. "Quality at a price you can afford" or "you get what you pay for" express this notion of accountability of quality;
- *Quality as transformation*: The process should ideally bring about a qualitative change, a fundamental change of form, such as the phase transition when water transforms into ice as the temperature is lowered. The authors claim that this view can be found in the thinking of major Western philosophers, as well as in Eastern philosophies. In education, the transformation can take the form of enhancement and empowerment.

In his study with accounting students, Watty (2005) used Harvey and Green's (1993) classification scheme to rank respondent beliefs and attitudes. The attribute ranked in first place was designing a program to suit the requirements of the profession, and the final results showed that the dimensions of quality, in order of importance, and according to Harvey and Green (1993) classification, where *fitness for purpose*, *value for money*, *excellence*, and, for last, *transformation*.

2.4.1.3. Quality Models in Education

Joseph & Joseph (1997) found that the factors of quality (identified by students) are, in order of importance (Table 15):

- *Academic reputation:* for students, an institution with academic reputation is the one that has a prestigious degree programme, is recognized nationally and internationally, and has excellent instructors;
- *Career opportunities*, which include two issues: 1) how employable will they be after getting a degree from a specific institution, and the information the institution provided on career opportunities and 2) the influence of word-of-mouth communication, as well as of family and peers when selecting a university;

- *Programme issues:* compromises the availability of specialist programmes, degree flexibility, a practical component in the degree, the availability of several course options, and flexible entry requirements;
- *Time:* the length of time it takes to complete a degree (and the costs involved in doing so);
- *Physical aspects:* academic, accommodation, sports, and recreation facilities, as well an appealing campus layout;
- *Location:* the geographical location of the institution.

Later, Lagrosen (2004), using factor analysis and Parasuraman *et al.* (1985) and Zeithmal *et al.*'s (1990) frameworks, found eleven quality dimensions that contribute to high quality in higher education, yet, only the first seven dimensions were considered sufficiently important in terms of quality (Table 15). Telford and Masson (2005) also provided a framework to evaluate quality in higher education, based on a qualitative approach, which includes ten dimensions of quality (Table 15). According to them, the relative importance of each dimension is different for each set of stakeholders: Students are primarily interested in a vocationally valuable qualification or experience that will help them in their careers and that all the particular activities and processes that they see as being necessary for that objective to be achieved. The lecturing staff, being close to the customer, has a similar view (Table 16).

Joseph & Joseph (1997)	Lagrosen (2004)	Telford and Masson (2005)
- *Academic reputation* - *Career opportunities* - *Programme issues* - *Time* (and the costs involved) - *Physical aspects* - *Location*	- *Corporate collaboration* - *Information and responsiveness* - *Courses offered* - *Internal evaluations* - *Computer facilities* - *Collaboration and comparisons* - *Library resources* - *Campus facilities* - *Teaching practices* - *External evaluations* - *Post-study factors*	- *Course design* - *Course marketing* - *Student recruitment* - *Induction* - *Course delivery* - *Course content* - *Assessment* - *Monitoring* - *Miscellaneous* - *Tangibles*

Table 15: Dimensions of evaluation of quality in higher education

Rank	Students	Lecturers	Senior managers
1st	Qualifications gained are of value in terms of a career	Commitment to learning programme by the lecturers	Commitment to learning programme by the lecturers
2nd	Commitment to learning programme by the lecturers	Commitment to learning programme by the students	Qualifications gained are of value in terms of a career
3rd	Level of books and journals available in the library	Commitment to learning programme by the university	An atmosphere of mutual respect for all students and staff
4th	Library opening hours compatible with student's needs	Qualifications gained are of value in terms of a career	Effective communication between staff and students
5th	Commitment to learning programme by the university	Level of books and journals available in the library	Emphasis on treating students as an individual

Table 16: First five ranks in the hierarchies of importance for students, lecturers and senior managers
Source: Adapted from Telford & Masson, 2005

2.4.2. Quality in Vocational Education and Training (VET)

Quality concerns in vocational education and training (VET) have been made operational by *evaluation models* and *quality assurance frameworks*.

2.4.2.1. EU Quality Assurance Framework for VET

The European Union developed a Common Quality Assurance Framework (CQAF) (European Commission, 2004) to the vocational education and training sector. This framework (Figure 6) was designed to support the development and reform of the quality of VET at systems and providers levels, while fully respecting the responsibility and autonomy of Member States to develop their own quality assurance systems (p. 3). The CQAF (2004, p. 4) constitutes a European reference framework to ensure and develop quality in VET, building on the key principles of the most relevant existing quality assurance models. This framework can be applied at both the system and VET provider levels, and can, therefore, be used to assess the *effectiveness* of VET. In this model, the quality emphasis is in effectiveness, as it gives a particular emphasis to the improvement and evaluation of the *outputs* and *outcomes* of VET in terms of increasing employability, improving the match between demand and supply, and promoting better access to lifelong training, in particular for disadvantaged people.

The CQAF comprises 1) a model, to facilitate planning, implementation, evaluation, and review of systems at the appropriate levels in Member States, 2) a methodology for assessment and review of systems, which emphasizes self assessment, combined with external evaluation, 3) a monitoring system, at national or regional level, or combined with voluntary peer review at European level, and, finally, 4) a measurement tool, which includes a set of reference indicators aiming at facilitating Member States to monitor and evaluate their own systems at national or regional levels. The CQAF model includes the four interrelated elements: planning, implementation, evaluation and assessment, and review. For each one of these elements, the core quality criteria, considered as transversal to any VET system, have been identified.

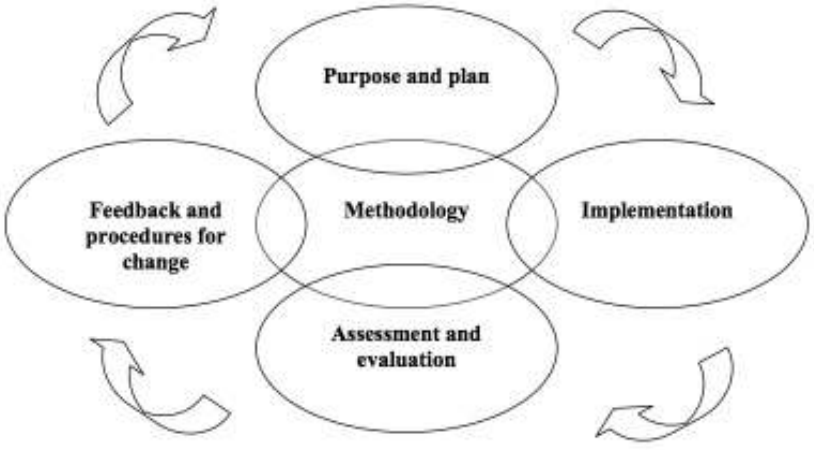

Figure 6: Common quality assurance framework (CQAF)
Source: European Commission, 2004

2.4.2.2. Models of Training Evaluation

Training *evaluation* is the process of finding out whether all the money, time, and effort put into designing and delivering training courses or other learning experiences was worth it (Donovan & Townsend, 2004, p. 6). Kirkpatrick and Kirkpatrick (2006, p. 19) focus the reasons for the existence of evaluation in the improvement of future programs and to determine whether a program should be continued or dropped.

Training evaluation is a process that is time dispersed, as it is supposed to occur before, during, and after the training course has occurred, although most of the times it is done only in the end of the courses and in an incomplete way (Tamkin, Yarnall, & Kerrin, 2002, p. ix). It can be prognostic or of impact, although the latter is more frequent: The prognostic evaluation provides a glimpse on how training objectives will be developed and the kind of impact the training course will have in the company; The impact evaluation is made some time after the course has ended and intends to preview the results that the course promoted in terms of knowledge, skills, and attitudes and aims to determine the impact the course had in the trainees and in the organization. Ehlers (2006, p. 159) claims that the differentiation between formative and summative evaluation is also often: Formative evaluations mainly serve purposes of quality *assurance* and its goal is the uncovering of weak points in a process. Summative evaluations are used to control the quality, the *impact*, or benefit of an educational offer.

The evaluation models of vocational training are focused on *results***,** rather than in the training *process*. As Stone (1967, p. xi) claims, organizational stakeholders are interested in demonstrated results - measures of how training expenditures contribute to the organization. Global competition and investors, he argues, are increasing the demand for accountability for results, as well as prudent expenditures, and for that, emphasis is put on training results.

Phillips and Stone (2002, pp. 1-2) justify this emphasis on *training results* for several reasons:

- Training and performance-improvement initiatives must be integrated into the overall strategic and operational framework of the organization; they cannot be isolated event-based activities, unrelated to the mainstream functions of the business;
- There must be a comprehensive measurement and evaluation process to capture the contributions of human resources development and establish accountability;
- Partnership relationships must be established with key operating managers.

2.4.2.2.1. Kirkpatrick's Model

The most widely used framework of training evaluation is the Kirkpatrick model (1959a). The model consists of four stages, originally described as steps and, later (1996), as levels (Figure 7):

- Level 1- Reaction: what the participants thought of the course, measured by reaction questionnaires;
- Level 2 - Learning: the changes in knowledge, skills, or attitudes with respect to the training objectives, measured by performance tests;

- Level 3 - Behaviour: changes in job behaviour resulting from the course, to identify whether the learning is being applied, measured by observation, productivity data, and interviews;
- Level 4 - Results: the bottom-line contribution of the course, measured by costs, quality, and return on investment.

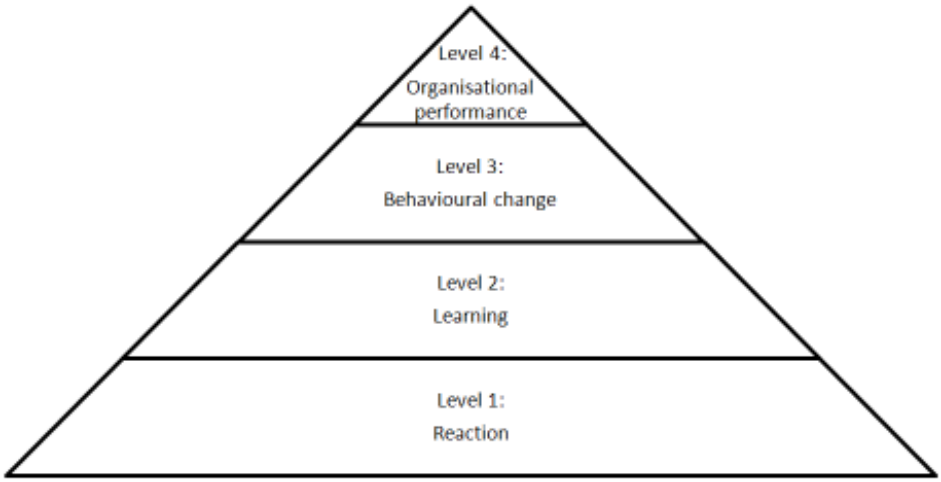

Figure 7: Levels of training evaluation in Kirkpatrick's model
Source: Kirkpatrick, 1996

Kirkpatrick's model is simple and pragmatic, and promotes the evaluation of training programs (Alliger & Janak, 1989). Yet, it has been widely criticized, mostly due to the fact that the levels are arranged in a hierarchical way, although it was not meant to be seen as such when it was first proposed. That promoted the idea that there is a causal relationship between each level, which has not been proved (for example, S. H. Lee & Pershing, 1999; Warr, C., & Birdi, 1999).

Bernthal (1995) and Holton (1996) are some of the authors that criticize the Kirkpatrick's model. Bernthal (1995) argues that the model mixes evaluation and effectiveness, and that the proposed levels do not form a continuum, while Holton (1996) argues that the Kirkpatrick's levels are a taxonomy of outcomes, rather than a model, due to the lack of constructs identified and the assumption of causal relationships.

Although the criticism made to Kirkpatrick's model, several other models based on it have been proposed (Table 17). Table 18 maps the key elements of each model, against the four levels of the Kirkpatrick's model.

Models
- The CIRO (Context, Input, Reaction, Outcome) Approach (Warr, Bird, & Rackham, 1970)
- The Hamblin's model (1974)
- The IPO model (Bushnell, 1990)
- The Organizational Elements Model (OEM) (Kaufman, Keller, & Watkins, 1995)
- The Five-Level ROI Framework (J. J. Phillips, 1994; J. J. Phillips & Holton, 1995)
- Molenda, Pershing and Reigheluth's model (1996)
- The KPMT model (Kearns & Miller, 1997)
- The Carousel of Development (Industrial Society, 2000)

Table 17: Models of training evaluation based on Kirkpatrick's model

Kirkpatrick		Reaction	Learning	Behaviour	Results	
Hamblin		Reaction	Learning	Job Behaviour	Organization	Ultimate value
OEM Model		Input process	Micro acquisition	Micro performance	Macro	Mega societal outcome
Molenda *et al.*	Activity accounting	Reaction	Learning	Transfer of learning	Business impact	Social impact
IS Carousel	Identify business need; define development objective; design learning process	Experience the learning process	Use and reinforce the learning	Judge the benefits to the organization		
Phillips		Reaction and planned action	Learning	Job application	Business results	Return on investment
KPMT	Staged process to examine the busine4ss needs; design solutions and get buy-in	Reaction to training and development	Learning	Transfer to the workplace/behaviour	Bottom line added value	
CIRO	Context analysis input	Reaction	Outcome immediate	Outcome intermediate	Outcome ultimate	

Table 18: Comparison of different models of training evaluation
Source: Adapted from Tamkin, Yarnall, & Kerrin, 2002, p. 13

2.4.2.2.2. Models Based on Kirkpatrick's

The CIRO (Warr *et al.*, 1970) model proposes four stages of evaluation:

- Context: the operational situation provides information that helps to determine the training needs and objectives;
- Input: information about possible training methods or techniques is gathered to select the best choice for the training intervention;
- Reaction: gathering participant views and suggestions about the training course;
- Outcome: looking at the results of training at an immediate, intermediate, and ultimate level. This includes Kirkpatrick's levels of learning, behaviour, and end results.

Hamblin (1974) proposed a slight modification to Kirkpatrick's model: His first three levels are close to Kirkpatrick's, but the final level is split into two - organization and ultimate value. In addition, unlike Kirkpatrick, Hamblin suggests that his levels form a hierarchy. The model proposed by Hamblin has the following levels:

- Level 1: Reactions;
- Level 2: Learning;
- Level 3: Job behaviour;
- Level 4: Organization – the effects on the organization, from participant's job to performance changes;
- Level 5: Ultimate value – the financial effects, both on the organization and the economy.

Bushnell (1990) proposed the IPO model (input, process, output) that, like the CIRO model, is focused on the inputs to training. The evaluation stages that the IPO model suggests are:

- Input: such as the instructor experience, trainee qualifications, and resources;

- Process: the plan, design, development, and delivery of the training;
- Outputs: the trainees reactions, knowledge, and skills gained, and improved job performance;
- And outcomes: profits, customer satisfaction, and productivity.

Kaufman and Keller (1994) expanded Kirkpatrick's model to include the societal contribution as an evaluation criteria, since industrial organizations are increasingly being called to account for the societal consequences of their activity, such as pollution and safety.

Later, Kaufman, Keller and Watkins (1995) reviewed this proposal and included:

- Level 1: Input – similar to Kirkpatrick's reaction level, but extended to include the role, usefulness, appropriateness, and contributions of the methods and resources used;
- Level 2: Process: also similar to Kirkpatrick's reaction, but extended to include an analysis of whether the intervention was implemented properly in terms of achieving its objectives;
- Level 3: Micro (acquisition) - similar to the learning level, it evaluates the individual, as well as small-group mastery and competences;
- Level 4: Micro (performance) - this level is close to the behaviour level and examines the utilization of skills and knowledge; it focus on application rather than on the transfer of skills and knowledge;
- Level 5: Macro - this level is related to the results level and examines organizational contributions and payoffs;
- Level 6: Mega - an additional level that looks at societal outcomes.

Jack Phillips and Holton (J. J. Phillips, 1994, quoted in Tamkin, Yarnall, & Kerrin, 2002, p. 8; J. J. Phillips & Holton, 1995) added a fifth level to Kirkpatrick's model, which aimed to separate the assessment of the financial benefits of the training compared to its costs:

- Level 1: Reaction and planned action, which includes a plan of what participants intend to apply from the program;
- Level 2: Learning;
- Level 3: Job application;
- Level 4: Business results, which include quality, costs, time, and customer satisfaction ratings;
- Level 5: Return on investment.

Molenda, Pershing and Reigheluth (1996) proposed an evaluation taxonomy based on non-hierarchical six *strata*, where the first and the last are add-ons to Kirkpatrick's framework:

- *Stratum* 1: Activity accounting - examines training volume and level per participant;
- *Stratum* 2: Participant reactions;
- *Stratum* 3: Participant learning;
- *Stratum* 4: Transfer of learning;
- *Stratum* 5: Business impact;

- *Stratum* 6: Social impact, which examines the impact of changed performance on society, and is similar to Hamblin's ultimate value and Kaufman *et al.*'s social impact.

The KPMT model (Kearns & Miller, 1997) is close to Phillips' model (1994) but the authors differentiate their model by providing an approach to help evaluators through the process of identifying bottom-line objectives through questioning techniques, evaluating training, and using process mapping to identify the added value to the organization. The KPMT model states that the beginning of the training cycle is at the identification of the business needs (rather than the training needs, or the trainees' needs) and that "if a business objective cannot be cited as a basis for designing training and development, then no training and development should be offered'. The model comprises four levels:

- Level 1: Reaction to training and development;
- Level 2: Learning;
- Level 3: Transfer to the workplace/behaviour;
- Level 4: Bottom line added value, measured in relation to the base level measures taken.

The Industrial Society (2000), currently known as the Work Foundation, proposed a six stage circular model, where stage three and four aim to validate the training, and stage five and six aim to evaluate it:

- Stage 1: Identify the business need;
- Stage 2: Define the development objectives;
- Stage 3: Design the learning process;
- Stage 4: Experience the learning process;
- Stage 5: Use and reinforce the learning;
- Stage 6: Judge the benefits to the organization (quality measures, customer satisfaction, and financial benefits).

2.4.2.2.3. Alternative Models

Other models have emerged with a different approach than Kirkpatrick's, and are focused on the *purpose* of evaluation.

Stufflebeam *et al.* (1971) argue that evaluation is essential to provide an explanation for the outcome, which has some similarities with the CIRO Model. They distinguish between *context evaluation* (that helps in planning and developing objectives), *input evaluation* (that helps to determine the design by examining capability, resources, and different strategies), *process evaluation* (that helps to control the operations by providing on-going feedback), and *product evaluation* (that helps to judge and react to the course's attainments in terms of outputs and outcomes).

Newby (1992) focus his attention in the contexts of evaluation and argues that evaluation can take place within the training event, in the workplace after the event, in the context of performance measures, and using criteria not related to the workplace, such as societal, moral, or political criteria.

Pulley (1994) claims that the objective of evaluation should be to provide evidence so that decision-makers can determine what they want to know about the training programme. His model is focused on the needs for qualitative or quantitative information of the decision-makers. Pulley's work has been supported in some literature (for example, Abernathy, 1999) that states that evaluators must find what internal customers want to know, rather than collecting data defined by a pre-existing framework. This suggests that each stakeholder may look for a different evaluation model.

Other models that have a different approach from Kirkpatrick's use different *measures* of evaluation:

- Kraiger *et al.* (1993) emphasize the importance of linking training evaluation to learning outcomes. They distinguish three *types of outcomes* (*cognitive*, *skill-based*, and *affective*) and argue that the goals of training must be looked from these three perspectives, which in turn will make the evaluation measures clearer;
- Kaplan and Norton (1996) proposed a balanced scorecard and suggest different perspectives of evaluation: *finance*, *customers*, *internal business processes*, and *learning and growth*. They also argue that measures of *innovation* and learning are as important as financial measures;
- Lee (1994) suggests the *pay back, pay forward* approach where a separation is made between pay back and pay forward results. Pay back includes the financial benefits, whereas pay forward includes those benefits that flow from training, which cannot be expressed directly in financial terms (indirect returns).

Later (page 101), we will discuss another alternative model of evaluation that was proposed by Holton (1996).

2.4.3. Quality in e-Learning

2.4.3.1. Defining What e-Learning Is

The term e-learning has its root in distance education and in computer-based training, which appeared in the early 80's and used CD-ROMs to teach mostly technical skills to mostly technical people (ACT Center, 2007). Around 1995, electronic learning was called Internet based training (IBT). To clarify that the learning process could also be within an Intranet, it was then called Web-based Training (WBT). Later, the concept evolved to *online learning* and finally e-learning, "adopting the in vogue use of "e-" during the dot com boom"(E-learning Guru, 2007). Nowadays, it is generically accepted that e-learning is *the delivery of learning by electronic means*, although to some authors such as Dewey (1902, 1910, 1916), Vygotsky (1978), and Paulo Freire (1970, 1992, 1996, 1998), the idea of learning as something that can be *delivered* and *transferred* from one head to another makes no sense.

E-learning has been used in the context of higher education, in vocational education and training, corporate training, and informal learning. It includes a wide range of learning formats that include tutorials (self-study) and instructor-led, asynchronous or synchronous, "pure" or blended learning, small group online collaboration, knowledge databases (also known as repositories), on-demand e-learning, online coaching, and

'jukeboxes' of granular chunks of learning material. It also includes more recent concepts and trends such as podcasting, blogs, wikis, and academic uses of social communities such as Twitter and Facebook.
As mentioned, e-learning has developed from two main origins, one of which is distance education, which in turn, has since its very start "always represented an alternative to traditional and training, and, therefore, has had to battle for recognition and consequently developed procedures for demonstrating quality early on" (Rekkedal, 2006, p. 12).

2.4.3.2. Stakeholders and Profiles of Quality in e-Learning

Ehlers and Pawlowski (2006, p. 6) alert that currently there are no generally recognized approaches for quality management in e-learning. This does not mean that there are no quality concerns in e-learning, although it is "difficult to 'fix' during a period of significant change and innovation; and constancy of purpose is needed to maintain momentum in assuring quality" (ICCA, 2004a). In order to cope with this unclear scenario, Ehlers and Pawlowski (2006, p. 2) propose a different approach to quality in e-learning based on three criteria: different interpretations of quality, different stakeholders with different perspectives on quality, and different forms of quality (also known as input-, process-, output-quality).

Kazmer & Haythornthwaite (2005), while discussing the stakeholder's point of view, define the primary concerns of each:

- For *educators*, the primary concern has been "whether online programs result in learning outcomes that are as good as those achieved through traditional means";
- For *faculty and instructors*, the primary concern is "how do we teach online? What works and what does not? Like any other educational enterprise, there are better and worse practices in online teaching. Translating courses into the online environment successfully requires new pedagogical techniques, syllabi, assessment mechanisms, and understanding of the particular needs of adult distance learners";
- For *administrators*, the concern is: "after spending the effort and money to put a whole degree or program online, will it be accepted?"

The concept of *individual quality profiles* (Pawlowski, 2004) in e-learning has been suggested, and four types of quality profiles in e-learning have been identified (Ehlers, 2004):

- The *individualist*, that is content-oriented and prefers individualised learning scenarios;
- The *result-oriented*, that is independent and goal-oriented. Learning is work integrated and there is an instrumental purpose attitude;
- The *pragmatic*, that needs to be oriented, requires tutor support, information, and advise;
- And the *avant-gardist*, that is interaction-oriented, elects discussions and communication, and expects technology vanguard.

2.4.3.3. Attitudes and Beliefs Related to Quality in e-Learning

Overall ratings of online courses are significantly more positive than the in-class versions of the same courses, and online students are more willing to recommend the course to others, than the in-class students, which reflects the students' skill-learning rather than requirement-fulfilment motivation for taking the courses (Kleinman & Entin, 2002). Attitudes and satisfaction of students in e-learning are also generally positive (Kleinman & Entin, 2002; Phipps & Merisotis, 1999, quoted in Kleinman & Entin, 2002). These studies provide some insights about overall satisfaction on e-learning, buying intentions, word-of-mouth promotional potential, and general perceptions that, as discussed above, are related to quality.

E-learning quality, by now, should be equal to face-to-face learning (The Sloan Consortium, 2003, pp. 10-11) but this does not mean that specific quality dimensions cannot have completely different perceptions in online and face-to-face education. In fact, similar overall *perceptions of quality* can also mean different quality problems and quality concerns. Moreover, a wider range of learning reasons also makes expectations of an online course different, and different expectations, can, as already discussed, create different perceptions of overall quality.

Although e-learning quality specific literature is frequently trying to compare online learning with traditional face-to-face learning, demographic and social differences that exist between the students of e-learning courses and face-to-face courses must be taken in consideration when comparing both. In fact, there are not only socio-demographic differences but also differences in the reasons for taking online courses: students are much more likely to be taking the course for the learning experience (the *internally motivated reason*) whereas in-class students are more likely to be in the course because it is a requirement for their program (*externally motivated reasons*) (Kleinman & Entin, 2002). Besides that, people expect a more informal type of instruction – and learning – in online courses than in face-to-face courses: Not only students feel that they depend much more on their own efforts and that they have much more control of their learning process, but they also expect to take an active part of the instructional process. A more participative instructional approach, filled with diversified content media supports and friendly and informal contexts, is also expected.

Differences in *learning outcomes* for online education, in comparison with face-to-face traditional education, are also subject of attention. In this field, the literature has pacifically accepted that the learning outcomes for online education are equal or superior to those of face-to-face instruction (Kleinman & Entin, 2002; Phipps & Merisotis, 1999, quoted in Keinman & Entin, 2002; The Sloan Consortium, 2003, p. 10)

Ehlers *et al.* (2005, p. 25) found out that for half of the students, 'quality in e-learning' is the *best learning achievements*. This means, they claim, that quality in the educational sense requires not just average performance, but the best performance imaginable. This is closely connected with something being excellent in performance (*exceptionality*); A fifth of all respondents call for *excellence in performance*, although this may mean not only successful learning but also, for example, 'carrying out and navigating a learning programme' or 'applying what has been learnt in practice'; Another fifth of respondents expect quality to mean fulfilling a certain minimum standard, something that meets the standard requirement; And finally, only 4,5% of the respondents associate 'quality' with receiving the best value for money.

2.4.3.4. Types of Methods and Instruments of Quality in e-Learning

Donabedian (1980, quoted in Ulf-Daniel Ehlers & Pawlowski, 2006, p.4) suggested the following quality triad to approach quality in e-learning:

- E-learning prerequisites (input or structure quality), which include the availability or capability of the technological infrastructure, and qualification of tutors, among others;
- The learning process (process quality), which includes the interaction of learners, learning formats, corporate learning culture, learning content, and desired training goals;
- The result (output/outcome quality), which includes the increase in the professional competence of the learners.

Reigeluths (1983) proposed a basis for evaluation of computer supported learning environment that differentiates five steps: instructional design, instructional development, instructional implementation, instructional management, and instructional evaluation.

According to Ehlers and Pawlowski (2004; 2006, pp. 6-8) there are four types of methods and instruments in the field of quality applicable to e-learning:

1. *Quality management* approaches, which generally do not follow a product-related quality understanding, and are directed at creation, implementation, and performance processes. These authors recognize that currently there are no generally recognized quality management approaches for e-learning, and generic quality management approaches are adapted for the educational or e-learning field;
2. *Quality assessment* on the basis of *criteria lists* and *checklists*. Quality criteria are mostly normative-static tools for the assessment, development, and selection of learning platforms, learning software or learning environments. These quality criteria are defined as a characteristic attribute of a learning program, but often have not been explicitly validated. These authors consider that these tools are relevant, and justify their popularity by the fact that they seem to make it relatively easy to evaluate learning effectiveness. They also recall that most of these tools mainly include criteria from the area of *screen interface design*, or *technical usability* and often under represent pedagogical/didactic issues. They claim that these tools enable users to assess the quality of a learning arrangement or learning software without prior empirical studies. This suggests that they may be valuable for a pre-learning decision (a buying decision), but not for a post-learning quality evaluation;
3. *Evaluation* as a quality approach. These methods do not focus on a product itself, but a learning process, and, thus, puts the learners in the focus of attention. Tergan and Schenkel (2004, quoted in Ehlers & Pawlowski, 2006, p. 7)[1] defend that since these approaches differ from more process-related evaluation approaches, quality criteria assessment (the previous) and quality evaluation approaches (this one) should be differentiated;
4. Other quality approaches. In this residual category, the authors include *benchmarking tools*, which attempt to compare different offers on the basis of

[1] Ulf-Daniel Ehlers confirmed, by e-mail, that the reference quoted in the book is wrong and that the correct one is the one above.

specified criteria (as, for instance, Phipps & Merisotis, 2000), *accreditation* and *certification* approaches, in which providers of e-learning must submit regular audits and are then awarded a certificate, and *quality mark* organizations, which are usually associations of several educational organizations and which award a self-developed mark of quality to their member organizations when they meet those criteria.

In this last category we can include all the initiatives to create *standards*.

Wirth (2006, p. 99) systematized quality approaches in e-learning into four fields, build on the Deming circle:

1. *Approaches to quality (management) planning*, in which are included three main organisations that intend to provide confidence to customers that the products match the agreed standards: The European Foundation for Quality Management (EFQM), the International Organisation for Standardisation (ISO), and the Deutsche Institute für Normung e.V. (DIN);
2. *Best and good practices*, *examples*, *guidelines*, and *benchmarking*. In this category, a large variety of proposals can be found, such as the French code of practice in e-learning (Association Française de Normalisation, 2004);
3. *Quality certification and accreditation* at different levels. Approaches in this category can be divided in three subgroups:
    a. Accreditation and certification mainly of *institutions*, such as the Distance Education and Training Council (DETC) in the USA and the British Quality Assurance Agency for Higher Education (QAA), the British Open and Distance Learning Quality Council (ODL-QC), or the Portuguese DGERT;
    b. Accreditation and certification of *management-oriented education*, as the European Foundation for Management Development (EFMD), which accredits business schools and has a specific scheme for e-learning accreditation;
    c. Accreditation and certification of e-learning *products* and services, such as the eQCheck (2009) or the IEFP in Portugal.
4. *Quality competition* and *awards*, such as the European eLearning Awards.

In Appendix 5 we present an extended discussion regarding accreditation and standards.

Another way of characterizing approaches to quality is to view them as mainly as either (Reglin, 2006, quoted in Rekkedal, 2006, p. 14):

- *Input-oriented* models focusing on the resources used for achieving objectives,
- *Output-oriented* models that examine *ex-post facto* to what extent goals are met;
- *Process-oriented* models on the potentials within the organizational structure of the educational institution;
- *Participant-protective* and *demand-oriented* models that provide results of product tests,
- Or criteria for *demand-related evaluation* of products on the market.

The term *evaluation* is multifaceted and differently defined. Will, Winteler, and Krapp (1987) identified four elements for the definition of evaluation:

- Evaluation is goal and usage oriented: it is primarily intended to improve practical measures, to legitimize them or to decide over them;
- Basis for every evaluation is a sound data basis about the conditions, the processes, and the impacts of the evaluation object;
- Evaluation includes a value statement, i.e., the data will be interpreted on basis of values and according to certain rules;
- Evaluation is not so much focusing on assessing the performance of individuals, but is rather concerned with evaluating the development, design, and control of educational processes, as a whole.

Ehlers (2006, p. 159) differentiate *evaluation* from *quality criteria*: "in contrast to the assessment of e-learning with quality criterion catalogues or check lists, evaluation places not so much emphasis on product-related characteristics, but rather on the evaluation of learning processes and judgments concerning quality, effect (acceptance, success in e-learning), and perceived benefit". Yet, this distinction is not true in general models of training evaluation.

As other authors (as Tergan & Schenkel, 2004) do, Ehlers (2006, p. 159) also differentiates between *process* and *product* evaluation, that is, between evaluations in which the object of evaluation is the development process and those related to the final product at the end of a development process. Some of the initiatives, as eQLs (detailed in Appendix 5), for instance, combine both, and focus their attention in product-related characteristics and output measures. Similar to eQLs, some authors that also focus on the consumer and their buying decision, suggest *consumer guides* for e-learning products (FuturEd & CACE2002b; Solent Training & Development, 2003); Other proposals provide *guidelines, recommendations, or benchmarks*, not necessarily targeting the consumer but the user in general or the person who has to make decisions (of buying an LMS or a learning object, for instance).

2.4.3.5. Proposed Approaches to Quality in e-Learning

ICCA (2004a) proposes a framework which sets out a range of quality dimensions related to e-learning, including the quality of 1) *supplier*, 2) *teaching, training and mentoring*, 3) *content management*, 4) *learning and development process management*, 5) *content relevance*, 6) *design process*, 7) *pedagogy*, 8) *working and learning environment*, and 9) *learner preparation*.

Ehlers (2004) proposes a thirty items model of quality. These items are organized into seven *quality fields* (QF): tutor support, collaboration, technology, costs-expectations-benefits, information transparency of provider/course, course structure, and didactics (Figure 8).

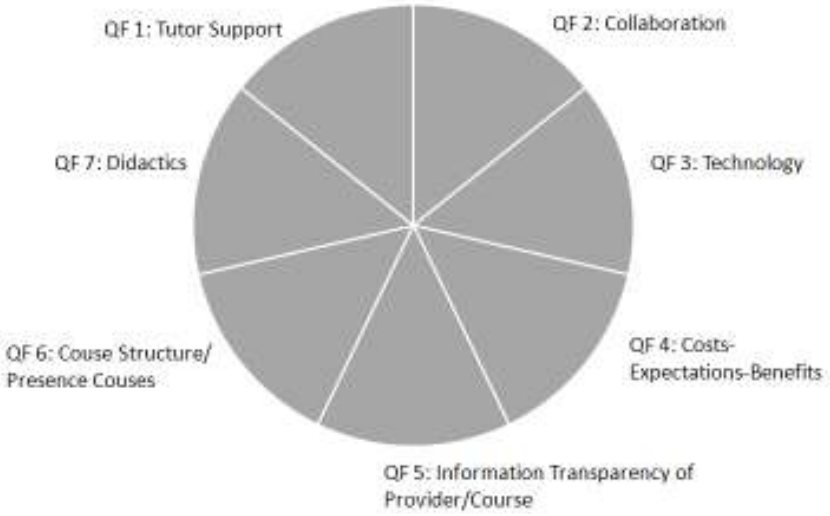

Figure 8: EFQM excellence model
Source: Ehlers, 2004

Frydenberg (2002) suggests a multi-criteria model to evaluate e-learning quality organized into nine domains:

- The *quality of institutional or executive commitment, organization and structure of an e-learning services developer and/or provider*, to ensure the appropriate administrative structure and staff commitment that correspond to the requirements of the development and/or provision of the e-learning product/service;
- The *quality of the technological infrastructure* necessary for the delivery of e-learning services, to ensure the development, acquisition, and existence of the appropriate infrastructure for the development and/or provision of the e-learning product/service;
- The *quality of students services*, to ensure that the services offered before, during, and after the completion of using the e-learning product/service are of high standards;
- The *quality of the design and development of e-learning programs and courses*, to ensure that the design and development processes of the educational material related with the e-learning product/service are of high quality;
- The *quality of instruction and instructors*, to ensure that the quality level of instruction is high;
- The *quality of program delivery*, to ensure that the conditions of access to the learning services are easy, efficient, and transparent to the users;
- The *quality of the structures to support financial management and ensure financial health* of an e-learning program, to ensure the viability of the e-learning product/service;
- The *quality of regulatory and local compliance*, to ensure that the e-learning product/service follows the regulations and laws under which it aims to get funded and/or be provided;
- The *quality of evaluation processes*, related with ensuring the improvement of the quality assessment processes that the e-learning product/service development and provision involves.

Within Europe Union several approaches to the quality in e-learning have been proposed (Table 19). Most of these initiatives, detailed in Appendix 6, have never been developed or used as a starting point for empirical research, most probably due to the fact that most of them are based on the opinion of experts rather than based in the opinion of the final customers.

Approach
EFQM Excellence Model (2003b, 2003b) and good practices (2003a)
EFQUEL's eQuality, UNIQUE, QMPP, QUALC, and ECBCheck (2009a)
EIfEL (EFQUEL2009d; EIFEL, 2008)
EQO (European Quality Observatory) (2004b; Pawlowski, 2003)
E-xcellence (EADTU, 2007)
ICCA (2004a, 2004b)
Meca-ODL (Francés & Borona, 2002)
QUAL-E-LEARNING (Francés, 2004; ITV Denkendorf, 2004; Qual E-learning project consortium, 2004)
QCC-eL (Rockmann & Olivier, 2005, quoted in Berger, 2006, p. 148)
QSEL (Ehlers *et al.*2005, p. 53; Lodzinski & Pawlowski, 2006)
Quality Adaptation Model (QAM) (Pawlowski, 2006)
SEEL (2004)
SEEQUEL (Dondi, 2004a, 2004b, 2006)
SEVAQ (Schreurs *et al*., 2008)
QUIS (Komáromi *et al*., 2004)
Exemplo – Elex (EVTA, 2005)
EQUEL (2004)

Table 19: Approaches to quality in e-learning

2.5. Motivations, Perceptions of Value, and Utility, and Their Relation with Quality

2.5.1. Insights From Motivational Theories

2.5.1.1. Quality and Motivation

Motivation is composed of energizing, directing, and maintenance components. In a training situation, motivation can be seen as a force that influences enthusiasm about the program (energizer), a stimulus that directs participants to learn and attempt to master the content of the program (director), and a force that influences the use of newly acquired knowledge and skills, even in the presence of criticism and lack of reinforcement for use of the training content (maintenance) (Noe & Schmitt, 1986, p. 498). Individuals may or may not be motivated to attend an e-learning course, and after that, they may be motivated, or not, to use all the knowledge and skills, that they created during that course, in their work or in their life. The attributes of motivation identified by Noe and Schmitt (1986, p. 498) relate motivation to behaviour, which, in a training situation, reflect the *use* of acquired knowledge, skills, and attitudes. This means that the presence of motivation suggests that there is a stimulus to *use* the acquired knowledge, skills, and attitudes after the course is completed. In this sense, the stimulus to use, or motivation, might be hypothesized to be related to quality as *fitness for use* (Juran, 1951, Section 2-2). In other words, if there is a *stimulus to use*, there must be a perception of *fitness for use*, which, in turn, suggests that motivation is somehow related to quality.

On the supply side, there are also references to the role of motivation in quality: TQM literature (for instance, ISO/TC 176: Quality Management and Quality Assurance, 2007) emphasizes, in its principles (Appendix 1), the need of involvement of individuals: *motivated* individuals will be committed and involved, will be accountable for their own performance, and will be eager to participate and contribute. Moreover, those individuals will actively seek opportunities to enhance their competence, knowledge, and experience within the company, and they will contribute to quality with their motivation and involvement.

Several authors (for example, Fok, Fok, Hartman, & Patti, 2001; Talaq & Ahmed, 2003) have been dedicating their attention to the influence that the motivation of the company's employees has on quality. Less often, others (for example, Holton1996) focus their attention in the influence that the motivation of the client has on the quality of the good or service delivered. In this last case, educational literature has the most extensive contribute as it is recognized that the student's motivation is an important piece of the learning process. In the following pages, we will briefly describe the major explanations to motivation, in order to, after that, understand why individuals value a good or a service in general, and an e-learning course in particular. We will relate *motivation* to *perception of value* and explore *utility* as an idiosyncratic type of value. The relationship between *motivation* and *utility* will also be made more explicit when we focus our attention in the particular case of e-learning.

2.5.1.2. The Decision of Acquisition and the Sources of Needs and Motivation

If we ask why people buy a product, one of the most obvious answer is to *own* (Oliver, 1997, p. 136). If the product is an online training course, ownership can range from pure tangible details as the course manuals, or tangible elements as the training certificate that has a great amount of psychological meaning, to pure intangible elements as the training experience and the knowledge, skills, and attitudes that were created during the training program. Ownership, in turn, is pursued to fulfil a perceived *need* to own.

According to Oliver (1997, p. 136), there are two *sources of need*:

- The first is a deficit that exists in the consumer's life that she wants to remove. In this case, the purpose of the purchase is *restoration*, in order to bring her back to the wholeness;
- The second source is the consumer desire to increase the positive *value* of her life. In this case, the deficit is created in the consumer's imagination of the *future utility* of possession.

Restoration and *enhancement* are the two cases of reinforcement specified by Skinner (1969), in *operant conditioning*, the term he uses to describe the effects of the consequences of a particular behaviour on the future occurrence of that behaviour.

Besides positive and negative reinforcements, *operant conditioning* also includes positive and negative punishments and extinction options (Skinner, 1969):

- *Positive reinforcement* occurs when a behaviour (response) is followed by a favourable stimulus (commonly seen as pleasant) that increases the frequency of that behaviour. In the Skinner box experiment, a stimulus such as food or sugar solution can be delivered when the rat engages in a target behaviour, such as pressing a lever;
- *Negative reinforcement* occurs when a behaviour (response) is followed by the removal of an aversive stimulus (commonly seen as unpleasant), thereby increasing the frequency of that behaviour. In the Skinner box experiment, negative reinforcement can be a loud noise continuously sounding inside the rat's cage until it engages in the target behaviour, such as pressing a lever, upon which the loud noise is removed;
- *Positive punishment* (also called "punishment by contingent stimulation") occurs when a behaviour (response) is followed by an aversive stimulus, such as introducing a shock or loud noise, resulting in a decrease in that behaviour;
- *Negative punishment* (also called "punishment by contingent withdrawal") occurs when a behaviour (response) is followed by the removal of a favourable stimulus, such as taking away a child's toy following an undesired behaviour, resulting in a decrease in that behaviour;
- *Extinction* is the lack of any consequence following a response. When a response is inconsequential, producing neither favourable nor unfavourable consequences, it will occur with less frequency.

Both *positive* and *negative reinforcements* strengthen behaviour, while *punishment* and *extinction* weaken it. *Negative reinforcement* is usually confused with *punishment*, but they are very different concepts: *negative reinforcement* strengthens behaviour, because a negative condition is stopped or avoided as a consequence of the behaviour;

punishment, on the other hand, weakens behaviour because a negative condition is introduced or experienced as a consequence of that behaviour. *Reinforcement* is a reward that has the property of sustaining behaviour, or, at least, increasing the likelihood of behaviour. Losing the stable job that one had for years is the trigger to search for a training program, in order to *restore* an employment, and lifestyle situation. The training program will act as *negative reinforcement* – the mechanism of removal of an aversive/negative situation and to restore the neutrality status. As soon as this restoration occurs, a feeling of relief is achieved. In contrast, attending a training course to increase current job performance is a *positive reinforcement*, as it results in an addition, or enhancement: a move up from the neutrality status. It produces pleasure and life enrichment, rather than life restore. The distinction between these two interpretations of fulfilment of needs – *restoration* and *enhancement*, also provides an easy way to distinguish *needs* from *wants*. *Needs* are more related with deficits and restoration, and are considered more essential to human existence, while *wants* derive from desired enhancements, and tend to be viewed as superfluous desires. One may considerer a job related training course as a *need*, while considering a job non-related training course on housing storage system and decoration as a *want*.

As discussed above, *reinforcement* is a core concept of operant conditioning, in which the consequences are used to modify the frequency of a "voluntary" behaviour. This means that a person will attend a training program for the consequences of that frequency. Yet, operant conditioning opposes to *classical conditioning*, also called *respondent conditioning*, or *Pavlovian conditioning* (C. D. Green, 2008; Pavlov, 1927), where behaviour is motivated by *antecedent conditions*. This would mean that a person would attend a training program not for its consequences but for its antecedents. This would be the case of attending a training course because of a positive early school experience (either with a specific training company or a specific trainer). Negative antecedents are also common and negative school experiences produce negative effects in later educational experiences (Ahl, 2006).

2.5.1.3. Needs *versus* Motivations

There are several kinds of services (D. P. Cook, Goh, & Chung, 1999): *restorative* services (such as home repairs and dental cavity care), *status quo maintenance* services (such as common residential utilities), and *services that add value* to an existing satisfactory situation (such as travel and entertainment). In *restorative* services, and in *status quo* maintenance services, the need extinguishes, while in *value-adding* services the motivation is reinforced. This is what differentiates *need* from *motivation*. In motivation theories, individuals are described in terms of kinds of effects they are trying to bring about, and not in terms of satiating needs (Oliver, 1997, pp. 139-140).

Oliver (1997, p. 141) distinguishes three types of need theories (Figure 9):

- The first one is the *classic need satisfaction model*, whereby need deprivation causes that need to become dominant. After activities are undertaken to relieve the state of deprivation, hedonic neutrality, referred as homeostasis, is again attained. The need is motivating only in the sense that the individual is driven to attain an end state, i.e., the need fulfilment. Once it is fulfilled, the motivating properties of the need are extinguished. For example, if the existing need is an

unfulfilled terminal goal, such a graduation degree, then, after graduation – that is, after attaining that goal, the need will be extinguished;

- The second one is the *classic motivation model* whereby deprivation results in a dominating drive to fulfil the need as before. Once the need is fulfilled, the need does not extinguish for at least two possible reasons. First, the need could be a stable personality trait to the individual, such as a *need of achievement* (McClelland, 1975; McClelland & Burnham, 1976) and in this case a single achievement only serves to reactivate the need, so that it can be achieved again. Solving a favourite puzzle is an example of this case. Second, the individual may be motivated to exceed each prior achievement, such as when a level of mastery is accomplished in a game of skill. Exceeding one's personal record in a fixed-distance footrace is another example. In both these two situations, the prior accomplishment serves only to fulfil the need temporarily. For example, when people are motivated to become an expert in an area, they will seek further and further training, and each time they look for more advanced programs;
- The last model is *the hierarchical motivation model***,** which provides the link between models of need satisfaction and motivation models. In the early stages it begins as a simple need satisfaction. Once the need is fulfilled, however, the lower-order needs attain homeostatic levels, and are no longer prepotent. Their gratification activates the dominance of the next higher need, its deprivation state having been dormant. One cannot activate a higher-order need unless a latent state of deprivation was already present. This process of activating newly dominant needs continues until the highest-order needs are dominant. These ultimate-level needs cannot be sated and will continue to reactivate and motivate again the individual.

Table 20 summarizes the most relevant theories of motivation, which are described in detail in appendix 7. Besides these theories, there are also other inspiring theories, which are summarized in Table 21 and also detailed in the Appendix 7.

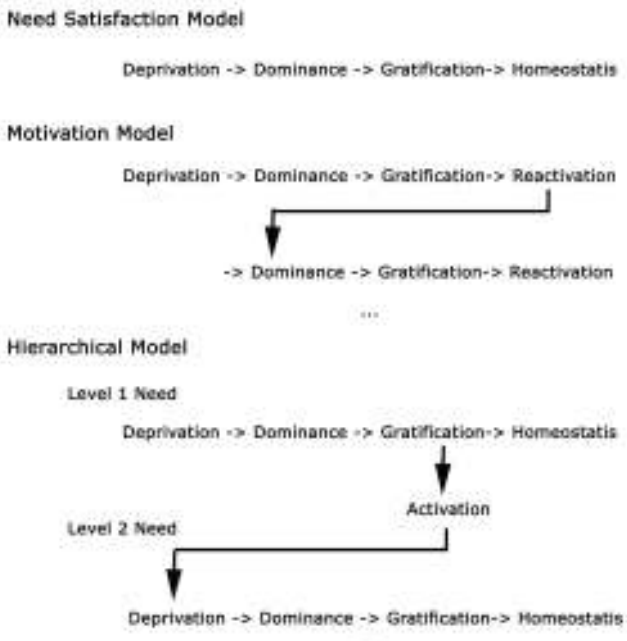

Figure 9: Needs and motivational models
Source: Oliver, 1997, p. 141

Theory	Brief Description
Murray's (1938) psychogenic needs	List of 33 psychogenic needs that influence behaviour and personality.
Horney's Neurotic Needs (1942)	Ten neurotic needs that can influence behaviour and interpersonal relationships.
Hierarchical needs theory (Maslow, 1943, 1954, 1968)	Higher order needs will not arise and will not be felt until one has met the lower level needs.
Psychosocial stages' needs (Erikson, 1950)	In each stage of the development of the personality there is a basic conflict and its correspondent needs.
Edwards' (1959) Personal Preference Schedule (EPPS)	A 15 needs or motives rating scheme.
Two-factor theory (Herzberg, 1966, 1968; Herzberg, Mausner, & Snyderman, 1959)	The *satisfiers* motivators and the *dissatisfiers* hygiene factors.
Need Gratification Theory (Wolf, 1970)	*Satisfaction* results from the gratification of a need; *motivation* results from the perceived opportunity to gratify a need through (consumption) behaviour.
ERG Theory (Alderfer, 1972a)	People seek the fulfilment of needs of *existence*, *relatedness*, and *growth*.
Acquired Needs Theory (McClelland, 1975; McClelland & Burnham, 1976)	Individuals seek *achievement*, *affiliation*, or *power*.
Soliman's (1979) Unipolar Theory	The operation of motivators and hygiene factors is moderated by the benevolence of the environment.
Intrinsic Motivation (Deci, 1975; Deci & Ryan, 1985)	Motivation drives from internal factors such as fun, or pleasure.
Extrinsic Motivation (Petri, 1991)	Motivation drives from external factors such as tangible rewards.

Table 20: Motivation and need theories

Theory	Brief Description
Cognitive dissonance (Festinger, 1957; Festinger & Carlsmith, 1959)	Non-alignment of beliefs and behaviour is uncomfortable.
Consistency Theory (Festinger, 1957; Heider, 1958)	People look for comfort of internal and external alignment.
Attribution theory (Heider, 1958; E. E. Jones & Davis, 1965; Kammer, 1982; Kelley, 1967; Roesch & Amirkham, 1997)	People need to attribute causes, which support their ego, and blame external factors for their mistakes.
Theory X and Theory Y (McGregor, 1960)	Two theories by which to view employee's motivation.
Side Bet Theory (H. Becker, 1960)	Aligned side-bets increase commitment to a main bet.
Expectancy Theory (Vroom, 1964)	People are motivated by desirable things that they expect they can achieve.
Self-perception theory (Bem, 1972; Festinger & Carlsmith, 1959; Zanna & Cooper, 1974)	Attitudes and feelings are decided after behaviour.
Opponent-Process Theory (R. L. Solomon, 1980; R. L. Solomon & Corbit, 1974)	Opposite emotions interact. Emotions are pairs and when one emotion is experienced, the other is suppressed.
Believe perseverance (Ross, Lepper, & Hubbard, 1975) and affect perseverance (Sherman & Kim, 2002)	Belief and affect/preference persist after disconfirmation.
Cognitive Evaluation Theory (Deci, 1975; Deci & Ryan, 1985, 1991)	People are motivated for tasks that are doable.
Disconfirmation bias (K. Edwards & Smith, 1996; Lord, Ross, & Lepper, 1979)	Agreeing with what supports beliefs and *vice versa*.
Reactance Theory (Brehm, 1966; Pennebaker & Sanders, 1976)	Discomfort when freedom is threatened.

Investment Model (Rusbult, 1980, 1983; Rusbult, Martz, & Agnew, 1998)	Commitment depends on what one has invested.
Glasser's Control and Choice Theories (1984, 1999a, 1999b, 2008)	People tend to seek to control the world around and the alternative is to see choices.
Attitude-behaviour consistency (Kallgren & Wood, 1986)	Factors that align attitudes (predispositions to behaviour) and behaviour.
Self-Discrepancy Theory (Higgins, 1987, 1989a, 1989b; Higgins, Bond, Klein, & Strauman, 1986; Higgins, Klein, & Strauman, 1985; Higgins, Strauman, & Klein, 1986)	People need their beliefs to be consistent.
Goal-Setting theory (Locke & Latham, 1990)	Different types of goals motivate people differently.
Escape Theory (Baumeister, 1990; Heatherton & Baumeister, 1991)	People seek to escape uncomfortable realities.
Theory of Attribute Need Fulfilment (Oliver, 1995)	Performance and previous need fulfilment are significant predictors of product need fulfilment.

Table 21: Other inspiring theories

2.5.1.4. Motivation to Learn and Its Temporary Barriers

Motivation to learn can be described as a specific desire on the part of the trainee to learn the content of the training program and develop the planned skills and attitudes.
Most need/motivation and educational theories take for granted that humans have an intrinsic motivation to learn (Cropley, 1985; P. K. Cross, 1981; Knowles, 1980; Wlodkowski, 1999), and, therefore, motivation to study and learning are always seen as latent.

Even so, although generally motivated to learn, adults may not be motivated to a specific training program and not motivated to another. In other words, adults reveal interest in a specific training course if it offers them some concrete, specific benefit (Ruberson, 1977).

Motivation to learn has a direct relationship with learning (Holton1996, p. 11). Yet, *pre-training motivation* and trainee attitudes have not received enough attention in the literature (D. J. Cohen, 1990). Even so, four categories of variables are hypothesized to be the primary influences on *motivation to learn* (Holton1996, pp. 11-12):

- *Readiness for the intervention*: Hicks & Klimoski (1987) found that giving trainees the choice to attend training or not, increased their motivation to learn and improved learning outcomes; Baldwin, Magjuka, and Loher (1991) found that trainees who were given a choice regarding the training content had greater motivation to learn. However, those who were allowed to choose but then not given their choice became less motivated than those who were not allowed to choose at all. Thus, the degree to which a trainee is involved in the process of needs assessment, and given choices about training, can be expected to influence motivation to learn. *Readiness* includes such variables as the degree to which trainees are involved in assessing needs, the involvement in planning the training, the degree to which expectations are clarified, and the degree of choice, among others;
- *Job attitudes*: employees who exhibit more positive job attitudes tend to be more motivated to learn, and, in turn, have more positive outcomes. Noe and Schmitt (1986) found a significant relationship between job involvement and learning,

while Tannenbaum, Mathieu, Salas, and Cannon-Bowers (1991) found that more committed employees performed better in training, although they were not able to identified a significant relationship between job involvement and motivation;

- *Personality characteristics*: certain personality characteristics, such as extroversion, openness to experience, neuroticism, agreeableness, and conscientiousness, are expected to influence motivation to learn, and in turn, learning itself;
- And *motivation to transfer learning*, which we will discuss later.

Motivation to learn can be affected by three types of temporarily barriers that have been identified by Ahl (2006):

- *Dispositional factors*, which are either personality traits or personal qualities acquired through upbringing and early school experiences, and that include insufficient self-confidence and insufficient self-efficacy (i.e., lack of one's ability to succeed in specific studies), negative early school experiences that caused negative expectations of continued education, and the identification with a social group in which education is not highly valued. Regarding this latter group, Ahl quotes Paldanius' (2002) study among adults that had not accepted offers for continued education: They were simply not interested; they were much more interested in their work, their family, and a stable, well-arranged daily routine. Education was only seen as an alternative, or a necessary "evil", if, and only if, it would lead to a guaranteed job opportunity. Education, *per se*, was not valued;
- *Situational factors*, which are closely tied to a person's life situation and that include lack of time, lack of interest, and lack of concrete, expected results from education;
- *Institutional or structural factors*, which include lack of availability of educational opportunities, lack of information about study opportunities, absence of childcare arrangements, lack of study financing, scheduling problems, a pedagogy not suited for adults, social norms that counteract participation in adult education, lack of job opportunities after completed education, and work organization, where learning at work is discussed.

Ahl (2006) identifies specific tasks that politicians, employers, and specially pedagogues, can do to remove these barriers. A suitable pedagogy is considered the best tool to remove obstacles created elsewhere, and good educational experiences are said to be able to raise motivation in spite of obstacles that arouse outside the educational context (Knowles, 1980; Wlodkowski, 1999).

This means that human innate need to learn is homeostatic: motivation exists initially and is hampered due to several factors, and after those barriers are removed, motivation to learn will re-emerge (Ahl, 2006, p. 396). This also presupposes that a) motivation exists and is measurable, b) that it is possible to affect motivation, by amending individual, situational or structural barriers, c) that motivation is individual, d) that it leads to behaviour, and e) that it can be higher or lower in a specific course. Even so, another variable – the perception of value, might explain better quality.

2.5.1.5. Searching for a Better Construct

There are several reasons that could lead us to exclude motivation as a relevant factor of quality in e-learning.

First of all, because it is assumed that every human being has the innate need to learn, a general presence *versus* absence of innate need difference in that need cannot be assumed to justify different perceptions of quality, although, at a lower level, at each course, motivation may be expressed in different levels, and not just as simple presence or absence.

The second reason is that most motivational theories privileges individual needs, in detriment of social needs, and in the specific context of education, external recognition of one's abilities or knowledge is relevant (for instance, to apply for a job, or to a promotion). For example, Maslow (1943, 1954, 1968) puts *social needs* in the third place from the bottom of his hierarchy, McClelland (1975) does not consider *affinity needs* as contributors to the development of the society, Herzberg (1966, 1968; Herzberg *et al*., 1959) accounts *social needs* as an hygienic need, and Deci and Ryan (Deci, 1975; Deci & Ryan, 1985) privilege *inner motivation* rather than *outer motivation*. Moreover, although this general privilege of individual needs is common in western societies, east societies are constructed with strong values based on the community and social web. Duties, dependency, and the idea of being controlled, are not well accepted in western societies, but are seen as natural in east cultures. This means that most motivational theories may not give the deserved attention to the social/collective factor included in the trainees' motivation.

The third reason is that nobody is just 'motivated' because motivation is a relational concept that depends on other objects or actions and cannot be studied by alone.

Finally, the relationship between motivation and behaviour is also questioned. *Attitudes* are defined as predispositions to behave in a characteristic manner with respect to specified social objects or classes of such objects. Yet, there is very little evidence for a relationship between *attitudes* and *action (behaviour)* (Ahl, 2006).

For these reasons, we will approach now axiology to better understand not only motivation, but mainly, perceptions of quality in the context of e-learning courses: *value* will be presented as a higher-level construct that can help us to understand better both motivation and perceptions of quality.

2.5.2. Quality and Axiology

2.5.2.1. Introduction

There is not a generic, widely accepted opinion about the proper interpretation to be put upon facts and upon behaviours, and, therefore, upon the perceptions of quality that trainees create on e-learning courses, and upon their motivation to attend those courses. We have been presenting several perspectives from which quality perceptions can be looked at, as the service marketing and the motivation perspectives. Another major theoretical framework that can provide useful insights on those interpretations is the theory of valuation. In the end of the day, facts, behaviours, and motivations can be explained by *perceptions of value* and objectives and so, *perceptions of quality* can be rooted in value propositions.

2.5.2.2. Quality and Value: Why Look Into Value?

Axiology has been used as an inspiration for several management approaches and concepts. For instance, according to Woodall (2003), *customer value* is a perceptional phenomenon, assesses the perception that a customer has of the *goodwill* that a product or a service may bring to her. Woodall (2003) suggests that corporate decisions are made on the basis of customer's predictions concerning the value of a future product or service. *Customer value* is commonly used to create corporate objectives, support several product decisions, design, marketing, and selling approaches. Moreover, value has been related with customer satisfaction, loyalty, and corporate profitability (for example, Hallowell, 1996, p. 28) and, therefore, it is not difficult to relate it to quality.

The concept of quality becomes clearer as we distinguish it from satisfaction, as we discussed previously (page 27). The same happens when relating it to the concept of value: as soon as it becomes clear what axiology means and stands for, the concept of quality becomes clearer. As Holbrook and Corfman (1985, p. 40) recognize, "we cannot adequately comprehend the meaning of quality without relating it to other terms within the broader sphere of normative discourse. We cannot understand quality unless we can specify how it compares with beauty, convenience, fun, and other types of value judgment".

This suggests that the meaning of quality must be analyzed within the overall nature of *value*.

2.5.2.3. Value and Motivation

It is now the appropriate moment to explain why it is so important to look into *value* theories, after making an overview state-of-the-art on motivation. The easiest way is to look into motivation, and understand that nobody is only 'motivated'. As Ahl (2006, p. 402) argues, motivation must not be regarded as an entity, residing within the individual, but rather as a relational concept, as it is hard to speak about motivation without relating it to something: one can be *motivated to* work, to study, to play, but never just motivated, except when using it as a synonym of energetic. Although Ahl's point of view makes sense, it is not enough to say that a person is motivated to learn or is motivated to attend an e-learning course. It is important to understand *why* she is

motivated, and, moreover, what the *process of valuation* that leads her to feel motivated is. In fact, she will only feel motivated in the end of an appraising process where *effort* will be confronted with *value*. This also helps to understand why somebody may be unmotivated to learn, but motivated to participate in an online discussion: Perhaps the effort of participating is lower than the effort of learning; or rather participation provides more *status* or *esteem* than learning in itself.

Valuation theories also make clear why two individuals, which are equally motivated to attend an e-learning course (and may express that as "I'm fully motivated"), and have the same motivational drive (for instance, stating that they want "to know more"), have different perceptions of value, as one may seek *self-esteem*, and the other may seek for *social recognition*. These *reasons* to be motivated are, in reality, different perceptions of value, which will be one side of the valuation process. The other side is effort. The result of this valuation process is motivation, which in turn, will lead to behaviour (Figure 10). Whenever effort is bigger than value perception, the individual feels unmotivated, and this may lead her to do nothing.

The same way that motivation is relational, valuation is contextual, and links desires to the existing situation. As Dewey (1939, pp. 16-17) argues, in this valuation process the consequences of the effort-behaviour determine the adaptation - the adequacy of an object or experience, to a given desire or interest.

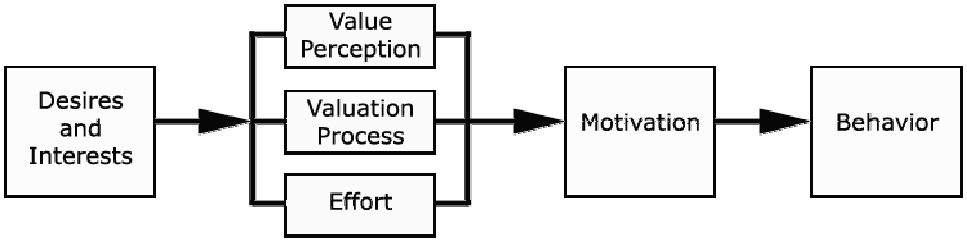

Figure 10: Valuation, motivation, and behaviour framework

2.5.2.4. Backgrounds of the Theory of Value: Axiology

The primary foundations of the theories on *value* are in axiology, the branch of philosophy dedicated to *value.*

Value (singular) is used to designate *the outcome of an evaluative judgment* (that is the *summary valuation*) (Holbrook, 1999c, p. 8) and is a temporary judgment, which can easily change over time. It is different from *values* (plural), which are related to standards, rules, criteria, norms, goals, or ideals on the basis of which evaluative judgments get made (that is, the underlying *evaluative criteria*).

As we detail in Appendix 8, value is the result of a valuation process. All planned human conduct, personal and collective, seems to be influenced, if not controlled, by estimates of value or worth of *ends* to be attained (Dewey, 1939, p. 2). Human considerations, such as the expressions good or bad, and right or wrong, influence and control the human behaviour. This suggests that all conduct or behaviour that is not simply impulsive or mechanically routine involves *valuations*. What Dewey did not say is that, although routines do not involve valuations (at least every time they occur), from time to time, they can be questioned and valuations will be re-created.

Value is the output of the *valuation process* and it includes the foreseen consequences, which are projected as *ends* to be reached (Dewey, 1939, p. 45), things to be brought into existence (pp. 51-52). The relation between *value* and the *process of valuation*, and the discussion of which precedes the other, are detailed in Appendix 8, where we make a distinction between valuation as *prizing* and valuation as *appraising*, and between *appraisal* and *evaluation*. The existence of an end-in-view means that valuation involves *desire*, which, in turn, is different from *wishing* because it requires effort. *Effort* is the essence of the tension involved in desire, and is expressed in behaviour (Dewey, 1939, p. 15) (Figure 10, above). Dewey (1939, p. 54) relates valuation to *desire* and discards *interest* as the source of value. Other authors, such as Perry (1926), have a different opinion and claim that *interest* is the origin and basis of value: For instance, according to Perry (1954, pp. 2-3), a thing - anything - has value, or is valuable, when it is the object of an interest - any interest.

2.5.2.4.1. Valuation, Desire, and Ends-in-view

The relationship between *desires*, *ends-in-view*, and *valuations* is made clear by Dewey (1939, p. 52):

> "Wherever there are desires, there are ends-in-view, not simply effects produced as in the case of sheer impulse, appetite, and routine habit. Ends-in-view as anticipated results reacting upon a given desire are *ideational* by definition or tautologically. They involved foresight, forecast or anticipation is warranted, like any other intellectual inferent factor, in the degree in which it is based upon propositions that are conclusions of adequate observational activities. Any given desire is what it is in its actual content or 'object' because of its ideational constituents. Sheer impulse or appetite may be described as affective-motor; but any theory that connects valuation with desire and interest by that very fact connects valuation with behaviour which is affective-*ideational*-motor".

Dewey (1939, pp. 52-53) argues that the required appraisal of *desires* and *ends-in-view*, as means of the activities by which actual results are produced, is dependent upon observation of the consequences attained, when they are compared and contrasted with the content of ends-in-view. Moreover, as *ends-in-view* are distinct from *ends*, as accomplished results, it is necessary to check the points of agreement and disagreement between the desire actually formed (and, hence, the valuation actually made) and the things brought into existence by acting upon it. Since *desire* and *valuation* of objects proposed as *ends* are inherently connected, and since *desire* and *ends-in-view* need to be appraised as means to end, the valuation of *ends-in-view* is tested by consequences that actually ensue: It is verified to the degree in which there is agreement upon results. Failure to agree, in case they are observed, is not a simple failure, but rather a source of means for improving the formation of later desires and ends-in-view.

The problem of valuation is concerned with the relation of means-ends and these ends are determinable only on the grounds of the means that are involved in bringing them about. As a complete theory of valuation requires an inquiry into the things that systematically have been sustaining the relation ends-means, and their results brought to bear upon the formation of desires and ends (Dewey, 1939, p. 53). Two situations can occur: action may take place with or without an end-in-view. In the latter case, there is action with no intermediate valuation, and a vital impulse, or a settled habit, reacts directly to some immediate sensory stimulation. In the first case, where an end-in-view exists and is valued, or exists in relation to a desire or an interest, the activity engaged

(that is the behaviour) is mediated by the anticipation of the consequences, which as a foreseen end, contributes to the makeup of the desire or interest.

The difference between *desires* and their correlative *ends-in-view* depends upon two things: the first is the adequacy with which inquiry into the lacks and conflicts of the existing situation has been carried on. The second is the adequacy of the inquiry into the likelihood that the particular end-in-view which is set up will, if acted upon, actually fill the existing need, satisfy the requirements constituted by what is needed, and do away with conflict by directing activity, so as to institute a unified state of affairs (Dewey, 1939, pp. 34-35).

Ends-in-views are anticipations of consequences of some behaviour, but they are also predictions of future events, which will be confirmed in the future, where those predictions will be validated or not. Value includes foreseen of consequences of the effort-behaviour and these consequences will be observable somewhere in the future, where the individual will evaluate the adequacy of the effort or behaviour. As we discuss in Appendix 8, past experiences have a major impact in the valuation process, as they influences the relationship between the *desired* and the *proposed ends* (ends-in-view) and the *attained ends*. Past experiences facilitate the anticipation of ends, the instrumentality of means and, consequently, facilitate the valuation process. This suggests that prior e-learning experiences may help dealing with a new e-learning experience, with another provider or learning approach, and may condition the new valuation process, which in turn, may induce a different perception of value.

According to Runes (1942), the problems of axiology fall into four main groups: (1) the nature of value, (2) the types of value, (3) the criterion of value, and (4) the metaphysical status of value, which are detailed in Appendix 8. Regarding the types of value, two main *types of value* are identified within axiology: *intrinsic* and *instrumental* values. *Intrinsic* or *consummatory* values are ends, prized for their own sake, while *instrumental or contributory* values, are means, which are causes of *extrinsic value*. Dewey (1939, p. 36) disclosures the relation of *means* and *ends*, and claims that any valuation focused on means is not a genuine valuation. He also exposes the distinction between *prizing* and *appraising*, as *appraising* is only applied to *means* while *prizing* is applied to *ends*. That is to say, a person *appraises* things as *means*, and *prizes* things as *ends* (Dewey, 1939, p. 25).

2.5.2.5. Behaviours as Expressions of Valuation

Valuation can be considered in terms of observable and identifiable modes of behaviour. As Dewey (1939, p. 51) puts it, “since desire and interest are behavioural phenomena (involving at the very least a ‘motor’ aspect), the valuations they produce are capable of being investigated as to their respective conditions and results. Valuations are empirically observable patterns of behaviour and may be studied as such”. Yet, according to Dewey (1939, p. 12), it is not clear whether interpersonal behavioural situations are propositions of value or not. If interpersonal behavioural situations are valuation-expressions, then a) valuation-phenomena are social or interpersonal phenomena and b) they can provide material for propositions about observable events - propositions subject to empirical test and verification or refutation.

Value-expression refers directly to an *existing* situation and indirectly to a *future* situation, which is intended and desired to be produced. The expressions of value are employed as intermediaries to bring about the desired change from present to future conditions. For example, when a person is calling for help, she is certainly intending to influence the conduct of others in order to bring about certain consequences capable of observation and of statement in propositions. While crying for help, the individual reveals a bad situation, while a future situation that is better, is anticipated. What emerge are propositions assigning a relatively negative value to existing conditions. What is being said in that cry is a) that there exists a situation that will have obnoxious consequences, b) that the person uttering the expressions is unable to cope with the situation, and c) that an improved situation is anticipated in case the assistance of others is obtained.

Behaviours, as expressions of valuation, reflect the existence of two propositions: an existing situation and, indirectly, to a future situation, which is intended and desired to produce and, therefore, considered better than the current. Behaviour is the intermediary to bring about the desired change from present to future conditions (Dewey, 1939, p. 12). This is not to say that the current situation is bad and the future one is good, but solely that the future situation is better. Yet, what emerges are propositions assigning a relatively negative value to the current situation, the one that is wanted to be changed, the one that is always less good than the future situation. Therefore, behaviour involves a) an aversion to an existing situation and an attraction toward a prospective situation and b) a specifiable and testable relation between the latter as an *end* and certain activities as *means* for accomplishing it (Dewey, 1939, p. 13).

For the matters of the quality of e-learning, behaviours also communicate valuations. The behaviours of enrolment and attending an online training course also communicate several valuations. What is said in them is a) that there exists a situation – in terms of knowledge, skills or attitudes, professional opportunities, social recognition, or other factors that is desired to be changed, b) that the person that has taken the decision to attend the course believes that it will help to change it, and c) that an improved situation is anticipated as a consequence of that attendance. The act of deciding to attend an online course, of enrolling in it and attending classes, are intermediate propositions intended to evoke activities that will bring about a transformation to the desired situation. Consequently, it is crucial to determine whether the trainee's registration in an e-learning course is the expression of her own motivation and value propositions or, rather, her bosses'.

2.5.2.6. Defining Value

Philosophy is not the only science that has been discussing what value is. Other sciences have developed their own view of what value means: several disciplines, including anthropology, design and architecture, sociology, psychology (namely consumer behaviour theory), economics, and marketing (for example, Holbrook & Corfman, 1985), have also been dealing with the concept of value and working around its meaning and impacts on the subjects that they study.

With the concept of value being discussed by so many sciences, it is not difficult to understand why the term *value* has such a wide range of different meanings as distinct as economic return, aesthetics, fun, status, and morality, among others. In general, value

refers to the evaluation of some object (product or service) by some subject (or user), but the literature is full of quite specific definitions that we resume next:

- The anthropologist Graeber (2001) has identified four main approaches to the definition of value: (1) the notion of values as conception(s) of what is ultimately good in human life, (2) value is, in an economic and business sense, a person's willingness to pay the price of a good in terms of cash in return for certain product benefits, (3) value as meaning and meaningful difference, and (4) value as action;
- According to Perry (1926, pp. 28, 115), "value in the generic sense attaches promiscuously to all objects of all interest". His definition of value as "*any object of any interest*" is quite clear, but it does not capture the evolutionary dimension of value that Dewey (1939, p. 4) later created when he argued that value is "best defined as the qualitative content of an apprehending *process*";
- Hilliard (1950, p. 42) states that "value is affectivity occurring in relational contexture determined by the reaction of an organism to a stimulus object". His definition relates value to preference (*affectivity*), relativism (*relational contexture*), experience (*reaction*), and interaction (*stimulus*);
- Ehrenfels (quoted in Frondizi, 1971, pp. 45-46) defines value as "a relationship between the subject and an object, which, by virtue of a clear and complete picture of the being of the object, determines within us, along the entire range of our feelings from pleasure to pain, an emotional condition more intense that its nonexistence of that very same object";
- On the other hand, Meinong, also quoted by Frondizi (1971, p. 46), defends that the value of an object consists in its ability to determine the *emotional reaction* of the subject, not only by virtue of the existence of the object, but also by its nonexistence;
- For Woodwall (2003), *value for the customer* is any demand-side, personal perception of advantage arising out of a customer's association with an organization's offering, and can occur as 1) reduction in sacrifice, 2) presence of benefit (perceived as either attributes or outcomes), 3) the resultant of any weighed combination of sacrifice and benefit (determined and expressed either rationally or intuitively), or 4) an aggregation, over time, of any or all of these;
- The *marketeer* Oliver (1999, p. 48) introduces the concept of *dual-stimulus value*. Value in the context of two stimuli is, by definition, a comparative process. These two stimuli do not have to be on the same conceptual plane. For Oliver, there are two comparative processes that consumers can take in assessing value. The first is an intra-product comparison such as when benefits are compared to costs; the second is an inter-product comparison that occurs when consumers compare the value of a product to its alternatives. The first comparison is actually a precursor to the second, but consumers do not necessarily process value comparisons in two stages. Oliver (1999) created a network of value-related concepts that move hierarchically from a basic level (cost-based value), to an intermediate level (consumption satisfaction or value-based satisfaction), and to a higher or more exalted level (extended value involving the quality of life).

Business and marketing literature combine objectivist and subjectivist approaches: Corporate finance values assets and companies according to the current value of future cash flows; financial markets value stocks in response to the gap between current perceptions of future value and current quotation or price; and marketing literature also

conceptualizes value as the monetary sacrifice that consumers are willing to make for a product (Butz & Goodstein, 1996; Gale, 1994; Zeithaml, 1988). Most marketing literature (for example, Yang & Peterson, 2004) rejects financial approaches to value, specially the use of *switching costs* to inhibit customers from switching from one to another service, and reject a financial solution for the customer perceived value and satisfaction.

Value for the customer is currently a common term in marketing literature, as well as *customer perceived value, customer lifetime value* or even *value consciousness* (for example, Broekhuizen, 2006). And it is within the marketing literature that can be found one of the most detailed interpretations of what value is. According to Holbrook (1999c, p. 5, 1994, p. 27) value is '*an interactive relativistic preference experience*', as we will detail next.

2.5.2.6.1. Value as an Interactive Relativistic Preference Experience

For Holbrook (1999c, pp. 5-9) consumer value is a *relativistic* (comparative, personal and situational) *preference* characterizing a subject's *experience* of *interacting* with some object.

Value is *interactive* because it entails an interaction between some subject (a consumer, or trainee) and some object (a product or, in our case, a training service). The *collaboration* between the subject and the object in the constitution of value is seen differently among subjectivists and objectivists. The former defend that value depends entirely on the nature of subjective experience, while the latter hold that value resides in the object itself and in its properties. An intermediate position suggests that value involves an interaction between the subject and an object. In this perspective, value depends on the characteristics (physical or mental) of the object, but cannot occur without the involvement of some subject who appreciates these characteristics (Frondizi, 1971, pp. 26, 146; Pepper, 1958, p. 402).

Value is *relativistic* because it is *comparative* (involving preferences among objects), *personal* (varying across people), and *situational* (specific to the context):

- Value is *comparative* because the value of an object is only stated in reference to that of another object as evaluated by the same subject. That is to say that value judgments involve relative preferences among objects for a given preference, rather than utility comparisons among people. Interpersonal utility comparisons as 'I like ice cream better than you like ice cream' are illegitimate while value statements involving intrapersonal comparisons among different objects assessed by the same individual are legitimate;
- Value is *personal* in the sense that it varies from one individual to another, and this is clearly a subjectivist approach to value;
- And value is *situational*, as it depends on the context in which the evaluative judgment is made. This situation-specific nature of value occurs because the standards on which evaluative judgments hinge tend to be context-dependent, changing from one set of circumstances or one time frame or one location to another. Accordingly, this means that the preference functions, which relate liking to product attributes, tend to vary from moment to moment, and from place to place. This also means that an individual attending a training course will develop

different value judgments depending on her current professional situation and on her current perspectives of future professional situation. The same individual will have one value perspective if she is unemployed, which will be related with employability, and another, if she is employed, where value will be related to promotions and career.

Value is *preferential* because it embodies a preference judgment. The concept of preference embraces a wide variety of value-related terms, prominent in several disciplines, and include such nomenclature as affect (pleasing *vs.* displeasing), attitude (like *vs.* dislike), evaluation (good *vs.* bad), predisposition (favourable *vs.* unfavourable), opinion (pro *vs.* con), response tendency (approach *vs.* avoid), or valence (positive *vs.* negative). In common, all these expressions of value share a unidimensional index of preference order. This preferential approach to value had been previously studied by Perry (1926, 1954) in his *interest theory of value*, where he positioned interests as the original source and constant feature of all value, while acknowledging that, as interests can conflict, the concept of *comparative value* creates an additional problem.

Finally, value is an *experience* because value resides not in the product purchased, not in the brand chosen, not in the object possessed, but rather in the consumption experience(s). This suggests a clear difference between value perceptions and expectations, since value perceptions are defined as something made during or after consumptions. Holbrook seems to discard the hypothesis of value evaluations prior to consumption. In this approach, first-time buyers will not have a *pre-training value* judgment, but only value expectations, while others can base their training decision and repeating acquisitions in past evaluations of value to formulate their expectations of future value.

2.5.2.7. Different Meanings of Value

2.5.2.7.1. Value as Exchange

Economists were the first to use the term value. It was back in the 18th century that economists as Adam Smith (1776) and his followers (namely David Ricardo and John Stuart Mill) created a different meaning of value related to a specific kind of *value:* the *exchange value.* Currently, in economic terms, value still means *exchange value*: value is defined in terms of the financial sacrifice that people are willing to make for a product. People trade future consumption - consequence of present savings - for present consumption; choose going to the cinema twice instead of buying a book, and change one working hour for a meal. In this economic paradigm, value can be quantified and money is its index.

In classic and neo-classic economic theories, the value of a product depended on the amount of labour (and labour equivalent) invested in producing it. Value was determined first by the absolute cost of production (for instance, Adam Smith's theory of absolute costs) and later by the opportunity cost, sacrifice or relative cost of it (for instance, David Ricardo's theory of relative costs). Although with significant differences in terms of which type of cost should be used (namely absolute cost or opportunity cost), Smith (1776) and Ricardo (1817) agreed that the value of an object depended on the amount of work invested in producing it, and that value came from

costs and the inherent advantage that costs could bring to countries. Consequently, value was conditioned by the physical properties of products, and it had a negative relationship with costs, and valuations were not at the individual level but at a national level. Yet, Ricardo's notion of comparative advantages, which emerge from opportunity costs, is still the main line of thought of economic value. Currently, in the economic arena, value is the gap between the price paid and its return in terms of benefits, i.e. it is the monetary sacrifice people are willing to make in order to harvest the benefit of the a product. The emphasis is on the point of exchange and money is seen as an index of value. In the moment of purchase, individuals make an evaluation where the quality of the product is confronted with the monetary sacrifice.

Other economic theories also related to the offer side, have also included the notion of scarcity of production factors (for instance, Heckscher-Ohlin's model (Heckscher, 1919; Ohlin, 1933), and neo-factorial theories of international trade). Others, as Michael Porter (1985), defend that value is successively added by each stage of production, as something that the producer adds to the product in each stage. Some economists refer technological gaps as a source of value and competitiveness. Others, more demand oriented, point out different demand preferences from customers as a source of value (detailed in Cação, 2005).

Economists are, therefore, mainly objectivists.

2.5.2.7.2. Value as Sign and Value as a Promise

The objectivist approach to value has been widely criticized by marketers and anthropologists, who have been emphasizing the social and cultural aspects of value.
Management and marketing literature eliminate the economical objectivism and add a subjective dimension to the notion of value. Value as a promise is the most common approach to value in marketing literature. Levitt's (1981, p. 94) definition of product as "a promise, a cluster of value expectations" is just one example of that.

The approach to v*alue as sign* defends that value emerges through the subjective experience of the user, and, therefore, objects cannot contain value. Their value comes not from their tangible features, but rather from the message they communicate. In this approach, the symbolic meaning of objects is taken into account. Gifts, memorabilia, photos and spiritual objects, which are not necessarily utilitarian, and do not circulate in the market, can be valuable. These goods do not have monetary prices attached to them, but are considered to be of high value by the people who possess them (Belk, 1987; Csikszentmihalyi & Rochberg-Halton, 1981). According to Csikszentmihalyi and Rochberg-Halton (1981) and Baudrillard (1998) the most valued domestic objects are valued primarily because of the symbolic meanings attached to them. People tend to give symbolic meanings to objects, which have nothing to do with their utility or with the meanings intended by the producers. They often value objects not for what they do, or what they are made of, but for what they signify.

Yet, not only is the use of products and communications valued. Social signs are also valued, especially social ends that products provide to users, including status, prestige, and identity. Goods are valued because they serve as an index of social status (Veblen, 2001). Honour, prestige, status, and social identity are sources of value (Bourdieu, 1984).

Baudrillard (1998, 2006) sees consumption as a communication process that involves a shared code and where products act as signs communicating messages and images which are independent of their use. The acquisition of goods not for their utility but for their association with modernity and lifestyles has been portrayed by Ger & Belk (1996) and by Gell (1986), who studied why do people in the developing countries buy western goods, as televisions, that cannot really be used (for instance because there is no access to electricity), and found that social signs are the best explanation for that behaviour.

2.5.2.7.3. Value as Experience

In the approach to value as *experience*, the value of a product or service pertains to the experiences associated with the product or service. This is also an interactionist position as the product or the service is the intermediary of the *experience*: Experiences emerge from interaction between the product and the user.

Experiences can be more important than the goods or services in itself. Pine and Gilmore (1999), for instance, defend that "what people actually desire is not products, but the experiences products provide". Holbrook (1999b, p. 8) has a similar opinion: "value resides not in the product purchased, not in the brand chosen, not in the object possessed, but rather in the consumption experience(s) derived there from". And the better the experience, the higher value: "[s]ince products enable an experience for the user, the better the experience, the greater the value of the product to the consumer" (Cagan & Vogel, 2002, p. 62).

Experience is different from *activity*. As Dewey (1916, p. 113) claims, experience includes an active and a passive element, and goes beyond mere activity:

> "On the active hand, experience is 'trying' – a meaning which is made explicit in the connected term experiment. On the passive side, it is undergoing. When we experience something, we act upon it, we do something with it; then we suffer or undergo the consequences. We do something to the thing and then it does something to us in return: such is the peculiar combination. The connection of these two phases of experience measures the fruitfulness or value of the experience. Mere activity does not constitute experience".

Boztepe (2007) recalls Leont'ev (1978) who defends that *activity* usually consists of a series of actions oriented toward a specific goal. *Experience*, on the other hand, involves the additional dimension of reflecting upon the consequences of one's activities. Margolin (2002, p. 42) has a similar opinion and states that *experience* has both operative and reflective dimensions, and the latter addresses the way we think about a product and give it meaning. Boztepe (2007) also claims that the notion of value as *experience* encompasses aspects of both *utility* and *social* significance consequences created through interaction with products. User experience involves the juxtaposition of (1) user context and characteristics, and (2) whatever features the product brings to the interaction, including both formal and functional characteristics. Users interact with products within the context of their goals, needs, cultural expectations, physical context, and emotions. And products, with their tangible and intangible qualities, can influence the way users interact with them. What we call user value is, thus, created as a result of the interaction between what the product provides and what the users bring in terms of their goals, needs, and limitations, as the user is an important input in the experience.

2.5.2.7.4. Value as Use and Utility

Marx (1887) conceived value as being made up, not only of the *exchange value,* but also of *use value*. Susan Boztepe (2007) provides a useful explanation for this relationship between use and value: "*Use value* relates to the utility of the physical properties of a product, which is realized upon its use". In this conception where value is related to *use* and *utility*, value is conditioned by the physical properties of products, but there is an explicit interactionist line of thought. Yet, a subjectivist view can also be considered in this approach as the individual will only perceive use value if she values the effective utility of the product or service.

We will discuss the use value, especially utility, in detail, later (page 90) in this chapter.

2.5.2.8. Spranger's Dimensions of Value

While Perry (1954) explored eight "realms" of value (morality, religion, art, science, economics, politics, law, and custom), Spranger (1914) condensates them in six realms or dimensions. Stewart (1998) resumes Spranger's six dimensions of value as:

- The *theoretical*: the dominant interest of the theoretical individual is the discovery of truth. In the pursuit of this goal she characteristically takes a 'cognitive' attitude, one that looks for identities and differences, one that divests itself of judgments regarding the beauty or utility of objects, and seeks only to observe and to reason. Her chief aim in life is to order and systematize her knowledge;
- The *economic*: the economic individual is characteristically interested in what is useful. Based originally upon the satisfaction of bodily needs (self-preservation), the interest in utilities develops to embrace the practical affairs of the business world. This type is thoroughly 'practical';
- The *aesthetic*: the aesthetic individual sees her highest value in form and harmony. Each single experience is judged from the standpoint of grace, symmetry, or fitness;
- The *social*: the highest value for this type is love of people (the altruistic or philanthropic aspect of love). The social individual prizes other persons as ends, and is, therefore, herself kind, sympathetic, and unselfish. She is likely to find the theoretical, economic, and aesthetic attitudes cold and inhuman. In contrast to the political type, the social individual regards love, as itself, as the only suitable form of human relationship. Spranger adds that, in its purest form, the social interest is selfless and tends to approach very closely to the religious attitude;
- The *political*: the political individual is interested primarily in power. Her activities are not necessarily within the narrow field of politics. Leaders, in any field, generally have high *power value*. Power is the most universal and most fundamental of motives. There are, however, certain personalities in whom the desire for a direct expression of this motive is uppermost, who wish above all else for personal power, influence, and renown;
- The *religious*: the highest value of the religious person may be called unity. She is mystical, and seeks to comprehend the cosmos as a whole, to relate her to its embracing totality.

These values are frequently incompatible and come into conflict with each other. For instance, the economic individual wants education to be practical, and regards inapplicable knowledge as waste; the value of utility conflicts with the aesthetic value,

except when art serves commercial ends. In her personal life, the economic individual is likely to confuse luxury with beauty; and in her relations with people she is more likely to be interested in surpassing them in wealth, than in dominating them (political attitude) or in serving them (social attitude).

The *aesthetic* attitude is also opposed to the *theoretical*. The former is concerned with the diversity, and the latter with the identities of experience. In the economic sphere, the aesthetic individual sees the process of manufacturing, advertising, and trade, as a wholesale destruction of the values most important to her. In social affairs, she may be said to be interested in persons but not in the welfare of persons; she tends toward individualism and self-sufficiency. Aesthetic people often like the beautiful insignia of pomp and power, but oppose political activity when it makes for the repression of individuality. In the field of religion, they are likely to confuse beauty with purer religious experience.

2.5.2.9. Holbrook's Typology

Holbrook (1999c) proposed a framework to categorize the various types of value in the consumption experience. His framework reflects three key dimensions of consumer value:

- *Extrinsic* versus *intrinsic* value;
- *Self-oriented* versus *other-oriented* value;
- *Active* versus *reactive* value.

Extrinsic value pertains to a means-end relationship wherein consumption is prized for its functional, utilitarian, or banausic instrumentality in serving as a means to accomplishing some further purpose, aim, goal, or objective. For instance, a hammer is not valued for itself, but for its power to drive in a nail. Money is also valued primarily as a means to accomplishment of goals viewed as desirable, as paying a meal. *Intrinsic value*, by contrast, occurs when some consumption experience is appreciated as an end in itself, for its own sake, as self-justifying or ludic. For beach lovers, a day at the beach serves little useful purpose beyond an enjoyment of the experience itself. Holbrook recalls that, among axiologists, it is generally accepted that only an experience – and not some object – can be appreciated as an end in itself. In this context, it is not clear whether e-learning, which provides an experience, and has, primarily, extrinsic value (as it is used as a tool to respond to performance needs, achieve more power, higher positions, and higher salaries) can also have intrinsic value for some individuals.

Value is *self-oriented* when the individual prizes some aspect of consumption selfishly or prudently for her own sake, for how she reacts to it, or for the effect it has on her. For example, a sweater has self-oriented value because it keeps the individual warm. *Other-oriented* value looks beyond the self to someone or something else, where the consumption experience or the product on which it depends is valued for their sake, for how they react to it, or for the effect it has on them. The other, can be family, friends, colleagues, the local community, or even higher order agents. In this context, an individual can buy a luxury car for safety reasons (self-oriented) or for the sake of impressing her neighbours (other-oriented), she can also enrol in an e-learning course to develop new skills (self-oriented), or rather to impress potential employers with a richer curriculum (other-oriented).

Value is *active* when it entails a physical or mental manipulation of some tangible or intangible object, that is, when it involves things done *by a consumer* to or with a product, as part of some consumption experience. Value is *reactive* when it results from apprehending, appreciating, admiring, or otherwise responding to some object, that is, when it involves things done *by a product* to or with a consumer as a part of some consumption experience. At a first sight, we probably would defend that e-learning, or any educational activity, is primarily active, as knowledge creation involves a *reflective thought* (Dewey, 1910, pp. 6, 9-13), but some reactive value can also be considered, especially when the individual is confronted with new things that attract her attention and provide appreciation.

2.5.2.9.1. Hoolbrook's Typology of Consumer Value

Holbrook's typology of consumer value includes eight types of value in the consumption experience: efficiency, play, excellence, aesthetics, status, ethics, esteem, and spirituality. Table 22 classifies each type of value according to the three key dimensions described above, and includes key examples parenthetically. The same product or experience can impart different types of value to different perceivers (M. R. Solomon, 1999, p. 80). In general, any given consumption experience can, and generally does, entail many or even all of the different types of consumer value identified by Holbrook (1999c). As even a chewing gum and a "humble" tie, as Holbrook (1999a) calls it, can contribute to all the eight types of value, so can, hypothetically, a training course.

		Extrinsic	Intrinsic
Self-oriented	Active	**Efficiency** (Output/Input, Convenience)	**Play** (Fun)
	Reactive	**Excellence** (Quality)	**Aesthetics** (Beauty)
Other-oriented	Active	**Status** (Success, Impression, Management)	**Ethics** (Virtue, Justice, Morality)
	Reactive	**Esteem** (Reputation, Materialism, Possessions)	**Spirituality** (Faith, Ecstasy, Sacredness, Magic)

Table 22: The Typology of Consumer Value
Source: Holbrook, 1999c, p. 12

2.5.2.9.2. Efficiency

In Holbrook's framework (1999c), *efficiency* involves *extrinsic* value that results from the active use of a product or consumption experience as a means to achieve some self-oriented purpose. Efficiency is often measured as the *ratio of outputs to inputs*. For example, the efficiency of e-learning can be assessed as the ratio of salary increase to registration fee. The concept of efficiency can also be viewed as *convenience*, and, in this case, the ratio outputs/inputs has *time* as the key input. The efficiency of e-learning

can be assessed as the ratio of production or performance increase to time dedicated to the learning process (for example, a 5% increase on productivity is obtained after having dedicated 40 hours to a training course).

Convenience, in the e-learning context, can also include other interpretations, beyond Holbrook's concept, as *time-to-need response* and *opportunity cost*:

- *Time-to-need response* can be defined as the amount of time that elapses from the moment the individual recognizes her training needs and decides to attend a specific course, and the moment when she actually is able to start the course. Time to need response is, most certainly, smaller in e-learning courses than in traditional face-to-face courses, which makes e-learning more convenient. Just as convenience stores, e-learning courses enlarge the consumptions options and minimize the time the individual needs to wait, since she can decide to buy in the right moment she wants and starts to "consume" it right away;
- *Opportunity costs* can also be considered lower in e-learning courses as they allow the individual to harmonize current professional commitments with training activities. E-learning courses can be considered more convenient than traditional courses as they allow timetable conciliation, as well as the minimal impact on professional functions, and the psycho-temporal value of family moments and time dedicated to the family.

As Leclerc and Schmitt (1999) found out in their study on the *value of time*, time-related decisions show a risk-averse tendency that contrasts with the risk-taking orientation of money-related decisions. They also found that time itself, has no definite value for people and may be constructed entirely by the context, which explains why individuals are sometimes incredibly wasteful with their time but almost stingy in other circumstances. Although not questioning that the *value of time* is self-oriented, Leclerc and Schmitt (1999) also admit that it can be *other-oriented* and have a *social* component.

2.5.2.9.3. Excellence

Excellence involves a reactive appreciation of the potential ability of the object or of the experience to serve as an *extrinsic* means to some personal *self-oriented* end. In *excellence*, one admires some object or prizes some experience for its capacity to accomplish some goal or to perform some function. Such a utilitarian emphasis on the appreciation of instrumentality relates closely to the concept of satisfaction based on a comparison of performance with expectations and appears to constitute the essence of what Holbrook (1999c) believes to be what we mean by quality.

The *excellence* type of value arises when a product or service is admired for its capacity to achieve some *self-oriented* want, but do so without being used for that purpose, that is, reactively rather than activity (as in the case of efficiency). As Holbrook (1999c, p. 15) exemplifies, one can appreciate the quality of a Ferrari for the fact that it can accelerate quickly, but one does not need to go out and "break the traffic laws in order to value this aspect of its quality".

2.5.2.9.4. Status

Status designates the active manipulation of one's own consumption behaviour as an extrinsic means toward the other-oriented end of achieving a favourable response from someone else. According to Holbrook (1999c), individuals seek *status* by adjusting their consumption in a manner that affects those whom they wish to influence. The value of products or experiences lay in the image of the individual they allow to be projected. In other words, consumption is made, or experiences are taken, so as to communicate to the others, in ways that contribute to the success of the individual. According to this perspective, individuals choose products, or courses, which allow them to pursue a set of symbols, intended to construct a persona that achieves success in the form of *status* in the eyes of others.

Status is the outcome of a process of social construction that assigns meaning to the desire for, acquisition and/or display of value objects calculated to increase social honour in a community (M. R. Solomon, 1999, quoting Waters, 1994). This suggests that post-graduation education products will probably hold higher *status value* than under-graduation ones. According to M. Solomon (1999, p. 66), while engaged in this process, the individual is motivated to 1) identify a desirable location in her particular social nexus, 2) acquire products and experiences that she believes that will attain that position, and 3) validate this standing among relevant others (Table 23). In this approach, an e-learning course is the instrumental activity used to attain the desired social construct and will be evaluated according to its capacity to attain the desired status.

Stage	Focus
Status definition	Identifying the social identity one can or should adopt and determining the optimal strategy to achieve that identity.
Status acquisition	Performing consumption activities instrumental to attaining that identity.
Status validation	Evaluating the impact of one's consumption choices in attaining desired identity.

Table 23: Stages of status seeking
Source: Adapted from M. R. Solomon, 1999, p. 66

2.5.2.9.5. Esteem

The difference between *status* and *esteem* is clarified in Holbrook's (1999c) typology of consumer value: *esteem* is the reactive counterpart to *status* in that *esteem* tends to result from a somewhat passive ownership of possessions appreciated as a mean to building one's reputation with others. *Esteem* is reactive and involves a tendency toward conforming, while *status* is active and entails an acquisitive manipulation intended to influence others. When a group of scientists is applying to a Nobel Prize, they are primarily looking for *status*. If they are unexpectedly awarded with a prize to which they did not apply for, the predominant value is the *esteem* that it represents. Under the heading of esteem-as-value, individuals reactively appreciate their own consumption of lifestyle in a somewhat passive way as a potential extrinsic means to enhancing their other-oriented public image.

Esteem-as-value includes, for instance, the ownership of expensive art objects not because they are pleasing to one's aesthetic sensibilities nor any other motive, but rather

because they imply a standard of living, a materialistic inclination toward owning prestigious possessions, consistent with an elite reputation in the community or an enhancement of respect from others (Holbrook, 1999c, p. 17).

Richins (1999) relates closely *esteem* with *achievements* and the praise received for these achievements, but also with *possessions* and the desire for materialistic possessions, not for the goods in itself, but for what they represent and their ability to shape a desired identity. According to Richins (1999, p. 100), other-dependent people use cues from others to identify who they are and to determine the appropriate course of behaviour. These cues help them identify the possessions they should own, the kind of clothes they should wear, and how they should spend their time.

If others perceive e-learning courses as easy and see the training certificate as something won, as in a lottery game, then individuals use it as a cue to adapt their behaviour appropriately, namely, to avoid e-learning courses.

2.5.2.9.6. Play

Play is a *self-oriented* experience, *actively* sought and enjoyed for its own sake, and typically involves having fun, which characterizes the classical difference between work and leisure. Play usually involves a mixture of competence, mastery, triumph, and a balanced dosage of challenge. Games have been increasingly used to achieve learning outcomes, as a way to explore the play-as-value to promote the creation of knowledge, skills, and attitudes (for example, ELSPA, 2006; Kirriemuir & McFarlane, 2006; Mitchell & Savill-Smith, 2004; Shaffer, Squire, Halverson, & Gee, 2004). *Play* can be harmlessly pleasant or threateningly subversive, which means that there are, at least, two general types of playful value: one in which consumers follow the rules expected, and another in which they break the rules (Grayson, 1999, p. 121), and enjoy doing it.

2.5.2.9.7. Aesthetics

Aesthetics refers to the reactive appreciation of some consumption experience valued *intrinsically* as a *self-oriented end* in itself. Beauty and fashion are types of *aesthetic value* and are enjoyed purely for its own sake, without any further practical purpose that might serve as a means to any other end.

As occurs in other types of value, there are limits to *aesthetics-as-value*: the aesthetic appreciation of an artwork is different from the instrumental function it might perform. Likewise, fashion is often prized for the beauty of its product design, as well as for the ability of clothes to keep the person warm (efficiency), for impression of prestige (status), or for ethical reasons (virtue) (Holbrook, 1999c, p. 20). One unique aspect of *aesthetic value* is that it is closely identified with the fine arts – painting, sculpture, architecture, music, dance, and poetry. More recently, *aesthetic value* has been extended to include applied arts, everyday objects such as appliances, cars, furniture, computers, and clothing (J. Heskett, 2007; J. Wagner, 1999, p. 128).

2.5.2.9.8. Ethics

The *active* and *other-oriented* pursuit of ethics involves doing something for the sake of others, that is, with a concern for how it will affect them, or how they will react to it, where such consumption experiences are valued for their own sake as ends in themselves.

Holbrook (1999c) suggested *virtue*, *justice*, and *morality* as the key examples of ethics as value. These are the result of the correspondence (Table 24) between the *natural* (concerned with a person's character, which is governed by some disposition or personality trait), *the right* (determined by various principles embodied in various rules, laws, duties or maxims), and *the good* (concerned with the consequences or results of behaving in a certain way).

	Natural	Right	Good
Natural		Virtue	Morality
Right			Justice
Good			

Table 24: Virtue, morality, and justice
Source: Adapted from Holbrook, 1999c, p. 21

Virtue appears among individuals whose conscience habitually leads them to not cross the street with a red light even when there is not another person or vehicle around. *Justice* occurs when the court system actually manages to convict the guilty and to protect the innocent. *Morality* shines when an individual tends by temperament to engage in selfless devotion to the cause of helping others.

If a person donates blood for the pleasure of saving lives or bestows a generous financial gift upon a university in order to further the cause of learning, her actions involve experiences of *ethical value*. The same behaviour may have the same *other-oriented* character, but holding also an extrinsically motivation character (for example, donating blood in order to receive grateful recognition or donating money to the university in order to get a relative into college). Therefore, the same identical experience can be valued as a means to some other end (extrinsic value, as *status*) or as an end in itself (intrinsic, and, therefore, *ethical value*). Likewise, if one pursues prayer as a vehicle for adoring some divine entity, such experience is valued for its own sake as an end in itself, and is clearly spiritual in nature. But if one prays for the purpose of asking for favours, then one's prayer takes on aspects of *value* associated with *status* or *efficiency* (Holbrook, 1999c, pp. 22-23).

2.5.2.9.9. Spirituality

According to Holbrook's (1999c) typology of consumer value, spirituality entails an intrinsically motivated acceptance, adoption, appreciation, admiration, or adoration of an Other where this "Other" may constitute some divine power, cosmic force, mystical entities, or some otherwise inaccessible Inner Being, and where such an experience is sought not as a means to an ulterior end, but rather as an end in itself prized for its own sake.

2.5.3. Utility as a Multidisciplinary Concept

2.5.3.1. Expected Value and Expected Utility

As discussed so far, motivation is related to value perceptions: individuals are motivated to something because they perceive value in it and there are several interpretations about what is *value*, namely the one that relates value to use and utility. Yet, other approaches do not consider *utility* as a special kind of *value*, but *value* as a special case of *utility*. *Expected value* and *expected utility* are confronted in the economic theory of choice between *uncertain* alternatives (von Neumann & Morgenstern, 1944), which explains how people make choices. The theory of expected utility provides the foundation of this theory of choice and it states that "the *expected utility* of a gamble is the *expected value* of the utilities of each of its possible outcomes" (Frank, 1991, p. 181). The central premise of this decision theory is that people choose the alternative that has not the highest *expected value*, but the highest *expected utility*.

Rabin (1996, p. 10) also differentiates *expected utility* from *expected value* and according to him, the *expected value* is a special case of the theory of expected utility where utilities are assumed to be linear (i.e., risk neutrality). Rabin (1996) claims that it is better the use of *expected utility* rather than *expected value* because most individuals are not risk neutrals, but rather risk averse. This suggests that, the same way that value perception is a better indicator than motivation, expected utility may also be a better indicator than expected value.

2.5.3.2. Use, Usage, Usefulness, and Utility

Some of the approaches discussed above relate value to use, usefulness and utility. Dewey (1939, p. 36) defends that genuine value is focused on ends, and that the value of a good or service is in its *usefulness* that it gives for attaining the ultimate objective. In this approach, *value* is related to *usefulness*. Meanwhile, Susan Boztepe (2007) provides a useful relationship between use and value: "*Use value* relates to the *utility* of the physical properties of a product, which is realized upon its *use*". *Use* is defined as an effective practice: When something is being used, it means that that thing is being employed for a purpose (The Free Dictionary, 2009). This is different from *usage*, which is related to the manner of using. If someone, historically, has been using something in the same way, that becomes a usage. The concept of *usage* assumes, therefore, several uses, a tradition in the way of using. U*tility*, in turn, is defined as "the quality of being usable". This means that something may be perceived has having utility, but not really being used. In other words, the concept of utility includes perceptions of a *hypothetical use*, an expectation of a *future* use, while the concept of *use* implies an *effective use*, and *utility* is an expectation that if confirmed upon effective *use*. This suggests that utility is closer to expectations, while use is closer to performance, and a *disconfirmation* (Churchill & Surprenant, 1982; Oliver, 1980, 1993) could be evaluated. It also suggests that, since utility is an expectation, the use of the word 'expected' in the expression 'expected utility' is a redundancy.

The perception of *utility* has idiosyncratic characteristics: according to Frondizi (1971, p. 33), "when considering what is useful, reason takes place of emotions. The utility of an object cannot be apprehended without a prior concept of the purpose which it is to fulfil, and the manner in which it fulfils it". *Utility* is also a marginal concept.

Something may be seen has having utility if it allows the individual to change the manner in which she behaves, namely the way she has been using what she has, which can be a good, a skill, or a knowledge.

Utility is a narrower concept that is more appropriate to apply in the narrower sense of finding new and practical *uses* for something. As the purpose of any training program is to change the way people do things, and, by that, have impacts on results (levels 3 and 4 of Kirkpatrick's model), in most situations, namely in e-learning, *utility* is a more appropriate concept than *use*: individuals formulate expectations of future use, which will be evaluated some time after the training course has ended and after giving some time to the individual to change her behaviour. What we cannot predict is the expiration date of that expectation, or the moment until which the expectation holds and persists.

2.5.3.3. Different Meanings of Utility

Oliver (1999, p. 45) relives any tension regarding finding a proper and definitive definition to *utility*. He claims that "the term 'utility' is frequently used as a convenient overarching concept that permits discussion of consumer goals without the necessity of greater formal specification" and proceeds saying that, although utility is frequently represented in axiomatic terms, there is no semantic definition of utility receiving widespread acceptance. This lack of consensus is probably due to the general use of the concept of *utility* among different sciences, aggravated by the existence of some constructivist approaches that challenge the positivist ones.

In the earliest writings on utility, Bentham (1823, quoted in Oliver, 1999, p. 46) referred to utility as the *hedonic quality of experience* - attaining pleasure and avoiding pain. Meanwhile, utility was related to decision utility or revealed preference (Shoemaker, 1982). More recently, utility has been related, once more, to *pleasure*, but sometimes is described as *satisfaction*, as an equivalent descriptor of the value of *experience*, or as *observable choices* and *preferences* (Kahneman & Snell, 1990; Kahneman & Varey, 1991).

2.5.3.3.1. Well-Being and Social Utility as the Sum of Individual Utilities

There are two common approaches to utility: one is focused on the individual and the other in the society. Social utility has been the subject of study of *utilitarianism*, which defends that society aims to maximize the total utility of the individuals. In contrast, *rationality* searches for behaviours that maximize utility under some economic constraints. In traditional formulations of utilitarianism, the individual utility was the only quantitative measure of personal well-being. Currently, the literature (Elster & Roemer, 1991) recognizes three approaches to compare individual and social well-being: *utility*, *welfare*, and *standard of living*.

Different concepts of *well-being* result in different versions of utilitarianism. For the early utilitarians, the focus was on mental states, and well-being was equated with *pleasure, happiness*, or, more generally, *satisfaction*. Subsequent utilitarians identified well-being with *desire fulfilment*. The third interpretation views utility as *preference* (Sen, 1987, quoted in Weymark, 1991, p. 299). Weymark (1991, p. 299) claims that, in

the first two interpretations, utility is a measure of satisfaction or desire fulfilment and, therefore, there may or may not be a causal link between *utility* and *preference*. If there is, *preference* has no independent meaning and is defined in terms of *utility*.

Utilitarism was developed by Harsanyi (quoted in Elster & Roemer, 1991, pp. 13-14; and detailed in Weymark, 1991, pp. 257-297) and states that a social welfare function U, under certain conditions, can be represented as the weighted sum of the utilities obtained by each person in society from the alternatives being considered (1) (Weymark, 1991, p. 299). In classical utilitarianism, those weights are all equal to one, resulting in the simple sum-of-utilities criterion, i.e., the social good is defined as the sum of the welfares or degrees of well-being of individuals, and it is assumed that the latter are interpersonally comparable. This theorem was later discussed by Weymark (1991, also quoted in Elster & Roemer, 1991, pp. 13-14) who pointed out that Harsanyi's 'aggregation theorem' was not a theorem about utilitarianism, but rather a theorem of representation of a social welfare function defined on a set of prospects, and assumed to satisfy the von Neumann-Morgenstern axioms of rational choice under uncertainty. Weymark (1991) pointed out that, even if utility is interpersonally comparable, the functions U_i would not be the ones that embody the correct interpersonal calibrations. And so, the view that U(A) measures 'total utility', in the sense that utilitarianism supposes, is wrong: Just because a social welfare function U is represented by the equation (1) that does not imply that the sum of the individual welfares is being maximized.

$$U(A) = \sum U_i(A) \qquad (1)$$

where U_i is a von Neumann-Morgenstern (1944) utility function for an individual i and the summation is taken over the relevant population.

This social dimension of utility is present may be present in the perceptions of utility in e-learning but not in this sense of societal well-being, but rather as social recognition as Holbook claims (1999).

2.5.3.3.2. The Economic Approach to Utility

In economics, utility plays a central role in the determination of demand patterns. More specifically, utility is one of the key concepts that define the *demand curve*. In the microeconomic theory, utility measures the relative outcomes or desirability of consumption, and economic behaviour is explained in terms of how utility can be increased and what the relation between the marginal utility of a good or service and its cost is.

Oliver's recalls this approach that relates *utility* to *worthiness* (1999, p. 46):

> "Many common events benefit from the singular notion of utility-as-worth, which is frequently defined in currency terms. For example (…) worth can mean the exchange terms required for acquisition (e.g., cost), the exchange value obtained at disposition (e.g., sale price), the estimated or imagined value of the item in ownership (e.g., appraisal), what one would be willing to pay if ownership were possible (e.g., the bid), and what one would require to give up the item (e.g., the asked). For the same item at the same time, each of these could vary, sometimes measurably."

Utility is built upon in *indifference curves*, which are explained in Appendix 9. Each indifference curve represents all combinations of two products that yield the same level of utility. Several combinations of goods can provide the same level of utility, which

makes the individual to go up or down in the same indifference curve. Indifference curves do not meet or intersect, and are convex to the origin (Douglas, 1992b, p. 40). The maps of indifference curves are based on the utility that consumers perceive to different sets of packs of goods. And it is from indifference curves that economists derivate an ordinary demand curve, i.e. they are one of the two elements that determine the economic equilibrium. Economists assume that individuals want to maximize utility, while price and income values are budget constraints given in advance, which means that the maximization problem is a *constrained maximization problem* (Frank, 1991, pp. 91-92). The solution to this problem of utility maximization is solved when *isocosts maps* are taken into consideration.

Utility can also be analyzed in terms of *demand for attributes* (Lancaster, 1971). This model, also detailed in Appendix 9, explains consumer behaviour as a process of choosing bundles of *characteristics* or *attributes* inherent in goods and services, rather than simply choosing bundles of goods or services themselves. The theory on *demand for attributes* provides some insights that are relevant to understand quality of e-learning and has some common arguments with theories of motivation: an individual that is motivated to a training course is looking for some *attributes*; She values a course because she perceives in it some attributes and those attributes can be, for instance, social recognition, job opportunities, improvement of current job performance, a *future utility*, or another attribute. The model of *demand for attributes* is more concrete and precise than general preference and demand models. Even so, in the end of the day, the final analysis of this model is based on indifference curves.

2.5.3.3.3. Expected Utility and the Utility Function

Most economists merge the concept of *utility* with the psychological concept of *expectation*. The concept of *expected utility* was initially proposed by the mathematician Bernoulli (1738) as a solution to the St. Petersburg Paradox. Besides his statistics distribution, for which he is most known, Bernoulli introduced two important concepts:

- The *expected utility hypothesis:* The individual's valuation of a risky venture is not the expected return of that venture, but rather the *expected utility* from that venture. The Bernoulli distribution is used in this hypothesis to compute expected utility;
- The *diminishing marginal utility:* Utility from wealth, u(w), is not linearly related to wealth (w), but rather increases at a decreasing rate.

Consequently, utility is a concave function of total wealth and the concavity reflects the diminishing marginal utility of wealth. Marginal utility is the slope of the utility function, which declines as wealth increases (Figure 11). Individuals whose utility functions are concave are said to be risk averse, which means that they would always refuse a gamble whose expected value is zero (a so called *fair gamble*) (Frank, 1991, pp. 181-182).

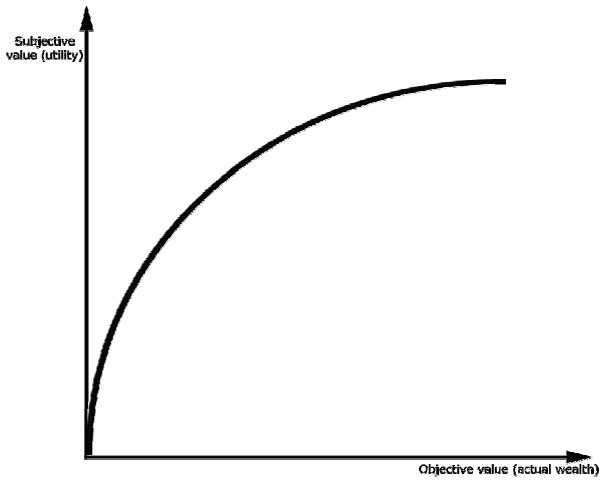

Figure 11: Berlounni's Concave Utility Function
Source: Adapted from Frank (1991, p. 182) and from TIFF (1996)

But the utility function is more complex than Bernoulli recognized, as Tversky and Kahneman (1986, p. 258) proved. In graphical terms, subjective value or utility is actually an asymmetrical function of the absolute size of the individual's gains or losses. These authors suggest that the value function is S-shaped, concave above the reference point, and convex below it, as illustrated in Figure 12. The utility function that they propose is concave in the positive region, reflecting the diminishing marginal utility, which reflects the fact that beyond certain point money ceases being as useful as before, which is closely related to popular expressions such as "money can not buy everything", although it has no boundaries. A convex utility function in the negative region means that the displeasure from a loss is greater than the pleasure of a same-sized gain, which economists typically use as the explanation for risk aversion. Thus, the difference in subjective value between a gain of € 100 and a gain of € 200 is greater than the subjective difference between a gain of € 1100 and a gain of € 1200. The same relation between value differences holds for the corresponding losses. The asymmetry around the origin reflects the fact that gaining and losing money can have different implications, especially if *opportunity costs* are taking into account, namely different uses of the same money. In general terms, the value function proposed by Tversky and Kahneman (1986) is a) defined on gains and losses, b) concave for gains and convex for losses, and c) steeper for losses than for gains. This function expresses the property that the effect of a marginal change decreases with the distance from the reference point in either direction. The loss aversion property of the value function originates that the response to losses is more extreme than the response to gains. This suggests that the displeasure of losing a sum of money exceeds the pleasure of winning the same amount (Tversky & Kahneman, 1986, p. 258). In a hedonic approach, we could say that losses are more painful than the pleasure of gains. In graphical terms (Figure 12), this means that if X = Y then A > B.

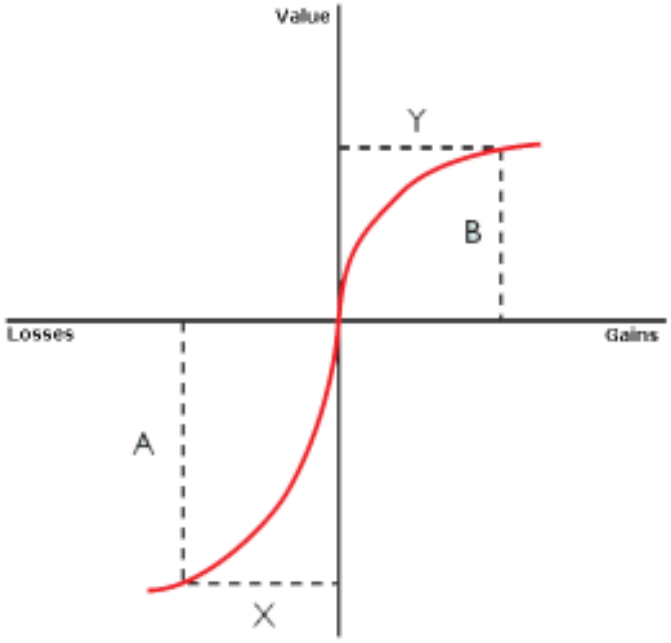

Figure 12: The Utility Function
Source: Based on Tversky and Kahneman (1986) and adapted from West (2008)

2.5.3.4. The Theory of Expected Utility and the Theory of Choice and Decision Making

2.5.3.4.1. Utility and the Process of Decision Making

The function of expected utility is used in the process of decision making between projects that have different risk profiles and it has inspired important economic tools as the *scenario analysis* and *game theory* (von Neumann & Morgenstern, 1944). The latter, for instance, captures the behaviour in *strategic situations*, in which an individual's success in making choices depends on the choices of others.

The traditional economic model of choice under *uncertainty* assumes that individuals maximize *expected utility*. This means that they maximize the weighted average of utilities they could get in different uncertain outcomes, where the weights are equal to the perceived probabilities of the outcomes. That is, if S represents a set of mutually exclusive and exhaustive outcomes that a person can experience from decision, U(s) is her utility for an outcome s ε S, and p(s) is the probability she assesses to that outcome, then her utility can be represented as $\Sigma_{s \varepsilon S}\, p(s) \times U(s)$ (M. Rabin, 1996, p. 10).

Hedesström (2006, p. 14) alerts to the approach to preferences made in this theory:

> "This theory assumes that individuals have stable and coherent preferences; they know what they want and their preference for a particular option does not depend on the context. Individuals who face a choice will go through all available alternatives before selecting the one that they judge to be the best. However, in psychology, there is a growing consensus that people's preferences are constructed. In many situations, people do not know what they want before being presented with the choice alternatives. Preferences for individual alternatives are being formed in the process of making the decision and are, thus, dependent on how the choice problem is described or 'framed' (Kahneman & Tversky, 1984), and on the method used when searching among options. Instead of evaluating all available alternatives, people use simplifying heuristics that limit the search".

2.5.3.4.2. Decision Making under Risk and Uncertainty, and Expected-Present-Value

Economics distinguishes *present value* (PV) from *expected value* (EV), and combines these two concepts in *expected-present-value* (EPV) for cases where decisions involve *future* cash flows and are made in an *uncertain* environment. The difference between these two concepts is based on the temporal dispersion of *value*.

The *expected value* of an outcome is the value of that outcome multiplied by the probability of that outcome occurring. Since several outcomes are possible under risk and uncertainty, the *expected value* of a decision is the sum of the expected values of all the possible outcomes that may follow the decision. As the actual outcome will not be known until after the "investment" is made and all the returns are in, the expected value is an *a priori* measure of decision that allows the probability distribution of outcomes to be summarized as a single number (Douglas, 1992b, pp. 18-19). The analysis of the *expected present value* is required whenever there are costs and revenue implications of the decision that fall in both the present period and, at least, one future period. The analysis is more complex when there is also a probability distribution of outcomes in each period, because the outcomes in the second and subsequent periods will have joint probabilities of occurring. To make a decision, individuals evaluate the expected-present-value of the profits promised by each alternative, assigning probabilities to each scenario. Then, an *opportunity* discount rate is used to evaluate future profits in the present period and expected present value will be the sum of the present value of future expected values (Douglas, 1992a, p. 3).

2.5.3.4.2.1. Uncertainty, Risk, and Risk Aversion

The utility function has several questions that have to be dealt, namely the risk involved in each alternative decision, the measurement or perception of that risk, and the problem of incomplete information about outcomes, which sometimes exists when decisions have to be made (that is, the *uncertainty* of outcomes, which is an additional problem besides *risk*). As Douglas (1992b, p. 17) puts it, *uncertainty* exists when a decision might lead to one of several outcomes and the exact outcome is not known in advance. Instead, there will be a probability distribution of possible outcomes, which the decision maker must identify. The concept of *risk* can be regarded as a subcategory of uncertainty in which the probabilities of each outcome can be assigned on an objective bases. According to Douglas (1992a, p. 35), the risk associated with a particular decision is defined as the dispersion of the possible outcomes that might occur.

The probability of having 'heads' when flipping a coin, or the probability of having a pair of numbers when throwing two dices, is known *a priori*. In other cases, that probability cannot be determined *a priori*. Another class of risk situations is that in which probabilities are assigned *a posteriori*, or on the basis of past experience under similar circumstances. For instance, based on past experiences, insurance companies are able to form an expectation (or assign a probability) of the chances of a specific driver having an accident in a specific car. Yet, in the great majority of decision-making problems, the potential outcomes cannot be foreseen clearly in advance and decision makers must estimate a rage of potential outcomes and assign probabilities subjectively, based on experience, intuition, and judgment (Douglas, 1992b, pp. 17-18).

Besides this distinction between *uncertainty* and *risk*, *risk profiles* are also a relevant factor. *Risk aversion* is defined by Douglas (1992a, p. 40) as "the psychic dissatisfaction (or disutility) caused by uncertainty". This author (1992a, p. 40) describes the perceptions of utility and the expected behaviour of these agents:

> "Risk averters will take bigger risks (and disutility) only if they, at the same time, expect to gain a sufficiently large amount of profit (and utility) associated with the proposed investment project. The greater the risk perceived, the greater the return the investor requires to offset the risk. Conversely, risk averters will accept lower expected returns if these are associated with lower degrees of risk".

Douglas (1992a, p. 40) depicts a structure of risk averter's preference between risk and return in terms of indifference-curve analysis, which is detailed in appendix 9. He argues that, since a risk averter gains utility from profits and disutility from risk, the indifference curves have a positive slope to reflect the fact that risk is 'bad' and that it generates disutility rather than utility.

2.5.3.4.3. Utility and the Observable Choices and Preferences

Kahneman and Varey (1991, p. 127) claim that the standard approach to utility in decision science is an objectivist view, which focuses on tangible goods as the carriers of utility, and on *observable preferences* as the proper measure of it. In contrast, a "psychological" view, as they call it, tends to focus on *interpreted* objects and events, as the carriers of utility, and on *experiences of pleasure or satisfaction* as the proper measure of it.

These authors relate utilitarianism to utility, and make a clear retrospective on the evolution of the concept of utility, formerly related to hedonism and currently, they argue, more related to observable choices and preferences (pp. 127-128):

> "[Bernoulli's] argument and his references to earlier writings by Gabriel Cramer, identify utility as satisfaction – a subjective state or experience. Jeremy Bentham and John Stuart Mill also used the term utility to refer to the hedonic quality of experience. Bentham spoke of the two sovereign masters that govern mankind – pleasure and pain – and developed the notion of a 'hedonic calculus'. Indeed the basic tenet of utilitarianism is variously referred to as the 'principle of utility' and as 'the greatest happiness principle' (…) However, the modern view of utility has abandoned any explicit reference to hedonic experience of happiness. The positivistic movement that swept the social sciences between the two world wars gave us behaviourism, strict operational definitions, and a suspicious attitude to mentalist notions. In this spirit it was natural to seek a definition of utility in terms of observable choices – revealed preferences. The definition of utility in terms of choices still rules the sciences of decision (…)."

Two concepts of utility, one more positivist and another more constructivist, seem to co-exist. As Kahneman and Snell (1990, quoted in Kahneman & Varey, 1991, p. 128) put it, "in referring to Bentham's concept we shall speak of *experience utility*: the hedonic quality of experience, broadly construed to include *satisfaction* as well as *pleasure*. The value associated with a particular consequence in a decision context is its *preference utility.* The distinction between *experience* and *preference utility* suggests another notion: *predicted utility*: the individual's reflective assessment of future experience utility".

The objectivist position favours a notion of utility based on publicly (objectively) observable choices. This means that the subjective experience as the criterion of welfare analysis is rejected. Sen (1986, quoted in Kahneman and Varey, 1991, p.129) notes that "the popularity of this view in economics may be due to a mixture of an obsessive concern with observability and a peculiar belief that choice (in particular, market choice) is the only human aspect that can be observed". Kahneman and Varey (1991, pp. 129-130) add that "the substantive argument for measuring utility from *choices* is that people know what is good for them. Thus, the objectivist stance requires faith in the consistency and stability of preferences, and implicitly invokes the standard assumption of rationality. There is also an ideological and moral attitude to the act of choice: whether or not they choose wisely, individuals are responsible for their decisions and for the consequences of these decisions".

The psychological stance on these matters is different: Psychologists tend to be more tolerant of measures of subjective experience and more inclined to doubt the rationality of agents – and the wisdom of their choices. Thus, the objectivist and the psychological analyses favour different responses as measures of utility and different objects as carriers of utility. In an objectivist analysis, utility is assigned mainly to tangible and objectively identifiable aspects of the decision maker's situation at a given time. Even though that not all economic analysis are objectivist in this sense, there is a distinct tendency in economics and decision theory to view material assets as the main carriers of utility (Kahneman & Varey, 1991, p. 130). The psychological stance on the carriers of utility puts more weight on intangibles as factors of utility. The utilities of outcomes depend on how they are framed – in violation of the principle of invariance or extensionality that is often invoked in economic analyses. In particular, utilities depend on a neutrally evaluated reference level, and the main carriers of utility are said to be changes or differences (gains or losses) relative to that reference level. Psychological analysis are also likely to put considerable weight on emotions such as hope, fear, disappointment, regret, pride, and guilt, which do not fit easily into an objectivist treatment (Kahneman & Varey, 1991, p. 130).

Kahneman & Varey (1991, p. 158) defend the existence of a *zone of tolerance* - similar to the one described above in the marketing literature: by some criteria, individuals, at different levels of wealth, can be equally adapted to their circumstances, much as individuals can feel equally warm at different temperatures. However, an exchange of endowments will cause pleasure to one of these individuals, and even greater displeasure to the other, because of loss aversion: "A characteristic of perception (…) is that individuals are more sensitive to changes than to steady states. Preferences reflect this characteristic of experience utility: there is ample evidence that outcomes are evaluated as gains and losses, rather than as states". These authors (Kahneman & Varey, 1991, pp. 128-129) also suggest that each of these concepts should be applied in specific contexts. For instance, if individuals do not know their future experience utilities, or if their preferences of the moment do not accurately reflect what they do know, a case can be made for using *experience utility*, rather than *preference* as the unit of account in utilitarian calculations.

2.5.3.5. Utility in Education

Several authors have focused their attention in the utility of training courses.

2.5.3.5.1. Utility in Training

Chéron and Rouland (2007) emphasize two points: the first, is the impact of training in the ability to cope with unemployment spells. The other, is the concept of instantaneous utility of unemployed workers. These authors used the concept of *immediate utility* in their study of the impacts of firm-provided training on the probability that the workers have to undergo an unemployment spell. They concluded that the impact of employees-followed training on the probability they have to keep their job is positive but very small.

Taras (2008) uses the concept of *utility* as *effectiveness* and *return of investment* in training programs in the context of cross-cultural training. His model suggests that the impact of cross-cultural training on performance is mediated by improvements in group processes and attitudes. Namely, that cross-cultural training improves cross-cultural knowledge and sensitivity of workgroup members and lowers prejudice and stereotyping, which leads to improved communication, trust, group cohesion, commitment, and work satisfaction, ultimately leading to improved performance. Taras (2008) used the *utility analysis* to provide an estimate of the return on investment in training programs.

Rupashingha and his colleagues (2000) also used the utility function when they studied why workers are interested in acquiring new skills and the circumstances under which their interest is maximized. They proposed a model of job skills training for those already working. In their model, the function of individual utility follows: $U = f(C, T)$ where, C is consumption and T is time devoted to training. They claim that the individual's decisions on the time devoted to training are based on expectations about the future, and that these expectations can be incorporated into a utility maximization framework by using the *expected utility theorem* (von Neumann & Morgenstern, 1944). They showed that the "perceptions of the value of training in terms of *quality of life* and its potential contribution to *finding a new job*" are the most valued factors. Workers who felt that new or improved skills would improve their quality of life were eight times more likely to be interested in skills training. Similarly, workers whose interest was tied to finding a new job were three times more likely to be interested in skills training. Their conclusions can be synthesized as follows:

- The perceptions of the value of skills training do matter and influence the demand and participation in skills training;
- Workers are willing to participate in improving skills but there are conditions that must be in place in order to make the programs of skill development successful, namely the costs of training, both in terms of time and lost of earnings. Workers justifiably are sceptical of programs that do not promise results";
- *Personal* benefits of the training program have to be recognized;
- One of the strongest motivations is the *potential for another job*. Since "those with the lowest job satisfaction and with the least financial security have greater interest in training, then employers may wonder if their implementing skill development programs will result in workers leaving for other jobs".

2.5.3.5.2. ROI as the Economic Expression of Training Utility

Phillips and Stone (2002) suggest an extra level to Kirkpatrick's training evaluation model. This level, to which they called, the *Return on Investment* (ROI) level, is focused on the monetary benefits as a result of the training program. They (2002, p. 7) define ROI as:

> "An evaluation of the monetary value of the business impact of the training, compared with the costs of the training. The business impact data is converted to a monetary value in order to apply it to the formula to calculate return on investment. This shows the true value of the program in terms of its contribution to the organization's objective. It is presented as an ROI value or cost-benefit ratio, usually expressed as a percentage. An improvement in a business impact measure as a result of training may not produce a positive ROI (e.g. if the training was very expensive)".

Birati and Tziner (1999) propose a model to estimate the cost-effectiveness of training programs in organizations and the economic utility of those programs. The proposed model regards any potential plan as an investment project that should be evaluated in a similar way to the assessment of other investment options. These authors made a more elaborated suggestion than the return on investment approach proposed by Phillips and Stone (2002): they recommend that a training project should only be considered if its *potential real*, *post-tax* rate of return exceeds the real, *post-tax* cost of capital to the firm, subject to the unique features of investment in human capital.

The concept of ROI is but an economic, and positivistic, expression of the utility of a training course and its major pitfall rests in the correct evaluation of the business impact.

2.5.3.5.3. Utility and Training Evaluation Scales

Kirkpatrick (1959a, 1959b, 1960a, 1960b) identified four levels at which any training program should be evaluated (Table 25 and detailed in page 52). Our attention is now focused on behaviour change (level 3), as it is the level where *use*, and therefore *fitness for use*, can be evaluated. Jim Kirkpatrick (Kirkpatrick & Kirkpatrick, 2007, p. 81) has also been focusing his attention on this third level of training evaluation, which he calls the 'missing link' because of its contention that is typically lost between levels 2 and 4. This author claims that "while the trend is improving, learning and training professionals still believe that their jobs are done when the training programs are over, or the computer is turned off following an e-learning session". So, he identified three reasons to take a serious look at level (Kirkpatrick & Kirkpatrick, 2007, pp. 81-83):

- First, the acquisition of knowledge and skills translates to little actual business value, unless they are transferred to new on-the-job behaviour;
- Second, this level is the only way to tell if lack of success at the fourth level is caused by ineffective training or lack of sufficient follow-up;
- Third, it is difficult to create a compelling chain of evidence leading from training to results without it.

Yet, behaviour is influenced by several factors and cannot be easily foreseen, as the authors (Kirkpatrick & Kirkpatrick, 2006, p. 52) argue: first, trainees cannot change their behaviour until they have an opportunity to do so. Second, it is impossible to predict when a change in behaviour will occur: even if a trainee has an opportunity to

apply the learning, she may not do it immediately. In fact, as they claim, change in behaviour may occur at any time after the first opportunity, or it may never occur.

Level	Description
Reaction	How those who participate in the program react to it. It is a measure of customer satisfaction.
Learning	The extent to which participants change attitudes, improve knowledge, and/or increase skill, as a result of attending the program.
Behaviour	The extent to which change in behaviour has occurred because the participant attended the training program.
Results	The final results that occurred because the participants attended the program. Includes increased production, improved quality, decreased costs, reduced turnover, and higher profits among others.

Table 25: Kirkpatrick's Four Levels of Training Evaluation
Source: Kirkpatrick & Kirkpatrick, 2006, pp. 21-22, 25

If training is planned to improve performance, we have to know what happens when the trainees leave the classroom and return to their jobs and what change in job behaviour occurred because people attended a training program (Kirkpatrick & Kirkpatrick, 2006, p. 21). As we will discuss next, Holton (1996) focuses his attention in the factors that influence that behaviour, and that allow *expected use* to become *real use*.

2.5.3.5.4. The Role of Utility and Motivation in Transformation of Knowledge

Based on the theory of planned behaviour (Ajzen 1991), Holton (1996) created a model, focused on the role of utility in training outcomes. More precisely, in the relationship between *utility*, *motivation to transfer*, *motivation to learn*, *learning outcomes*, and *organizational results*. The evaluation model proposed by Holton (1996, p. 9) has three *primary outcomes* (Figure 13):

- *Learning*: the achievement of the learning outcomes desired in the training course;
- *Individual performance*: change in individual performance as a result of the learning being applied on the job;
- And *organizational results*: results at the organizational level as a consequence of the change in individual performance.

Holton's (1996) model also includes *primary* and *secondary* influences on these three primary outcomes. The primary intervening variables are hypothesised to influence the *primary outcomes* that the training course is targeted to achieve, whereas the *secondary* intervening variables are hypothesised to have a secondary influence on the motivation elements (*motivation to learn* and *motivation to transfer*). Holton (1996) calls *motivation to transfer* to the level of motivation that the trainee holds when she leaves the training program, to use their learning on the job. Noe and Schmitt (1986, p. 503) have a similar definition as they describe *motivation to transfer* as the trainee's desire to use the knowledge and skills mastered in the training program on the job. As we discussed previously (page 57), the term *transfer* may not be adequate if we assume that learning cannot be transferred but only created: the expression *transfer* can be interpreted as the ability to express the knowledge created during the course into new

behaviours that will be observable in the individual's performance after the course ends. More than a transfer, it is more a transformation of the knowledge created. Motivation to *transform*, *apply*, or *use*, new knowledge, skills, and attitudes into new behaviours would be more precise expressions but we will use his terminology to state his point of view. Regardless the term used, it is relevant to look at that ability, the motivation to employ it, and the moment of time when it occurs.

In the primary influences, Holton (1996, p. 9) included (Figure 13 and Figure 14):

- *Motivational elements*, which include *motivation to learn*, *motivation to transfer*, and *expected utility;*
- *Ability elements*, which include *ability*, *transfer design*, and *linkage to organisational goals;*
- *Environmental elements*, which include *reaction*, *transfer climate*, and *external events*.

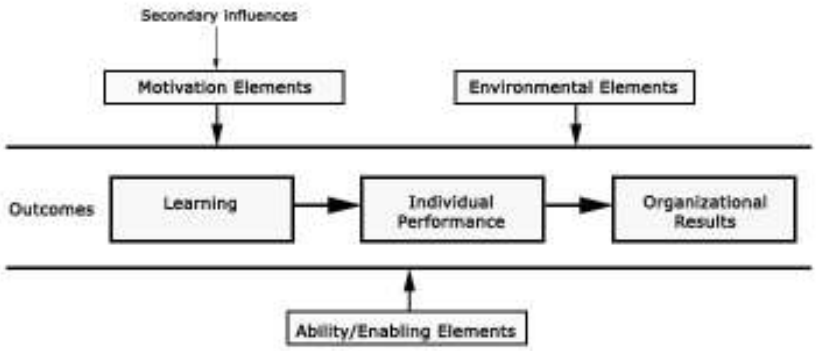

Figure 13: Holton's Conceptual Evaluation Model
Source: Holton III, 1996, p. 9

Primary intervening variables (*motivation to learn*, *motivation to transfer*, *expected utility, ability*, *transfer design*, *linkage to organisational goals, reaction*, *transfer climate*, and *external events)* are shown in boxes with arrows pointing directly to one of the outcomes. Secondary intervening variables (*personality characteristics*, *intervention readiness*, *job attitudes*, and *intervention fulfilment*) are linked by lighter arrows to the primary intervening variables (Figure 14). These secondary influences are hypothesised to have an indirect influence on *motivation to learn and motivation to transfer*. *Motivation to transfer* is, in turn, also influenced by *transfer climate and learning outcomes.*

According to Holton (1996, p. 13) "learning is expected to lead to individual performance change only when three primary influences on transfer behaviour are at appropriate levels". These three primary influences that Holton proposes are: a) *motivation to transfer*, b) *transfer conditions (environment)*, and *transfer design (ability)*.

Five types of factors influence motivation to transfer:

- *Job attitudes* refer to trainees' attitudes toward the organisation and the job: individuals with high commitment and job satisfaction are more likely to exert

effort to transfer and to perceive the rewards form transfer as having a higher valence;
- *Intervention fulfilment* is related to the degree to which the trainee's expectations about the training are met, and has a significant impact on post training attitudes. Trainees who perceive that a training course has met their expectations and fulfilled their need for performance-related learning will be more motivated to transfer learning into on-the-job performance;
- *Learning outcomes*: more successful learners are expected to feel better able to perform, and therefore, more motivated to transfer;
- *Transfer climate* is an important environmental element to influence *motivation to transfer* because trainees who worked in conditions supportive of training transfer are more likely to transfer their learning to the job;
- *And expected utility.*

Holton (1996) defends that organizations should not engage in interventions unless the *expected utility* or *payoff* warrants the investment that has been made. Training programs that have *expected utility* or exhibit a payoff to both the organisation and to trainees should result in greater *motivation to transfer* learning to the job. This idea is consistent with Vroom's (1964) expectancy theory (detailed in page 357), which states that individuals will be more motivated if they perceive that their effort will lead to rewards they value. Training courses with high utility to the organization are also more likely to have high utility to the individual if there is a link between rewards and contribution to the organization. According to Holton's (1996), a high *expected utility* of organizational results from performance change should result in greater *motivation to transfer* learning into individual *performance*, and, in turn, in greater *motivation to learn*. Thus, organizational results are more likely to occur when a training course has a high *expected utility* to both the *organization* and the *individuals*.

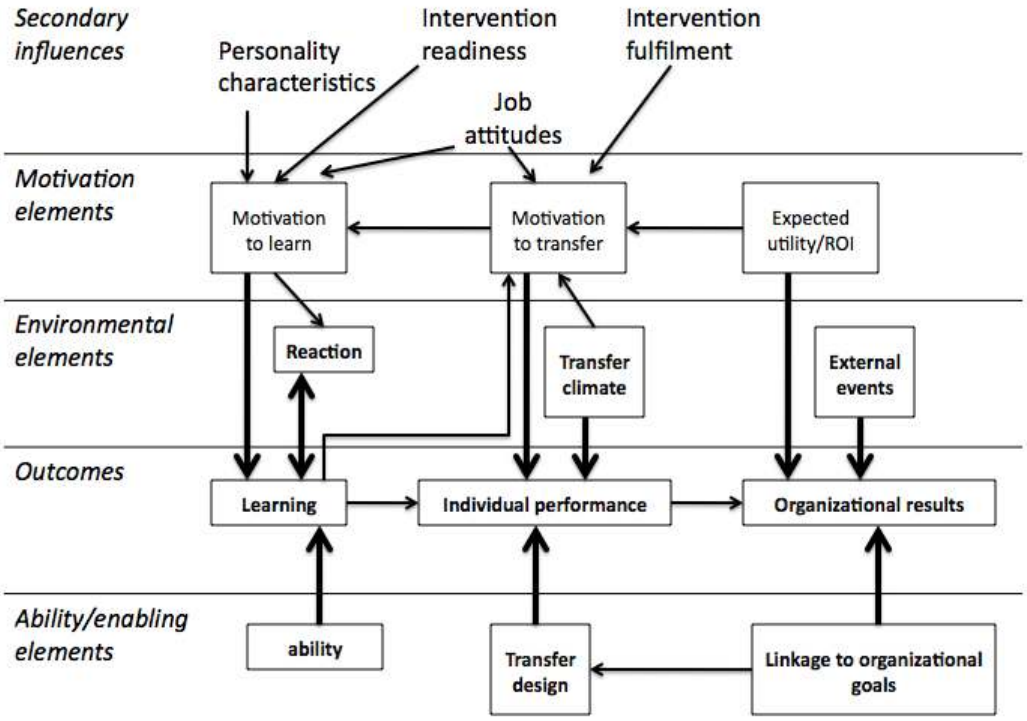

Figure 14: Holton's Model
Source: Holton, 1996, p. 17

Bates and Holton (1999) studied the relationship between *expected utility* and *motivation to transfer*, but in a context of an agency of social service. In their study, *motivation to transfer* was conceptualised, firstly, as a function of *utility* (or expectancy beliefs) about the extent to which learning is expected to have useful job applications; and secondly, as a function of rewards or the extent to which the application of learning on the job is perceived to result in some valued outcome for the individual. The authors concluded that *utility* is a significant predictor of *motivation to transfer* while *rewards* were not. Their findings are consistent with other studies (for example, Poon & Idris, 1985) that Baharim (2008, p. 18 of chapter 2) synthesizes, which defend that *extrinsic rewards* (such as money) are not enough to motivate employees to put into practice what they have learned in the course.

Besides Holton, other authors have been proposing similar models. Wexley and Latham (1981, quoted in Noe and Schmitt, 1986, pp. 498-499), for instance, define *trainability* as the degree to which training participants are able to learn and apply the material emphasized in the training program. Noe and Schmitt (1986, p. 498) complemented Wexley and Latham concept and describe *trainability* as a function of the trainee's *ability*, *motivation*, and *environmental favourability* [that is, trainability = *f* (ability, motivation, environmental favourability)], which is quite close to Holton's (1996) *primary influences*. Yet, the weight of each of these three influences may not be equally distributed.

Regarding the abilities, several studies quoted by Noe and Schmitt (1986, pp. 498-499) have been founding that they are not so important: even if trainees possess the prerequisite skills needed to achieve training objectives, performance in the course will be poor if *motivation* is low or absent. Specifically, only 16% of the variance in trainee performance may be attributable to ability. This means that *motivation* and *environmental* factors are responsible for the most use of what has been learnt in training courses. If we consider environmental factors constant (for instance, among the members of the same team, with the same job, within the same company), then *motivation* is the key primary influence.

This is consistent with Noe and Schmitt (1986) conclusions since the results of their study suggest that *job involvement* and *career planning* are *antecedents* of learning and behaviour change: Highly job-involved individuals are more likely to be motivated to learn new skills because participation in training activities can increase *skill* levels, improve *job performance*, and elevate *feelings of self-worth* (Noe & Schmitt, 1986, p. 502). Based on their conclusions, Noe and Schmitt (1986, p. 519) suggest that training funds may be wasted by forcing employees with low job involvement and lack of career interest to attend skill-improvement programs. These authors make explicit the relationship between *motivation* and *utility*. They combined expected utility variables (*transfer effort-performance expectations* and *performance-outcomes expectations*) with *pretraining* and *posttraining motivation*, to which they call *expectancies*. Figure 15 represents the two types of expected utility: *effort-performance utility* and *performance-outcomes utility*, as well as *pretraining* and *posttraining motivation* and the other two primary influences: *abilities* and *environmental* factors. The authors (1986, p. 508) found that expectations regarding *effort-performance* and *performance-outcome* were highly correlated with *motivation to learn*. These variables were combined by the authors into a 21-items measure of *pretraining motivation* and the items from the *posttraining* measures of *motivation to learn*, *motivation to transfer*, and *environmental favourability* were also combined to form a 21-item scale believed to represent

posttraining motivation.

Clark, Dobbins and Ladd (1993, quoted in Holton, 1996, p.16) found that trainees who perceived that the course has more job and career utility are more motivated. The correlation between *training motivation* and *job and career utility* were found to be 0.61 and 0.44, respectively, and to have significant paths in their structural model of training motivation. The results of Clark *et al.* (1993) study can be synthesized as this:

- The perceived *job utility* of training significantly predicts *training motivation*;
- The *involvement in the decision* of training results in higher perceptions of job and career utility;
- The credibility of the decision-maker affects the *job and career utility*;
- The supervisor climate of training transfer affects the anticipated *job utility*.

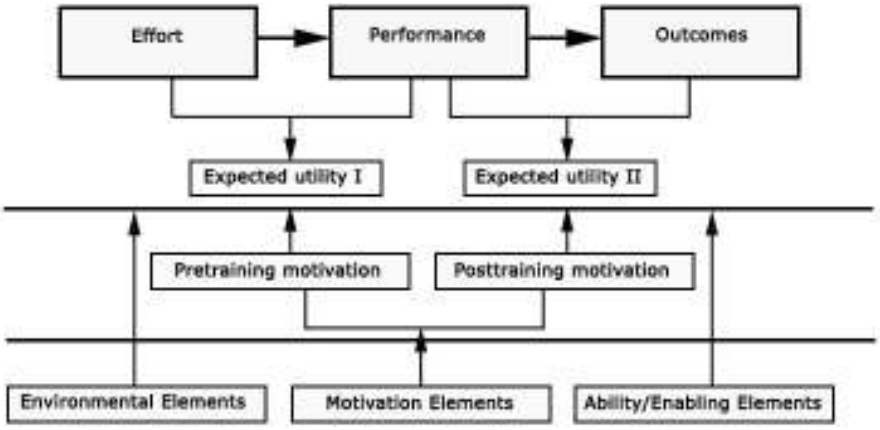

Figure 15: Expected Utilities and Motivations
Source: Adapted from Noe and Schmitt (1986) and Holton (1996)

2.5.3.5.5. Immediate *vs.* Future Utility

The present evaluation of the possible *future utility* is not an easy task, since it is different to make a judgment about something that is expected to exist in the future, and something that already exists. Dewey (1939) expresses similar concerns when he confronts what is expected to happen and what really happened. When differentiating *appraisal* from *evaluation*, Dewey (1939, pp. 20-21) stated that *appraisal* refers to something in the future that has not been accomplished but which shall or should happen, while *evaluation* refers to an accomplished fact (detailed in page Appendix 8). In that appraisal, the levels of motivation and *future utility* are taken into consideration.

The economic approach to *utility* deals with the different moments in time where utility will be effective, namely through present-value. In this approach, all future outcomes are discounted into the present moment in order to achieve a current value of that *future utility* and value is the (discounted) cumulative future return. This means that the longer the time frame between the moment of expected utility and the moment when the decision is made, more interference will exist. Moreover, in the economic approach, the precision of the calculation of future outcomes is questionable and several doubts arise regarding the most suitable opportunity discount rate.

Some authors alert to the predictability of *future utility*, and the maintenance of *current tastes*. Kahneman & Snell (1990, p. 133), for instance, claim that rational decisions about *delayed outcomes* require accurate predictions of *future tastes*, and the prediction of adaptation is an important part of the task. They argue that decisions cannot be made reasonably without considering the possibility of *tastes* and *sensibilities* being modified by continued exposure. Moreover, *unpredictable tastes* must be taken in consideration. Yet, the individual's ability to predict her future tastes is quite poor and the correlation between actual and predicted changes in liking is close to zero, although that is not enough to say that people cannot predict future tastes.

Loewenstein, O'Donoghue, and Rabin (2003) claim that individuals exaggerate the degree to which their *future tastes* will resemble their *current tastes*. These authors demonstrated the prevalence of such *projection bias* and showed that, when people exhibit habit formation, projection bias leads them to consume too much early in life, and to decide, as time passes, to consume more (and save less) than originally planned. Projection bias also leads to misguided purchases of durable goods. The same is to say that people are too optimist about *future utility*. In a training context, this may mean that people tend to enrol in training courses having in mind a too-optimist *future utility* of that experience.

Kahneman & Varey (1991, p. 141) brought into this discussion relevant factors such as *prior experience* and the ability of *future retrieval*. They argue that utility should be viewed as a dimension of *experience* and, as such, it is expected to obey the usual laws of *perception* and *memory*. They also point out two sets of factors that are likely to affect the experience utility: the history of *prior experiences* and the *context* to which the relevant object, state, or event will be compared. *Immediate utility* is not only easier to appraise but is also less uncertain and with less risk than *future utility*, which sounds as a hypothetical occurrence. In addition, *future utility* also includes retrieving problems that we will approach next.

2.5.3.5.5.1. Retrieval and Future Use

There might come a moment in time where the good or service will reveal its utility. When (and if) that happens, the good or service becomes *useful* and a concrete *use* is given to it. As we discussed previously (page 90) *utility* is different from *use*: the former is like a goodwill that is put on a good or service while the latter is more related to the actual and effective objective application. *Use* is largely dependent on the environmental factors and on the ability to retrieve knowledge, skills, and attitudes. Considering the environmental facts unchanged, if the moment of use is in the future, the ability to use depends on the ability to retrieve information. *Future use* differs from *immediate use* not only in the chronological moment, but also in the effects that a longer *retention interval*, defined as the period of time between the end of the learning course and the retrieval situation, has in the *retrieval situation* (Thalheimer, 2007, pp. 8-9) (Figure 16) .

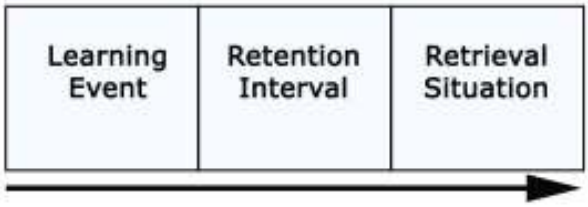

Figure 16: Retention Interval and the Retrieval Situation
Source: Thalheimer, 2007, p. 9

This process of retrieval depends on many factors such as the closeness between the *context of use* and the *training context*, the *duration* of the retention interval, the adequacy of the assessments made during the training course to the predicted situations they are designed to support (Thalheimer, 2007), and, even, as Radvansky, Zacks, and Hasher (2006) refer, on *age* and *inhibitory processes*.

Thalheimer (2007, p. 6) describes the effects that the passage of time has on the retrieval process: The more time passes by, the less likely is that learners will be able to retrieve the information they acquired. In other words, traditional learning and forgetting curves are not very generous to *future use*. Retrieval achieves its maximum point immediately at the end of the training course (point B in Figure 17). From this point forward, retrieval performance will decrease along the forgetting curve (down along segment BC and forward) if the learners do not immediately utilize what they have learned (immediately in point B or later in time in point C).

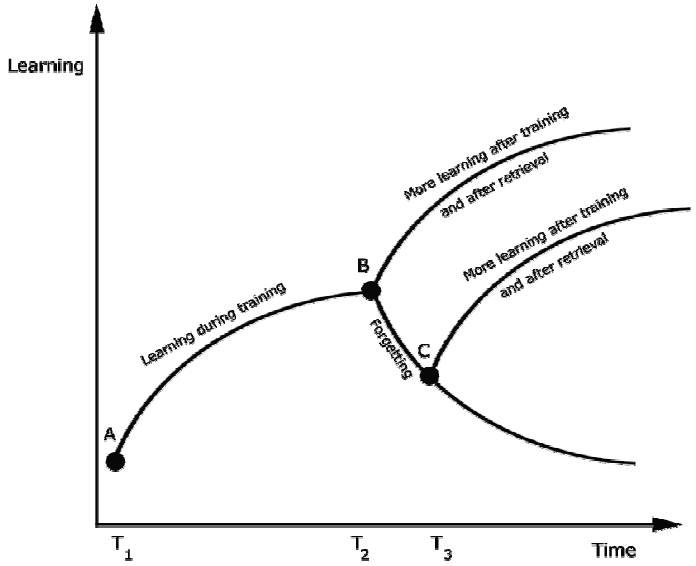

Figure 17: Learning and Retrieval
Source: Adapted from Thalheimer, 2007, pp. 9-11

One conclusion that Thalheimer (2007, p. 8) draws from this is that measuring retrieval at the end of the training course will produce an *inflated prediction* of *future retrieval*. If his line of thought is true, quality perceptions measured after the training course will also be inflated and optimistic and will tend to decrease in the long-term. Therefore, learners may become overly optimistic about their ability to remember in the future, and, consequently, about the possibility of future use, i.e., the *perceptions of future utility* may be too optimistic and if *quality* is dependent on *future utility*, those perceptions of *quality* can also be inflated.

The *length* and *deepness* of the training course also provide inputs to the forgetting curve. On one hand, longer and deeper courses tend to include a lot of knowledge, skill development, and attitude formation that tend to not be used, and therefore, tend to be forgotten. If a large percentage of the course is not used, then the training course is not *fitted for use* (Juran, 1951), and the perception of quality will be low. On the other hand, short and very specific training courses are focused on a small content, or a specific skill, or attitude. The right context will provide the opportunity for those learning outcomes to be retrieved and used, and, therefore, the perceptions of quality will be high. Yet, assuming everything else is held constant, there are not as many chances of retrieval as in longer and deeper courses, and, so, short courses are riskier, in terms of quality, than long and deep courses.

2.5.3.5.5.2. Multiple Uses: Spacing Fan and Inhibition Effects

If multiple *uses* are considered, then the learning effect, obtained from the experience of each use, will increase learning, and a new stage of knowledge will be achieved. Whenever a new use occurs, a retrieval situation happens, the retention interval is refreshed, and the probability of having another retrieval situation and another use increases.

Zechmeister and Shaughnessy (1980) studied the effects of the time between each use, called the *spacing effect*. They found that widely-spaced *repetitions* (that is to say, *uses*) are more effective than narrowly-spaced repetitions. Narrowly-spaced repetitions give learners greater confidence but they actually recall narrowly-spaced repetitions less highly than widely-spaced repetitions. If their conclusions hold true in *use* and *experience* contexts, then, immediate repetitions of use cannot minimize forgetting as much as widely spaced repetitions of use, which is contradictory with the learning effect of each use. Yet, if each context of use is different from the learning context and the context of each previous use, then the ability to transfer previous knowledge and adapt it to the current context is more important than the volume of uses or the spacing effect. Moreover, vital impulses and acquired habits often operate without the intervention of an end-in-view or a purpose (Dewey, 1939, p. 39) and can become so routined that no reflective thought is made upon them, which will hinder even the consciousness of use.

The *fan effect* (J. R. Anderson, 1974; J. R. Anderson & Reder, 1999) explains the ability of the brain to optimize memory retrieval by keeping better access to memories that are more likely to be relevant. The *fan effect* states that the amount of time required to retrieve a particular fact about a specific concept tends to increase with the number of facts that are known about that concept. This *fan effect* is usually held responsible for the slowing down of memory retrieval with age, as the number of facts that are known about a specific concept tend to be higher.

Besides the known facts about a concept, *age* also influences memory retrieval. Younger individuals have a higher *inhibition effect*, which is the ability to suppress related but irrelevant facts during long-term memory retrieval, whereas older ones have smaller inhibition effects, i.e. older individuals are less effective at suppressing irrelevant information (Hasher, Zacks, & May, 1999; Radvansky *et al*., 2006). The *fan effect* and the *inhibition effect* are negatively correlated (Radvansky, 1999), as the former tends to increase with age and the latter one tends do decrease.

Even though *retrieval* situations are crucial, in terms of quality concerns, because they enable *use* (which, in turn allows positive perceptions of *fitness for use*), the causal relationship between the *retrieval situation* and the *correct use* is not perfect. Let's assume, for instance, a training course that is focused on knowledge about labour legislation. Longer retention intervals will increase the probability of, in face of a retrieval situation where labour legislation has to be applied, that knowledge having become obsolete as new legislation had been released since then. This means that not only there is a decreasing forgetting curve, but there is also an *expiration deadline*, especially if the training outcome is knowledge and not skills or attitudes, and that current expectations about *future utility* may be too optimistic and never become *use*.

Chapter 3
Research Objectives and Approach

We conducted a case study at EVOLUI.COM, a Portuguese company that provides short-term courses in e-learning. The case study was based on mixed methods to address the main dimensions of quality in e-learning courses. In order to triangulate and explore different related variables, we collected different but complementary data using different approaches.

We initiated our research with a participant observation, which was combined with interview, to explore the phenomenon of quality in e-learning courses. Based on the major conclusions of this qualitative study, we conducted two quantitative studies. The first one was used to test the hypothesis that utility is an important dimension of e-learning quality and to determine the influence of several variables on perceptions of quality and the major *factors* of quality. The second quantitative study was used to confirm the hypothesis that, like perceptions of quality, the perceptions of value are also related to utility. This study was also used to explore the motivational profile of the trainees, namely the relation between financial sacrifice and their presence at training events with quality and utility. The reason for collecting both quantitative and qualitative data was to bring together the strengths of both forms of research and validate results.

3.1. The Choice for Mixed Methods

We combined both qualitative and quantitative data in our study. For many years, researchers have put both forms of data together in the same studies but did not consider that as a distinct research design or methodology.

Some authors (Erzberger & Kelle, 2003, pp. 459-462) argue that mixed methods designs evolved from the notion of 'triangulating' information from different sources. Denzin (1970, p. 119), for instance, suggests that there is a false dichotomy between qualitative and quantitative data, and defends the usage of multiple methods as a final methodological rule to which he calls triangulation (1970, p. 26).

Creswell and Clark (2007, pp. 1, 4-7) claim that mixed methods research can be called a methodology, as "it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process" (p. 7). Tashakkori & Teddlie (2003, p. x) recall that eminent social and behavioural scientists conducted mixed methods research throughout the 20th century, but it was only during the last decade of that century that researchers began giving unique names to their designs. According to Creswell and Clark (2007, p. 7) mixed methods involve both collecting and analyzing quantitative and qualitative data, but this mixture has that privileges of being an autonomous philosophical approach to research. These authors suggest that the mixing may occur in three ways: merging or converging the two datasets by actually bringing them together, connecting the two datasets by having one that builds on the other, or embedding one dataset within the other so that one type of data provides a supportive role for the other dataset (Figure 18). They also argue that it is not enough to simply

collect and analyze quantitative and qualitative data; they need to be "mixed" in some way so that, together, they form a more complete picture of the problem than they do when standing alone.

Our case study is based in mixed methods: we collected and analyzed qualitative data that was used to design the quantitative study. Not only the studies we carried out were chronologically ordered (first the qualitative and then the quantitatives), but the quantitative studies were the natural consequence of the qualitative study and intended to go deeper into some issues that were brought to our attention in the qualitative study.

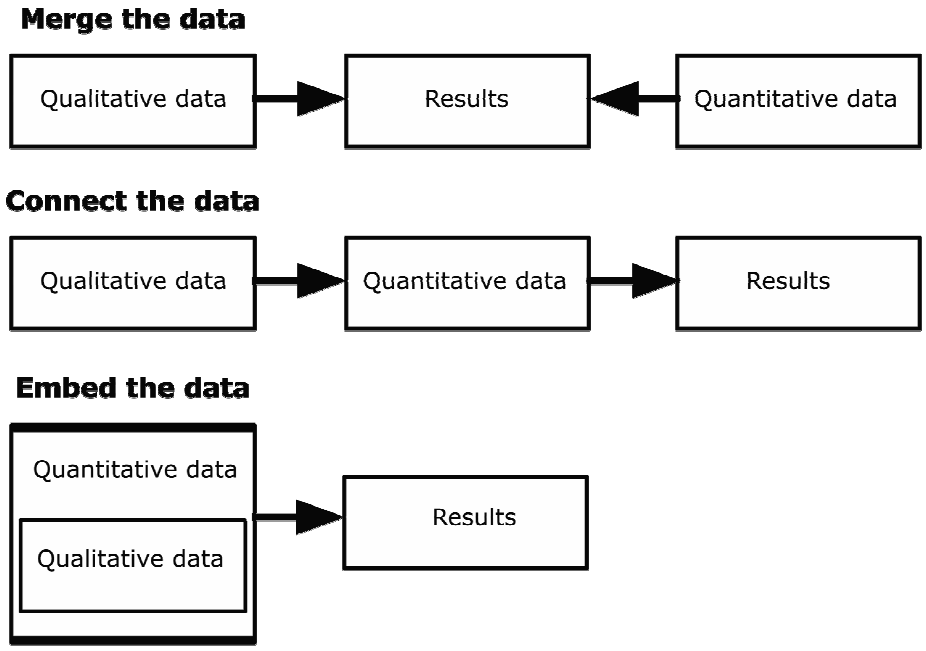

Figure 18: Three ways of mixing quantitative and qualitative data
Source: Creswell & Clark, 2007, p. 7

3.1.1. The Qualitative Approach as the Starting Point

Our research had its starting point on a qualitative approach to the quality of e-learning.

We selected a qualitative approach to start the research for several reasons. First, because e-learning services combine educational paradigms with technological ones and we were not sure what the predominant paradigm was: studying the quality of e-learning services requires looking for service quality management, educational and learning paradigms and, finally, technology development and maintenance quality issues. It was not clear what the dominant part was: the service itself (the learning inducing event or the delivery method), the fact that the learning process is not promoted in traditional ways, within a classroom, or the effect that the combination of both has in the final quality perception. Starting with a qualitative approach guaranteed the openness and flexibility needed (Sørensen, 2001) to welcome all kinds of possible quality dimensions.

The second reason for choosing qualitative research methods was that most of the studies dedicated to the quality of services usually create questions that are assumed to

be related to some dimension's taxonomy, and then apply factor analysis to responses to confirm or not that those questions are related to those dimensions. Those initial dimensions usually are the result of exploratory qualitative studies and are later confirmed with quantitative studies.

The third reason for using qualitative research methods was that, as is made clear in Appendix 6, there has not been enough qualitative research in e-learning, and that would contribute to the innovative side of this work.

The last reason was that quality evaluations, in themselves, are based on perceptions and are highly subjective. We cannot force a definition of quality on the respondents, but rather ask for descriptions of quality in the common consumer's vernacular, without any formal academic language or technical vocabulary (e.g. recovery, responsiveness, or reliability). Customers express quality evaluation in their own words, and not in scientific or technical terms.

3.2. The Choice for Multiple Studies Within a Case Study

3.2.1. Case study Research

A case study is a specific instance that is frequently designed to illustrate a more general principle (Nisbet & Watt, 1984, p. 72, quoted in L. Cohen, Manion, & Morrison, 2007, p. 253). Case studies are very popular because they provide a unique example of real people in real situations. In fact, one of the strengths of case studies is that they observe effects in real contexts, recognizing that context is a powerful determinant of both causes and effects (L. Cohen *et al*., 2007, p. 253). They are created within a specific temporal, geographical, organizational, and social context that makes them well delimited and unique. This means that generalizations are not possible. Even so, some authors, as L. Cohen *et al.* (2007, p. 254-257) defend that generalizations can also occur in case studies.

Even though there are several taxonomies of case studies (for instance, Merriam, 1988; Robson, 2002; Stake, 1995; Sturman, 1999) we can say we made an *exploratory* case study (Yin, 1994, pp. 3-7) dedicated to determine *what* are the most important dimensions of quality in e-learning.

3.2.2. Embedded Case Study Design

In designing and conducting case studies, various tactics are available. Yin (1994, p. 39) considers four types of designs (Figure 19). Each type includes the analysis of contextual conditions, which he represented by the dotted lines between the case and the context. Single- and multiple-cases studies reflect different design situations and that within these two variants, there also can be a unit or multiple units of analysis. The resulting four types of designs for case studies are single-case (holistic) designs, single case (embedded) designs, multiple-case (holistic) designs, and multiple-case (embedded) designs. We used a single-case (embedded) design: we collected qualitative and quantitative data in multiple studies over time, either using one or another approach, rather than collecting both qualitative and quantitative data in the same unit of analysis.

Single cases are a common design for doing case studies. Yin (1994, pp. 40-46) recalls that the single-case study is an appropriate design under several circumstances, which are present in our case: our case is critical and representative, which can be considered *revelatory* (as the researcher has the opportunity to observe a phenomenon that is inaccessible to scientific investigation), and provides opportunities to longitudinal analysis. Our case study involves more than one unit of analysis, and, therefore, it can be called an embedded case study design.

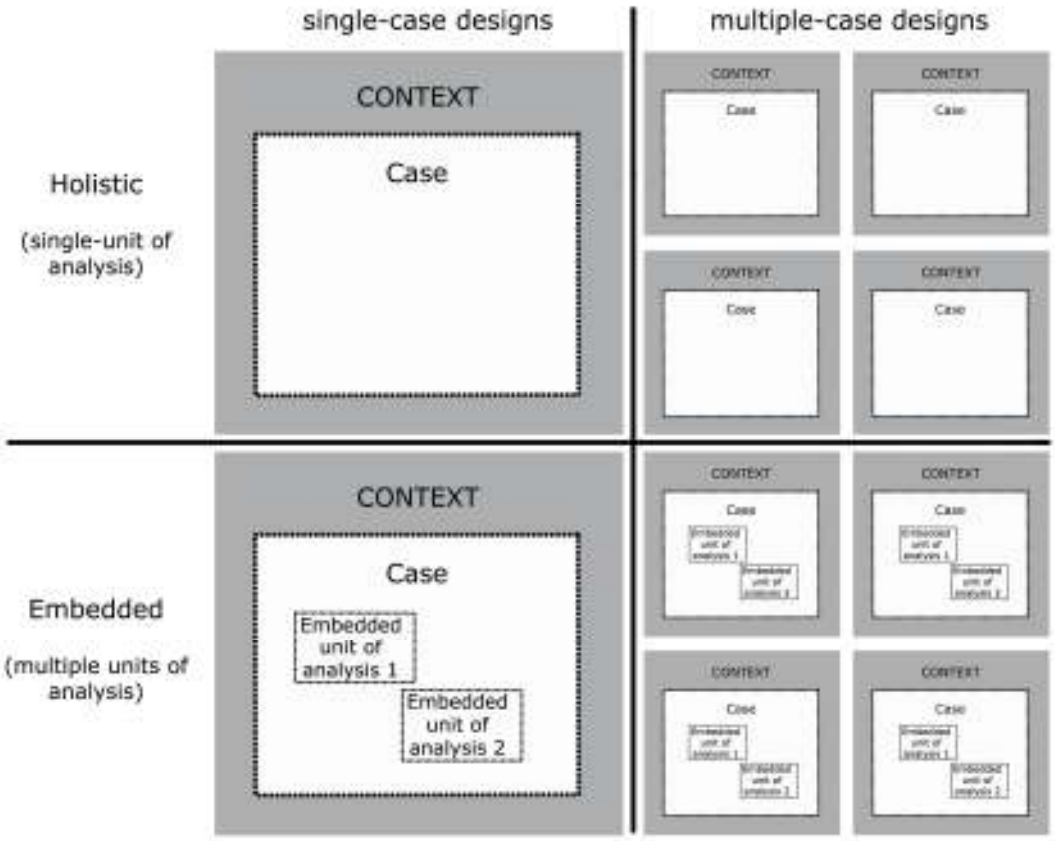

Figure 19: Basic types of designs for case studies
Source: Yin, 1994, p. 40

3.2.3. EVOLUI.COM as the Case Study

We focused our study on clients of EVOLUI.COM (available at www.evolui.com), a Portuguese e-learning service provider.

The choice of this provider rested on several reasons:

- It is one of the oldest and most experienced e-learning providers in Portugal (it was founded in 1999, after two years of experiments with an e-learning service provider called DIGITO Formação);
- No conflicts of interests exist between the author of this thesis proposal and the company's stakeholders;
- It has a diversified courses portfolio with more than 160 online courses available and more than 50.000 registered users, most of them with several

purchases, providing a good source of 'experienced' clients.
- Unconditional and free access to the clients' database was guaranteed as well as total freedom to make the studies;
- Technical resources were available to adapt the current platform to the planned research, to provide evidence to document and to allow external validation and external audits to the study.

Due to ethical concerns, it is worth mentioning that the author of this thesis has full management privileges in the company.

As Taylor and Bodgan (1984, p. 19) refer, the ideal research setting is one in which the observer obtains easy access, establishes immediate rapport with informants, and gathers data directly related to the research interests, but such settings seldom exist. They recommend that researchers stay away from settings in which they have a direct personal or professional stake. They report that novice observers tend to want to study friends and familiar surroundings and that when one is directly involved in a setting one is likely to see things from only one point of view. Yet, the recommended distance is sometimes incompatible with the need of access. Participant observers usually gain access to organizations by requesting permission from those in charge, also called *gatekeepers* (H. S. Becker, 1970, quoted in Taylor & Bodgan, 1984, p. 20) and these often close their 'gates', especially in our case, as they perceive the researcher as a competitor. This access and closeness *versus* distance question is not very clear in the literature. Although researchers are advised to stay away from familiar contexts, some authors recommend researchers to involve themselves with the community, hang out, make friends, and develop social relations with potential respondents (Taylor & Bodgan, 1984, pp. 23-24).

3.3. Research Questions and Purposes Statements

E-learning services are relatively new and combine educational characteristics with technology that supports the learning process and the training delivery. Our main objective was to know **what a high quality e-learning course is** and what the **main quality dimensions of e-learning courses** are.

Several additional questions were also addressed, namely:

- Do perceptions of quality have an asymmetric distribution?
- Do customers tend to focus their perceptions of quality more on content related issues than on the learning experience?
- Can we differentiate the dimensions of quality that are related to the training *process* from those that are related to the training *results*?
- Are quality and satisfaction related in any way?
- Are quality perceptions a long-term attitude?
- Do quality perceptions depend on who pays for the course?
- Does motivation influence the perception of quality?
- Does the financial sacrifice influence the motivation and the perception of quality?
- Is there any construct that is common to *quality* and *value*?

We started addressing these questions with an exploratory qualitative study. In this study we had the following purposes (Creswell & Clark, 2007, pp. 97-103):

- To understand what kind of issues do trainees refer when they describe what is important in terms of quality in an e-learning course;
- To explore each of those items, promoting a discussion around it to get the most extensive description possible of it;
- To identify the most important dimensions of quality in e-learning courses in order to conduct a quantitative study after it;
- To describe the most quoted quality dimensions in a way that the reader feels as she was present when the discussion occurred;

For our first quantitative study, our purposes, inspired by the results of the qualitative study, were:

- To confirm that perceptions of quality and global satisfaction have asymmetric distributions;
- To identify the variables that explain most of the *variability* of perceptions of quality;
- To identify the most significant *factors* of quality;
- To distinguish what kind of utility (immediate or future) is more relevant in terms of perceptions of quality;
- To identify the differences in terms of utility regarding the gender of the subjects and the type of course;
- To verify if the perceptions of quality are different according to who pays for the course;
- To understand the role of motivation in the process of evaluating quality;
- To identify the duration of the courses that maximizes the perception of quality;
- To explore the differences in terms of perception of quality and utility in a specific course that has idiosyncratic characteristics.

For the second quantitative study, our purposes were:

- To identify the type of value that is associated with an e-learning course;
- To check if perceptions of value are related to perceptions of utility;
- To identify the main motivational drives of the trainees and their attitudes towards training;
- To understand the role of utility in the presence or absence of training.

3.4. Research Design Details

3.4.1. The Subjects of Study: The Respondents

The subjects of our study were not potential trainees but rather actual clients/trainees of EVOLUI.COM: they were participants in an online training course that they had paid for.

Respondents were not invited to participate in this PhD research. They were not informed that online discussions would be used for this research, or that the surveys they answered were more than 'reaction surveys' or 'motivational

surveys'. As we will discuss later, several reasons accounted for this decision:

- EVOLUI.COM's general service conditions anticipate the usage of every kind of data collected during the course for research purposes;
- If they had been informed about the research purposes, that could have influenced their behaviour or their opinions and the way they expressed themselves;
- The kind of questions they were asked was perfectly contextualized and could not be considered purposeless in the context of a training course or in the context of the specific training course that they were attending.

In the qualitative study that we carried out initially we intended to focus our attention on clients that already had purchased and attended several courses in an e-learning format, to avoid disturbing factors as novelty, technical difficulties, loneliness, and unrealistic expectations among others, and because service quality is a long-term *attitude* (Cronin Jr. & Taylor, 1994; Oliver, 1981). Yet, we realized that even novices had relevant contributions to give and that even though they had no prior experience, they had *expectations* on what the quality of an e-learning course should be. Even so, in the qualitative study most respondents were training professionals – clients who, one way or another, were connected to human resources development and training. This included general managers, human resources managers, talent managers, training managers, trainers, and teachers. This was not a selection that we have made but we had predicted that this might happen, as we used pedagogical courses to conduct our qualitative research.

We believe that our research was enriched by this fact because we were able to interview professionals who have experience in planning, organizing, executing and auditing training events, and, therefore, are aware of the training process and of small details that can make a difference in terms of quality. Yet, in that context, they were still trainees who were attending a course, customers who, at that specific moment, were looking for additional competences, as all the others. The fact that most of the respondents were training professionals added some useful insights on e-learning quality and provided a more global approach to e-learning quality.

In the quantitative studies, respondents had a tremendous variety of occupations and experience, which is representative of the profile of EVOLUI.COM's clients.

3.4.2. Sample Size

Although we defend the use of qualitative research as the basis of this research project, concerns with sample size were considered pertinent and were attended to.

Since what is collected in qualitative studies is in-depth information, sometimes it is wrongly believed that there is no need to guarantee a significant number of respondents. In fact, there is some logic in the belief that very large samples may even be an obstacle to getting "in-depth" and miss the opportunity to analyse each respondent carefully. But the opposite is also true, and the lack of sufficient respondents has also to be avoided. Some literature refers that the optimal sample size in qualitative research not only depends on the subject investigated, but also on the judgment and experience in

evaluating the quality of the information collected and the particular research method used (Sandelowski, 1995). The minimum number of respondents is "as many as necessary to find out what you need to know (Fink, 2000, quoting Kvale, 1996, p. 101).

In our initial proposal we had expected to use 40-50 respondents in the qualitative study. As we will detail later (page 132), we have collected 2398 messages that were posted in the online forums by 210 trainees. Of these, only the contributions of 44 trainees were considered. These respondents were not chosen by the researcher. We believed that the professional interest in the courses, in general, and in training related issues, in particular, would lead the respondents to purchase the e-learning courses and participate in the research project. The price, as well as the topics planned for the courses, we hypothesized, would also be good filters to select respondents.

In the qualitative study, respondents were handled in batches: each group corresponded to an edition of an e-learning course. Groups co-existed during short periods of time but were unable to interact with each other.

There are several scientific concerns with the small sample size that usually is used in qualitative studies. Those concerns are related to the representativeness of such a small sample and its ability to represent the whole population. In order to deal with these concerns, we reinforced the sample size in the qualitative studies and almost 4.000 answers were collected (2741 in the first quantitative study and 1237 in the second).

3.4.3. Context of Research and Techniques to Collect Data

We used EVOLUI.COM's website and platform to collect the data. In the qualitative study, our research was conducted within the online forums provided in the e-learning courses. For this purpose, we only considered pedagogy-related courses, since EVOLUI.COM has more than 300 editions every month and it would be impracticable to conduct a qualitative study in all of them.

As we discuss later, in this qualitative study we combined participant observation and interviewing techniques to collect the data: within each group, the online forums were conducted to promote the discussion on quality-related issues. Messages from respondents were used to promote in-depth questions about the issues mentioned. This approach has some characteristics of individual and group in-depth interviews, but, as, sometimes, we just 'seated and watched' the discussion between the trainees, it also has characteristics of an ethnographic observation.

In the quantitative studies we used surveys, as we will justify later (page 145). The first one was given to the trainees at the end of the course (page 145). The second one was included in the welcome class that EVOLUI.COM offers to every customer (page 227).

3.4.3.1. The Protocol of Qualitative Research

The development of a protocol of investigation is important for several reasons: First of all, as data collection procedures are not routinized, some experimental and discretionary behaviour and data collection techniques may be used, and adaptability and flexibility are necessary. At the same time, it is fundamental to ensure that the data

collection guarantees answers to the research questions. In fact, as Yin (1994, p. 69) defends, the protocol helps to keep the investigation targeted on the subject of the case study. It is also provides the instrument, as well as the procedures and general rules to be followed in data collection. In addition, the protocol helps to differentiate between different *levels of questions* (Yin, 1994, pp. 74-75) – for instance, research questions, questions that are to be asked to multiple cases, and specific interviewees questions. It also forces the investigators to anticipate several problems that may occur during the data collection process or even in the research design. And finally, because the existence of a protocol is an especially effective way of dealing with the overall problem of increasing the reliability of case studies (Yin, 1994, p. 57).

Even so, a protocol, is very rigid (Yin, 1994, pp. 67-77) and formal. Because of that, we decided to use three instruments:

- Our PhD thesis proposal, which included several procedures that were planned and a clear schedule of the data collection activities that were expected to be completed within specified periods of time;
- EVOLUI.COM's guidelines for tutoring; and
- An informal document, which includes a set of substantive questions that reflect our line of inquiry, which Yin (1994) calls the "the heart of the protocol" (p. 73). This document includes, as Yin (1994, p. 74-75) suggests, the questions that were posed to us, as researchers, and not to the interviewees. We did not expected to keep a stable and standardized set of questions and strategies to collect data, but we created a starting kit of questions that we could use.

3.4.4. Transcribing and Analysing Stages

After collecting the data in our qualitative study, the next step was the transcription of the recordings. This task was facilitated as opinions and comments expressed by respondents were written in the forums and these were kept.

The current literature helped us understand and interpret opinions expressed. As Kvale (1996, p. 165, quoted in Fink, 2000) argues, transcripts "are not copies or representations of some original reality, but interpretative constructions that are useful tools for given purposes. Transcripts are decontextualised conversations, they are abstractions, as topographical maps are abstractions from the original landscape from which they are derived". Therefore, this interpretative construct work also depends on the researcher experience, dedication, objectiveness, and interpretation skills. The analysis of the transcripts was made periodically, and not at the end of the data collection stage, and, systematically, transcripts were categorized and labelled with attributes that were further explored in the following group of respondents. At the end of the transcribing stage we had rich descriptions made of words, expressions and phrases that synthesized this interpretative work. The interpretative analysis was made with the support of NVIVO®.

Regarding the quantitative studies, the data, which was recorded directly by the trainee into a SQL database, was later analyzed with the help of SPSS. Even though quantitative studies are more objective, in our quantitative studies there is also an interpretative task, either regarding the labelling stage of factor analysis, or regarding the possible causes of some quantitative-based conclusions.

We ran the quantitative analysis in several moments in time, while the collection proceeded, and several preliminary and, consequently, longitudinal comparisons, were made.

3.4.4.1. The Researcher's Role

Although the data in the qualitative study was collected from the messages that trainees posted on online forums, its interpretation depended much on perceptions and on the construction of meaning that was made, and was, therefore, subjective. The researcher's good sense and experience are crucial to the quality of the output. We recognize that the researcher can, without purpose, distort meanings, influence respondents, and make misinterpretations, and cannot be completely objective although an effort must be made to reduce subjectivity, since it undermines credibility, as referred by Sørensen (2001).

The researcher's own experiences and insights are an important part of the inquiry (Sørensen, 2001) and in this case the researcher's experience as a trainer is extensive and no problems related to the trainer function, the environment, or related rules were reported. The researcher's experience as an online trainer was not only a guarantee that some problems would be avoided, but it also provided trainees some help in expressing their opinions, which strengthened the research.

In the quantitative studies, the researcher's role was constrained to the design of the instrument of data collection and to the analysis of the data, although, as discussed previously, there was also some interpretative work.

3.4.5. Verification Concerns and Final Report

The 'final' report was the result of several preliminary drafts of conclusions that we kept gathering while we were collecting and analyzing the data, and was not a solo, decontextualized, and orphan document. It includes responses that can be illustrative and elucidative and can exemplify the general opinions, perceptions, and attitudes of respondents, or the major statistical conclusions, but it focuses on the essential points of our research. As we discuss in the conclusion, several other paths of analysis could be made with the same data.

In the same way that qualitative and quantitative studies analysis had preliminary analysis, made in specific moments in time, while the collecting procedures were still running, we also kept verification concerns during the process of collection and analysis of the data. Although the verification of the data analysis is to be made throughout the process, it is inevitable to provide a general verification of that analysis before reporting findings. This verification stage has three major concerns (Fink, 2000):

- Generalizability: the ability of findings to be extended beyond the case being studied;
- Reliability: the consistency of findings/results;
- Validity: to assure that the study in fact investigates what was intended (Table 26).

We focused our attention in the reliability and validity concerns, as there was no

intention to generalize any conclusion.

Validity Concern	Concern
Theoretical meaningfulness of concept	Constructs well defined Making theoretical sense
Observational meaningfulness of concept (content validity)	Measures correspond to theoretical constructs
Internal consistency	Maximally similar measures of the same construct agree (i.e. reliability)
Discriminant validity	Distinct constructs can be distinguished
Convergent validity	Maximally dissimilar measures of the same construct correlate (e.g. does a collection of questions on a questionnaire correlate with an overview question, or with some objective measure?)
Nomological validity	Making sense in the larger theoretical framework

Table 26: Validity concerns
Source: Based on Bagozzi (1980) and Bagozzi and Phillips (1982), both quoted in Loiacono *et al.* (2000)

3.4.6. Cronogram of Research

Our time schedule had several milestones, which are described in Table 27.

Milestone	Description
From September 2006 until December 2007	- Review most of the State-of-the-Art; - Prepare and promote all the training courses that were planned to use in the qualitative study; - Design de qualitative protocol of research; - Start the collection of qualitative data. This process of collecting qualitative data turned out to be extended until June 2008;
From March 2008 to March 2009	Collection of quantitative data using surveys designed in conformance to the preliminary conclusions of the qualitative study.
Until December 2008	Transcription, analysis, verification, and reporting of final findings of the qualitative study.
From March 2009 until July 2009	Analyzing and reporting final findings of both quantitative studies.
Until September 2009	Updating and reviewing State-of-the-Art.
Until December 2009	Revising the thesis and “last-minute” changes.

Table 27: Cronogram of research

Chapter 4
Empirical Research

4.1. Quantitative Data Analysis

4.1.1. General Description

Our empirical research started with an exploratory qualitative analysis of messages posted in forums of e-learning courses (Figure 20) by 210 trainees of 45 editions of five specific online courses that took place between August 2007 and June 2008. The e-learning courses considered were "training management", "e-trainers workshop", "implementation of quality and satisfaction systems in training programs", "training evaluation", "public communications and presentation techniques", and "EVOLUI.COM's internal trainers' training program". We collected 2398 messages from 210 trainees, but only 104 messages from 44 trainees were considered relevant for the purposes of our investigation, as we explain later (page 132).

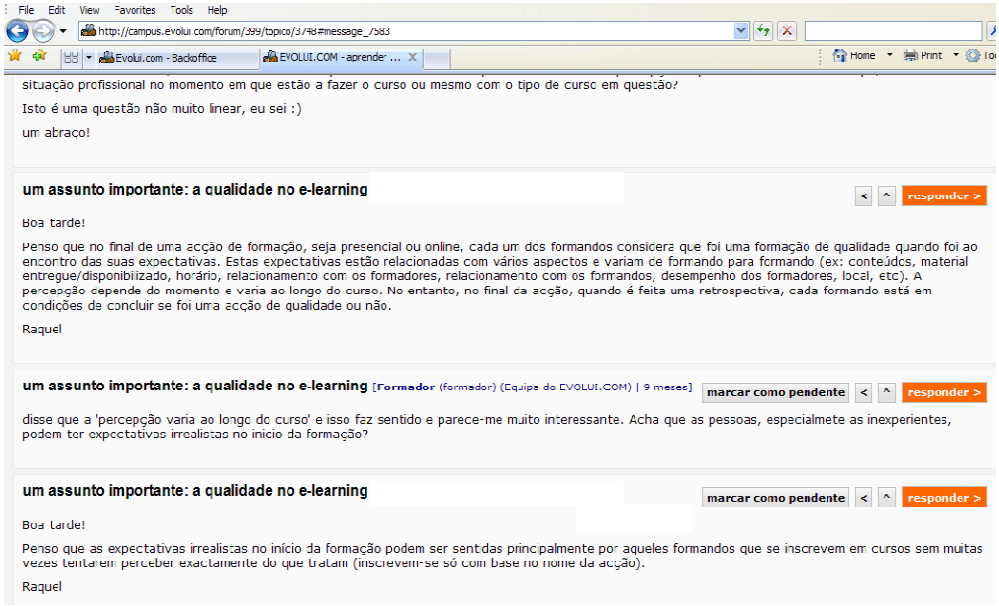

Figure 20: Example of a forum where testimonies were collected

4.1.2. Research Design

4.1.2.1. Informed Consent and Confidentiality

Trainees were not informed of our research intentions for several reasons:

- First, because informed consent and confidentiality are made explicit in the general rules of service that all clients must accept or decline during the registration phase, so, there was no need to ask for additional consent for this specific research. Taylor and Bodgan (1984, p. 25) defend that is unwise to give

details concerning the research and the precision with which notes will be taken, and that if respondents knew how closely they were going to be watched, most people would feel self-conscious in the presence of the researcher. These authors suggest a "be honest, but vague" approach (p.27);

- Second, because the type of questions that we asked was somehow related to the course that the trainees were attending. This also explains why we chose these courses, and not others, from EVOLUI.COM's portfolio;
- Third, the researcher was the trainer - a *participant observer* (Taylor & Bodgan, 1984, p. 15) so no third parties were brought into the training process, in which case trainees would be alerted to the presence of the observer;
- Forth, because we wanted respondents to speak openly, minimizing the risk of having a biased response; and
- Finally, because personal confidentiality was kept without jeopardizing the ability of auditing the collected data, since each trainee is identified only by her customer number at EVOLUI.COM. All forums were kept and the full name of the customer is there identified, and personal and payment data can easily be tracked down. We refer trainees' citations by their client number, only. As Patton (1990, p. 273) recalls, those who advocate covert research usually do so with the condition that reports conceal names, locations, and other identifying information, so that the people who have been observed will be protected from harm or punitive action.

Researchers have expressed a range of opinions concerning the ethics and morality of conducting covert research. A traditional concern about the validity and reliability of observational data has been related to the effects of the observer on what is observed. People may behave quite differently when they know they are being observed *versus* when they do not think they are being observed. Thus, the argument goes, covert observations are more likely to capture what is really happening than overt observations, where the people in the settings are aware they are being studied (Patton, 1990, p. 269).

4.1.2.2. Types of Observation

According to Angrosino (2005, p. 732), there are three main ways in which social researchers conduct observation-based research. Despite considerable overlap, it is possible to distinguish among:

- *Participant observation*, grounded in the establishment of a considerable rapport between the researcher and the host community, and requiring the long-term immersion of the researcher in the everyday life of that community;
- *Reactive observation*, associated with controlled settings, and based on the assumption that the people being studied are aware of being observed and are amenable to interact with the researcher only in response to elements in the research design;
- *Unobtrusive (nonreactive) observation*, conducted with people who are unaware of being studied.

Angrosino (2005, pp. 732-733) defends that all forms of observational research involve three procedures of increasing levels of specificity:

- *Descriptive observation* where the annotation and description of all details is done by an observer who assumes a nearly childlike stance, eliminating all preconceptions and taking nothing for granted, a procedure that yields a large amount of data, some of which will prove to be irrelevant;
- *Focused observation*, where the researcher looks only at material that is pertinent to the issue at hand, often concentrating on well-defined categories of group activity, such as religious rituals and political elections;
- *Selective observation*, which is focused on a specific form of a more general category, such as initiation rituals and city council elections.

Underlying these various methodological points was the assumption that it is both possible and desirable to develop standardized procedures that can 'maximize observational efficacy, minimize investigator bias, and allow for replication and/or verification to check out the degree to which these procedures have enabled the investigator to produce valid, reliable data that, when incorporated into his or her published report, will be regarded by peers as objective findings' (Gold, 1997, p. 397, quoted in Angrosino, 2005, p.733).

4.1.2.2.1. Types of Researchers and the Member's Role

Angrosino (2005, p. 733) recalls a classic typology (Gold, 1958) that divides naturalistic researchers into *complete participants* (highly subjective and, hence, scientifically questionable), *participants-as-observers* (with a little bit of scientific training but not truly acceptable as scientists), *observers-as-participants*, and *complete observers*.

Adler and Adler (1987, quoted in Angrosino, 2005, p. 733) emphasized a range of *membership roles*, as opposed to roles defined relatively to some presumed ideal of pure observation, as Angrosino states. Adler and Adler differentiate between:

- *Peripheral member researchers*: those who believe they can develop a desirable insider's perspective without participating in those activities that constitute the core of group membership;
- *Active member researchers*: those who become involved with the central activities of the group, sometimes even assuming responsibilities that advance the group without necessarily fully committing themselves to members' values and goals;
- *Complete member researchers*: those who study settings in which they are already members or with which they become fully affiliated during the course of research.

Gold (1997, p. 399, quoted in Angrosino, 2005, p. 733) advocates a new form of ethnographic research that seeks to collect data that are "grounded in the informants' actual experience". He insists on the continuing importance of maintaining standards of reliability and validity, through "adequate and appropriate sampling procedures, systematic techniques for gathering and analyzing data, validation of data, avoidance of observer bias, and documentation of findings", although he admits that such goals are

met in ethnographic research "in ways that differ from conventional (statistical) procedures".

Participant observation is the mainstay of qualitative methodology, according to Taylor and Bodgan (1984, p. 15). It is related to research that involves *social interaction between the researcher and informants in the milieu of the latter, during which data are systematically and unobtrusively collected*. The data obtained from observation consists of detailed descriptions of the people's activities, behaviours, actions, and the full range of interpersonal interactions and organizational processes that are part of observable human experience (Patton, 1990, p. 4).

In participant observational studies, the researcher stays with the participants for a substantial period of time and records what is happening, while taking a role in the situation. By staying in a situation over a long period, the researcher is also able to see how events evolve over time, catching the dynamics of situations, the people, personalities, contexts, resources, roles, etc. (L. Cohen *et al*., 2007, pp. 404-405).

In contrast to most methods in which the researcher's hypotheses and procedures are determined a priori, the research design in *participant observation* remains flexible, both before and throughout the research (Taylor & Bodgan, 1984, p. 16). Taylor and Bodgan recognize that although participant observers have a methodology to follow and perhaps some general research interests, the specifics of their approach evolve as they proceed. Even so, most researchers often have some general questions in mind when they enter the field, which fall into one of two broad questions: substantive and theoretical. The former includes questions related to specific issues in a particular type of settings, and the latter is more closely tied to basic sociological issues such as socialization, deviance, and social control (Taylor & Bodgan, 1984, p. 17).

4.1.2.2.2. Degrees of Participation

There are variations in observational methods (Figure 21).

The first characteristic that differentiates observational strategies concerns the extent to which the observer will be a participant in the setting being studied. This involves more than a simple choice between *participation* and *nonparticipation*. The extent of participation is a continuum that varies from complete immersion in the setting as full participant to complete separation from the setting as spectator, with a great deal of variation along the continuum between these two end points. Yet, this is not just a simple matter of deciding, at the beginning, how much the observer will participate. The extent of participation can change over time. The researcher may begin the study as an onlooker and gradually become a participant as fieldwork progresses and the opposite can also occur. An evaluator might begin as a complete participant, to experience what it is like to be initially immersed in the program, and then gradually withdraw participation over the period of study, until finally taking the role of occasional observer from an onlooker stance (Patton, 1990, p. 265).

The degree of participation and the nature of observation vary along a wide continuum of possibilities between these two ends. For Patton (1990, p. 267), the ideal in evaluation is to design and negotiate that degree of participation that will yield the most meaningful data about the program, given the characteristics of the participants, the

nature of staff-participant interactions, the socio-political context of the program, and the information needs of intended evaluation users. In our case, in some groups, we were very participative (also because the trainees asked for our opinion or for some feedback). In other cases, the group was very dynamic and we were able to post a topic for discussion and 'leave' them on their own for a couple of days.

Although there are degrees of participation in observation, we can characterize some common characters (L. Cohen *et al*., 2007, p. 404): in the *complete participant* approach, the researcher takes on an insider role in the group being studied, and maybe does not even declare that she is a researcher. The *participant observer* is part of the social life of participants and documents, and records what is happening for research purposes. The *observer-as-participant*, like the *participant-as-observer*, is known as a researcher to the group, and has less extensive contact with the group. With the *complete observer* scenario, participants do not realize that they are being observed, hence this may be a form of covert research. In our fieldwork, we had a full participation in all discussions and developed close relationships with some of the trainees. We sometimes took detailed notes during activities (the group discussions), while other times we waited until the discussion was over to record notes. This activity of taking notes was made easier because we were not in the presence of the trainee (so she was not aware that we were taking notes) and because the messages were all kept (which means that we did not have the urge to take some notes regarding the content of the messages).

Patton (1990, pp. 266-267) identifies some limitations or barriers to participant observation. For instance, males cannot participate in female-only programs; there may also be difficulties if all the participants in a program know each other intimately, as they may object to an outsider trying to become part of their close circle; and finally, socio-economic and political differences can also impose barriers to that participation. The extent to which it is possible for an evaluator to become a participant in a program depends partly on the nature of the program. In education programs that serve children, the evaluator cannot participate as a child but may participate as a volunteer, parent, or staff member, in such a way as to develop the perspective of an insider in one of those adult roles (Patton, 1990, p. 266). In education programs that serve adults, the evaluator can participate as the trainer or as a trainee. We have decided to participate as a trainer. Our barriers were related to the types of courses where we could participate without creating suspicions regarding the motives for our presence or for those specific topics of discussion. This explains why we only used courses where we provided the tutoring and courses that were somehow related to quality concerns.

Patton (1990, p. 277) discusses several other variations related to observation, namely the full participation *versus* the onlooker observer, the insider *versus* the outsider perspective, the individual *versus* the collaborative conduction, the overt *versus* the covert disclosure of the observer's role, the duration of observations, and the spectrum of observed items (Figure 21).

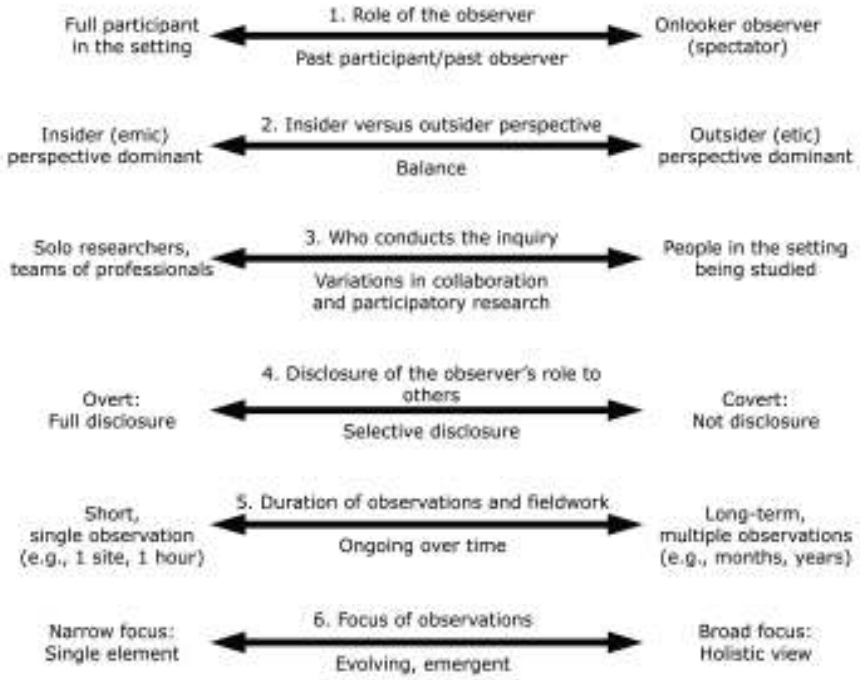

Figure 21: Dimensions showing fieldwork variations
Source: Patton, 1990, p. 277

4.1.2.3. Participant Observation and Interviews

Observations and interviews are usually differentiated as qualitative methods.

Creswell (2002, pp. 178-181) considers four basic types of qualitative research:

- *Qualitative observations*: are those in which the researcher takes field notes on the behaviour and activities of individuals at the research site. In these field notes, the researcher records, in an unstructured or semi structured way (using some prior questions that the inquirer wants to know), activities at the research site. Qualitative observers may also engage in roles varying from a non-participant to a complete participant;
- *Qualitative interviews*: the researcher conducts face-to-face interviews with participants, interviews them by telephone, or engages in focus group interviews, with six to eight interviewees in each group. These interviews involve unstructured and generally open-ended questions that are few in number and intend to elicit views and opinions from the participants;
- *Qualitative documents*: these may be public documents (e.g., newspapers, minutes of meetings, official reports) or private documents (e.g., personal journals and diaries, letters, or e-mails);
- *Qualitative audio and visual materials*: this data may take the form of photographs, art objects, videotapes, or any forms of sound.

The comparison between these four methods is available in Table 28. Although this classification scheme, provided by Creswell (2002, pp. 179-180), makes sense in

general terms, in practice, *participant observation* necessarily combines observing and informal interviewing (Patton, 1990, p. 287). Informal interviewing requires open-ended questions. This means that participant observation implicitly has interview characteristics included. Probably for this reason, Denzin (1970, p. 186) suggests a broad approach to the concept of participant observation: a field strategy that simultaneously combines document analysis, respondent and informant interviewing, direct participation and observation, and introspection". According to him, in participant observation, interviews are typically open-ended.

Data collection types	Options within types	Advantages of the type	Limitations of the type
Observation	- Complete participant researcher conceals role - Observer as participant – role of researcher is known - Participant as observer – observation role secondary to participant role - Complete observer – researcher observes without participating	- Researcher has a first-hand experience with participant - Researcher can record information as it occurs - Unusual aspects can be noticed during observation - Useful in exploring topics that may be uncomfortable for participants to discuss	- Researcher may be seen as intrusive - Private information may be observed that researcher cannot report - Researcher may not have good attending and observing skills - Certain participants (e.g., children) may present special problems in gaining rapport
Interviews	- Face-to-face - one-to-one, in-person interview - Telephone – researcher interviews by phone - Focus group – researcher interviews participants in a group - E-mail Internet interview	- Useful when participants cannot be directly observed - Participants can provide historical information - Allows researcher control over the line of questioning	- Provides indirect information filtered through the views of interviewees - Provides information in a designated place, rather than the natural field setting - Researcher's presence may bias responses - Not all people are equally articulate and perceptive
Documents	- Public documents, such as minutes of meetings, or newspapers - Private documents, such as journals, diaries, or letters	- Enables a researcher to obtain the language and words of participants - Can be accessed at a time convenient to researcher – an unobtrusive source of information - Represents data which are thoughtful in that participants have given attention to compiling them - As written evidence, it saves a researcher the time and expense of transcribing	- Not all people are equally articulate and perceptive - May be protected information unavailable to public or private access - Requires the researcher to search out the information in hard-to-find places - Requires transcribing or optically scanning for computer entry - Materials may be incomplete - The documents may not be authentic or accurate
Audio-visual materials	- Photographs - Videotapes - Art objects - Computer software - Film	- May be an unobtrusive method of collecting data - Provides an opportunity for participants to directly share their reality - It is creative in that it captures attention visually	- May be difficult to interpret - May not be accessible publicly or privately - The presence of an observer (e.g., photographer) may be disruptive and affect responses

Table 28: Qualitative data collection type, options, advantages, and limitations
Source: Creswell, 2002, pp. 179-180

4.1.2.4. Participant Observation and Online Ethnography

As our observation takes place in the field, we can assume it as a *naturalistic observation* or *ethnographic*, as it is conducted in the "natural" setting. Typically, anthropological fieldworkers combine in their field notes data from personal, eyewitness observation with information gained from informal natural interviews and informant's descriptions. Thus, the participant observer employs multiple and overlapping data collection strategies: being fully engaged in experiencing the setting (participation) while at the same time observing and talking with other participants about whatever is happening (Patton, 1990, pp. 265-266). Ethnographers have traditionally been using the methods of participant observation and intensive fieldwork to study everything from small groups to nation-states. Yet, what it means to 'participate' or being in the 'field' or even be a 'group' has changed with the World Wide Web and the emergence of the *virtual ethnographer*, who studies people connected through distributed electronic environments (Ruhleder, 2000). This computer mediation has influenced communication habits, and both traditional assumptions and previously taken for granted rubrics of social research have to be revised, as suggested by Markham (2005). The way that qualitative research is made on the Internet is being created and transformed in ways that are still new and experimental and has been gathering the attention of the scientific community (for instance, C. Mann & Stewart, 2000).

Researchers studying these distributed settings are often focused on three sets of issues (Ruhleder, 2000):

- They look at ways in which *new work practices* emerge to support effective participation in virtual and particularly hybrid environments;
- They study the ways in which broader technical infrastructures, organizational policies, and cultural barriers and assumptions define the *integration of technologies* within and across institutions; and
- They further study the ways in *which people work to integrate* virtual and hybrid activities into their broader lifescapes, often challenging established relationships and boundaries in the process.

Markham (2005) recalls that the individual's identity has changed in the last two decades. In cyberspace, she defends, someone is only acknowledged through some sort of response. "I am perceived, therefore I am" and "I am responded to, therefore I am" seem to be appropriate identity signs. Social being is initiated through a process of creating and sending a message, and negotiated through a process of interaction. She also recalls the importance of text to a person's construction and negotiation of identity in online text-based environments (for instance, some users use correct punctuation and strive to make the meaning as clear as possible, while others do not pay much attention to the textual and linguistic aspect of the medium). Although technologies facilitate visual and audio communications, text remains a primary unit of analysis for the qualitative researcher (Markham, 2005). Yet, the tendency is not to include online audio-visual communications but to study hybrid environments, where the physical and the virtual overlap and interact. As Markham (2005) points out, ethnographic inquiry is shifting from the study of online-only environments and virtual identity to the intersection of computer-mediated communication with everyday life.

4.1.2.4.1. The Online Ethnography in Our Research

Our research included some ethnographical elements.

Besides personal information, we gathered some elements in order to get a sense of the field. For instance, the number of topics addressed by each trainee, who responds to whom, when (in time) did trainees post, what was the response lag, to whom did they respond, if they responded to other messages besides the ones that were related to this research, and what was our perception of what their feelings were when they responded (did they seemed angry, enthusiastic, careless, etc.), the length of their posts, and the patterns of quoting earlier messages, as well as the use of emoticons (probably to compensate for the absence of nonverbals). This provided us with some insights. For instance, trainees usually responded to our posts but rarely responded to those of their colleagues. They usually quoted our messages ("as Rosário said" was a frequent expression) and used a lot of emoticons and exclamations, which included expressions of affection ("I admire your work", "lovely thought", "that's an interesting idea", "hope to see you soon"), as well as lots of "kisses and hugs".

There are several elements that we did not gather, as the social and informal relationships that trainees developed outside the forum (as they usually exchange msn and email contacts) or after the training has ended, and, for instance, who provided email/msn contacts first and who did not provide their own to the colleagues. Another level of representation would also require the incorporation of specific measurements such as the number of clicks in each thread (i.e. the number of times the user read each message), where she went after reading each message, and how much time did she take to answer each message or even if she actually answered it. There are things we are not able to know and would be hard to get: how trainees organized both their professional and training to-do's, in which settings did they accomplish their training tasks (during work hours, at the office, in the middle of a meeting, during traffic, hermetically closed at home/office with a non disturb sign at the door, etc.), how they dealt with their technical and social difficulties of remote participation, and what kind of efforts they had to make in order to respond to a message.

We were able to reconstruct the discussion at any time, and read each message whenever we needed, as all of them were kept after each course ended. Archives allow us to recapture some aspects of the virtual class experience, as each forum was saved and placed into an archive. These kinds of archival materials represent a rich source of data and we are aware that we only analyzed a small part of them. Putting this in a positive way, the data is generous enough to provide us several alternative research paths. We decided to support our conclusions on the textual elements, in order to minimize the subjectiveness. Because of this, the ethnographical side of our research is limited. Markham (2005) defends that many studies have been labelled as ethnography when the more appropriate term would be interview study, case study, phenomenology, grounded theory, narrative analysis, biography or life history, and so forth. She goes on saying that ethnography is a term that is applied by scholars who do not know what else to call their work, or by scholars whose study of new forms of ethnography broadens the umbrella of what can be considered ethnography. Yet, having collected so many informations – some of which, we acknowledge now, were a waste of time – provided us a sense of 'knowing' these users and made us feel comfortable when narrating what they said.

4.1.3. Data Collection Procedures

We used a semi-structured interview guidebook where we not only defined the structured questions to be made, but also the moment of time when we wanted to put them, and other related topics that might be interesting to discuss, if opportune. Structured questions were programmed into EVOLUI.COM's tutoring system in order to be posted automatically on the forums in the exact day we planned to. Other questions were introduced manually, according to the answers given by the trainees and were not structured, but rather the result of an opportunity to explore a specific topic. We made two major changes in our interview guidebook during the period of data collection, as we matured the type of approaches to which trainees reacted better.

Although Lincoln and Guba (1985, p. 273) suggest a variety of elements or types of observation, such as chronologs, context maps, sociometric diagrams, and logs or diaries of field experiences, we restricted the studied elements to the verbatim of the messages and to some observational elements. We used an observational grid where we registered the number, length, and nature of interwoven threads by each user, the relevance (or not) of the message to our research, the number of iteractions each thread had, the time lag between our message and the reply post, to whom did users respond, and the degree of agreement between users' opinions. We kept in that grid additional information we had on each user, namely her client number (which provides an idea of how old the client is for EVOLUI.COM), the number of paid courses she had already attended, age, and other personal data. All the forums and their messages are still kept in EVOLUI.COM's databases and all the relevant messages were copied to the software (NVIVO®) that we used to analyze the data.

4.1.4. Data Analysis

4.1.4.1. Theoretical Saturation Point and Data Selection

We analyzed 2398 messages posted in forums of e-learning courses at EVOLUI.COM by 210 trainees of 45 editions of five specific online courses that took place between August 2007 and June 2008. By June 2008 we had acquired an in-depth understanding of the perspectives and routines of the respondents. As Glaser and Strauss (1967, pp. 61-62, 111-113) call it, we have reached the *theoretical saturation point* and additional observations would not yield additional insights.

The first selection that we made eliminated most of them, and only the contributions of 44 trainees were considered relevant for the purposes of our investigation. At the end of this phase, 104 quotations from those 44 trainees were selected and prepared to be analyzed. After this phase of data selection, we decided to use a commercial programme to help us to make the analysis. Most of these 44 trainees were first-time buyers at EVOLUI.COM. Only 7 of them were frequent buyers (more than 2 courses in the last six months). Two of them attended two of those courses in the time period analyzed and made important contributions to both forums. Only 4 of those 44 trainees were attending EVOLUI.COM's internal training program and made relevant contributions. Except these last 4 individuals, all the others paid full price for their registration.

4.1.4.2. Software Support for Data Analysis

After preparing the data, we decided to use qualitative data analysis software in the following stages. Although the use of (any) qualitative data analysis software is labour-intensive and does not present any solution or "magic formula", it has several advantages that were considered important to the process being held, as it would:

- Make easier the historical tracking of the analytical process;
- Guarantee the portability of the data;
- Allow multiple searches over the same data;
- Improve the potential of analysis;
- Provide easier qualitative (and quantitative) outputs;
- Allow external validation of the analysis made, which helps to minimize researcher bias and contributes to the reliability of the study.

Historically, the use of qualitative data analysis software has facilitated some activities, such as coding, and limited others, such as seeing a document as a whole or scribbling memos alongside text (Bazeley, 2007, p. 7).

After deciding to use data analysis software, we began the process of choosing the software from Lowe's (2007) review of software for qualitative analysis software. After having tested both Atlas.ti® and NVIVO®, and having concluded that both had, more or less, the same functions, we decided to use the last one, for three related reasons: the opportunity that was given by the CISUC's Information Systems research group to attend an NVIVO® training event, which, in turn, helped us to enter into a community of NVIVO® users that could help each other, and that was the second reason for choosing NVIVO®, and finally, the decision of that research group to buy a license of NVIVO®. Our analysis was made with NVIVO® version 8.

NVIVO® in particular, and qualitative data software in general, have been designed on the assumption that researchers need both *closeness* and *distance* (Richards, 1998, quoted in Bazeley, 2008, p. 8): closeness for familiarity and appreciation of subtle differences, but distance for abstraction and synthesis, and the ability to switch between the two. Our decision to use NVIVO® instead of not using any programme was mainly to provide us closeness to the large amount of testimonies, but we also felt a need for distance, which led us to make the qualitative analysis in three different moments of time, which in turn made us feel more comfortable to use different procedures of analysis. The time span of those analyses provided us some distance, but also time to feel close to the data.

We shall now describe these three stages and the final results.

4.1.4.3. Description of the Analyzed Data

The qualitative analysis with NVIVO® was made in three stages. These three stages are not only the result of separate analysis made in different moments of time, but also the application of different analysis procedures.

The first, held between May and July 2008, consisted of a free reading, as Bardin (1977, p. 90) suggested, which led to a free codification that was complemented with a word

frequency analysis, in an attempt to find further inspiring data. At this stage, we had no intention to create *nodes* related to the current literature, and decided to ignore existing theories or frameworks, as Strauss and Corbin (1990) suggested. Grounded theory (Glaser & Strauss, 1967) was our only reference, as it seemed the most suitable approach to this exploratory study. In this free reading, 46 *free nodes* were created.

After have gained some experience with NVIVO®, namely with other kinds of sources, such as news and interviews, another analysis was made, three months after the first one, and that represented the starting point of stage two. This second approach was made from scratch, and the time gap between these two initiatives guaranteed the minimization of any influence from the first attempt. This second analysis began with the 500 most used words with more than 5 characters. From this list, 85 nodes were created, which means that 17% of the most frequent words were coded as nodes. The other 83% consisted of adjectives, adverbs, verbs or even nouns that, at the first sight, were meaningful, such as 'classes', or 'evaluations', but were not coded into new or existing nodes, as the context in which those words were used seamed meaningless or irrelevant. Unlike what happened in our first analysis, these 85 nodes were, from the beginning, created inside a fixed categorization. We looked for a *thesaurus* that could be applied in this situation, as Stone (1967, quoted in Bardin, 1977, pp.120-121) suggested, since several advantages had been pointed for that use.

As no such *thesaurus* was found, we combined three important references:

- The literature on service quality (that we discuss in Appendix 2) and the distinction made by Grönroos (1990a) between the *technical* or *outcome* component of services from the *functional* or *process*-related one (page 35);
- Traditional training evaluation analysis frameworks, prescribed by Kirkpatrick (1959a, 1959b, 1959c, 1960a, 1960b, 1978, 1999, 2007; Kirkpatrick & Kirkpatrick, 2006), Philips & Stone (2002), and Hamblin (1974), among other authors detail in Donovan and Townsend (2004) and Cação (2007);
- Portuguese legal framework on vocational training that considered, between 1997 and 2009, six certification levels: needs assessment, training planning, training conception, organization and promotion, development and execution, and finally, training evaluation.

Therefore, we had a 3D coding matrix with training process elements on one hand, and training results on the other hand; it also included reaction perceptions, learning results, behavioural results and corporate results; and finally, it included needs assessment, training planning, training conception, organization and promotion, development and execution, and those training evaluation dimensions. After developing this closed and rigid coding structure, the same *sources* – the selected messages - were coded again. The codification was, this time, confined to the main categories created. Even so, some flexibility was allowed in the creation of subcategories.

The third stage was a reconciliation step, where we intended to search for points of commonality between the previous two stages of qualitative analysis. In this merging process, several duplicated nodes were removed and close concepts were reduced into one. After merging the two analyses, 106 nodes were kept and 1213 *references* were made (see Appendix 10 for the full description of the final *tree nodes* structure).

4.1.5. Exploratory Results

Even though NVIVO® has several interesting features that allow us to relate qualitative data with several (quantitative) attributes, we decided that, since this was an exploratory study, and we would triangulate it later, it would be best to concentrate our efforts in the possibility of inspiration and on the qualitative tools of the program. Therefore, we only used some of the available tools offered by the program. Figure 22 illustrates the codification of the messages posted by the trainees when stimulated to give their opinion about what is quality in e-learning, what determines quality, what does it take to be a quality e-learning course, and what kind of quality dimensions they were more sensitive to.

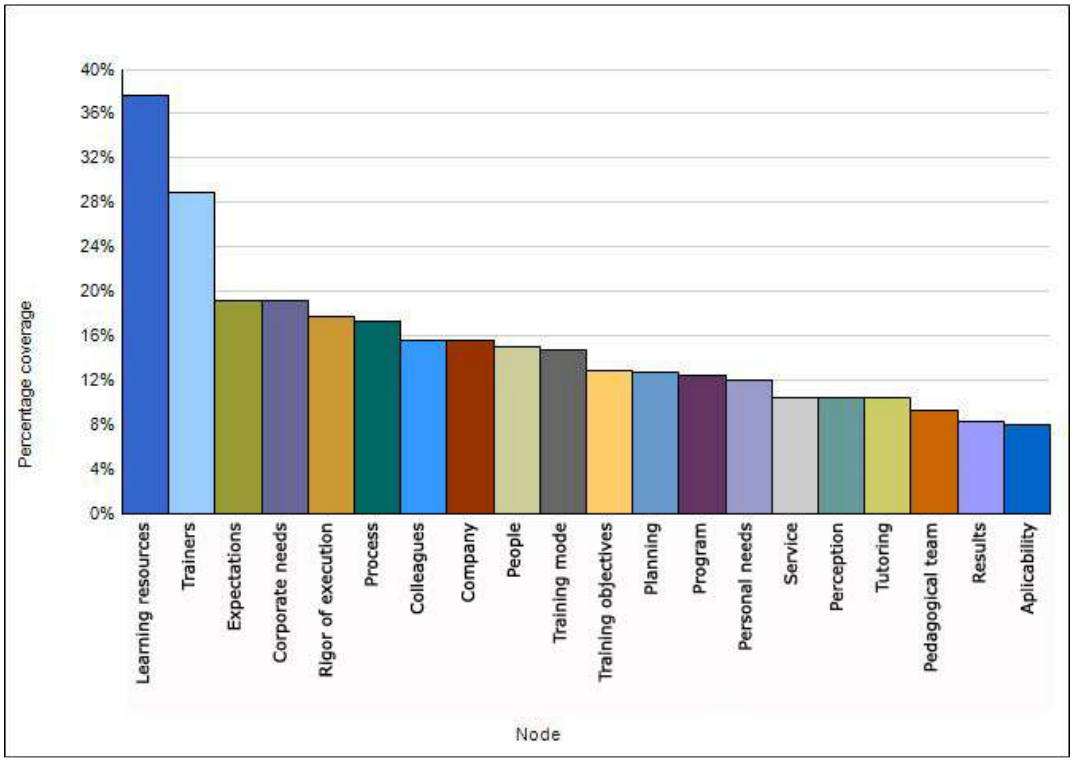

Figure 22: Histogram of the most coded nodes

Most references made to the quality of e-learning are related with the content (37%). Even though content is still "just" content, it is the most acknowledge quality dimension in e-learning. Most trainees recognize that content is just information, but they also acknowledge they do not have time to look for essential, accurate, and up-to-date information.

Customer 39323 said:

> In an e-learning program, perhaps the most important is the quality of the contents and the incentive that is given to the development of a culture of permanent learning[2].

[2] Num programa de e-learning, talvez o mais importante seja a qualidade dos conteúdos e o incentivo ao desenvolvimento de uma cultura de aprendizagem permanente.

Customer 38194 summarizes the need for structured information, and the role of contents in the learning process:

> Nowadays there is still the idea that contents are not important and that what is important is the learning process in itself, and the context of learning. And that revolutionized the teaching methods. Recall that nowadays they do not teach times tables to kids in elementary school, because memorizing and 'singing' it, as we did, is wrong. I do not agree with it, but ok! For sure, nowadays there is more content available: there is more information, it is more structured or is easier to structure it, and is easy to access it. I remember spending entire afternoons in the public library, waiting for the librarian to bring me the books I had chosen from the paper files. The Internet revolutionized all this, as well as the increase in the editors and the easiness that nowadays someone can publish a book. The issue here is that we have to guarantee that we are about to invest our time in something that guarantees that we will be able to solve our problem. Regarding this, training courses usually have structured contents that aim that. We have more guarantees that in the end we will know more about something, than if we were online googling it. Therefore, on one hand, there is the issue of guarantee of learning, and on the other hand, the certification issue: that is, sometimes we want some of our skills to be certified by someone. Because of that, there will always be room for contents but the role of contents is an accessory to the learning. That is to say, the important is not the content but the result of a process were those contents were used. Contents are the crutch of our learning[3].

Customer 38214 had a similar opinion regarding the need of structured and synthetic information and emphasized the importance of the perceived use of content in the learning process:

> Content is not the king it used to be when training was based on notebooks and books. Today, all the content is available online, in different shapes and formats and what makes the difference is the way it is made available, the transparency, the look, and even the ability to synthesize. This is because we do not have much time available and, therefore, we need to know the most in the shortest time possible.
> Besides that, the way that content is made available is probably more important than the content itself. We all have books we didn't read but if someone gives us a summary of that book we read it and dedicate our attention to that. Personally, I think that when I see an online class with those small boxes with short summary sentences, or with links to places where that subject is detailed, I become more motivated. Besides that, I believe that more important than the content is its application. What benefit does content provides if later I'm not able to use it in practice, or if it is useless? I end up not validating the content in my head and only when I do it does the content really get kept in my head. Otherwise, I forget most of the things. The content, in itself, is worthless if I do not use it, and the trainer has an important role in the process of creating value for the content, as she is the one that will provide us the first perceptions about the importance and the potential impact of the content, providing us with examples or case studies[4].

[3] Hoje em dia há muito a ideia de que os conteúdos não são importantes e que o importante é o processo de aprendizagem em si, e o contexto da aprendizagem. E isso revolucionou a forma como hoje se ensina. repare-se que hoje em dia não se ensina a tabuada aos meninos na primária porque se considera que decorar a tabuada e 'cantá-la' como nós o faziamos estava errado. eu não concordo nada com isto, mas enfim. o certo é que hoje em dia há mais conteúdos: há mais informação, ela está mais estruturada ou é mais fácil estruturá-la, e está de acesso fácil. Eu lembro-me de passar tardes inteiras na biblioteca municipal à espera que a bibliotecária me trouxesse os livros que eu escolhia nos ficheirinhos em papel da biblioteca. A internet veio revolucionar isso tudo, assim como o aumento das editoras de livros e a facilidade com que hoje qualquer pessoa edita um livro. a questão é que por vezes nós queremos garantir que vamos investir o nosso tempo em algo que nos 'garanta' que vamos resolver o nosso problema. e ai a formação geralmente tem os conteúdos estruturados para isso. temos mais garantias de ficar a saber sobre uma determinada questão num curso do que se estivermos online a pesquisar sobre o tema o tempo todo que estariamos na formação. Assim, por um lado há esta questão da 'garantia' da aprendizagem e por outro a questão da certificação: ou seja, por vezes queremos que determinadas competencias que temos sejam certificadas por alguem. Acho por isso que haverá sempre espaço e lugar para os conteúdos mas o papel dos conteúdos é acessório à aprendizagem. Ou seja, o importante não é o conteúdo mas sim o resultado de um processo onde foram utilizados os conteúdos. No fundo, o conteúdo é a muleta da nossa aprendizagem.

[4] O conteúdo já não é o rei que era quando a formação se baseava em sebentas e em livros. hoje o conteudo está disponivel online, de varias formas e feitios e o que faz diferença é a forma como ele é fornecido, a transparencia, o aspecto e até a capacidade de sintese. Isto porque nós não temos muito tempo disponivel e por isso precisamos de saber o maximo possivel sobre um tema no mais curto espaço de tempo. depois, a forma como o conteúdo é fornecido se calhar é mais importante do que o conteudo em si mesmo. todos nós temos livros que nunca lemos mas se nos derem um resumo desse livro nós lemos e dedicamos-lhe tempo e

Human dimensions, which include trainers, training colleagues, training staff, namely administrative help and pedagogical supervision, are also usually referred to as relevant drivers of quality.

Customer 39279 emphasized the role of the trainer:

> The trainer must have technical expertise about the training program, but her pedagogical skills must be very developed. She must have professional experience within the subject she is teaching. She must have the ability to motivate… captivate… exemplify…provide case studies… and she must know how to adapt the training to the characteristics of the trainees (personality, socio-cultural/motivation/education, etc.). Another important aspect is time management[5].

Customer 38123 added some references to back office staff:

> Regarding the differentiating elements among the courses that I attended, I choose the technical, relational, and pedagogical competence of the trainer.
> Being a central element in the service delivery, the trainer is essential in the process of construction of a perception of higher or lower training quality. Even so, the front and backoffice service that is provided by the training company is also relevant. I have to admit that it is hard for me to be unbiased in this regard, since most of my time is spent as a trainer, not a trainee. Any way, I would like to know what my colleagues, as well as the trainer, think about this[6].

Specific items related to e-learning and the flexibility and learning style promoted, are also referred. Customer 38194 said:

> I believe that the dimension of the group helps: if there were only 1 or 2 persons, the learning potential would be limited. Likewise, if there were a lot of people, there would be a big confusion. When it is done well, e-learning can improve the learning process. The ability to promote the discussion and the informal learning at the same time supporting systems are made available (like the tutoring) are essential quality dimensions of an e-learning course[7].

Customer 35933 also indicated flexibility, besides contents and image issues:

> Quality has everything to do with what the client is expecting. In e-learning, both the intelligibility of the contents and its richness are essential. I agree with someone who said that embellishment is not relevant, although a good image is, because, as it usually is said,

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atenção. eu pessoalmente acho que quando vejo uma aula com aquelas caixinhas com pequenas frases resumo ou com links onde o assunto é desenvolvido, fico muito mais motivada do que quando vejo texto c orrido. para além disso, acho que mais importante do que o conteudo, é a sua aplicação. que me adianta saber o conteudo de um determinado tema se depois não o posso testar na prática ou ele não me serve de nada? acabo por não validar esse conteudo na minha cabeça e só quando o consigo fazer é que realmente ele ficou cá dentro. caso contrário, esqueço-me da maioria das coisas. o conteudo em si não vale nada se eu não o aplicar e o formador tem um papel importante nesse processo quase de criação de valor do conteúdo, pois no fundo é ele que nos vai dar as primeiras impressões sobre a importancia e capacidade de impacto do conteúdo, dando-nos exemplos ou casos práticos

[5] O formador deverá ter o dominio tecnico do tema de formação, mas deverá ter as suas competencias pedagogicas muito bem desenvolvidas. Terá de ter experiencia profissional na area em que está a dar formação. Deverá ter a capacidade de motivar... cativar...exemplificar...colocar casos praticos... e saber ajustar a formação às caracteristicas dos formandos (personalidade/socio-culturais/motivações/escolaridade, etc.). Outra vertente muito importante na formação e a gestao do tempo.

[6] Em termos de elementos diferenciadores/marcantes de cursos que já frequentei creio que foi a competência técnica, relacional e pedagógica do formador. A meu ver, tratando-se de um elemento crucial na prestação do serviço, o formador julgo ser fundamental na construção desta percepção de maior, menor ou ausência de qualidade da formação.
Porém, o trabalho de front e back office a que o formando tem acesso também me parece relevante por parte da entidade formadora. Confesso que me é um pouco difícil ser isenta nesta reflexão na medida em que na maior parte do tempo não sou formanda mas sim profissional da formação. Qualquer das formas gostaria de conhecer a opinião de colegas face a este assunto e da formadora se possível.

[7] E até acho que a propria dimensão do grupo ajuda: porque se fossemos 1 ou 2 se calhar o potencial de aprendizagem ficava mutilado e se fossemos muito isto ficava uma grandessissima confusão. isto tudo porque, quando bem trabalhado, e acho que aqui temos um bom exemplo disso, o e-learning pode potenciar o processo formativo. No fundo, a capacidade de mobilizar a discussão entre as pessoas, de promover aprendizagem informal ao mesmo tempo que são disponibilizados meios de apoio (como a tutoria) são factores fundamentais da qualidade de uma formação online.

> "eyes also eat". The great advantage of e-learning comes from the tremendous flexibility that it provides, without being a *laissez-faire* approach[8].

Training planning and execution are also often quoted. Quality is associated with rigor in execution, in doing exactly what was planned. Any adaptation that should be made to the plan in accordance to the specific profile and needs of the trainees is considered as incompatible with quality by some trainees. Yet, this was not an easy question and some trainees gave confused answers. Customer 37823, for instance, when questioned about whether doing what was planned was incompatible with adapting the plan to the needs of the trainees, said:

> (...) Yes, I believe it is incompatible. (...). Generally, a high quality course is the one where there is strictness in the training process. If, during the training course, a need is detected to adequate the program to a specific context, and if that change will help achieving the training objectives, then that change should be made[9].

Strictly executing the plan is quoted as an important quality dimension, and it is related with the training process. Some customers suggest that training results are the output of a training process, which injects quality to the course.

Customer 35920 answered that:

> Regarding the question whether quality in e-learning is related to the process or to the results, I believe that these dimensions are correlated. If the training process has quality and is very demanding in terms of the methodologies of needs assessment, conception, implementation, and evaluation, the result won't have less quality than the process. Therefore, if the process is meticulous and has quality, then the results will, probably, be the mirror of that process. I also think that if the process does not gather a high level of quality, that does not necessarily mean that the result will not have quality. The efficiency of the process may not be reached, but the results may have quality. This means that both dimensions have to invest in quality (…).[10]

The process-related items that are cited are not confined to the period of time during which the course occurs. Post-sale procedures were also referred as being important quality dimensions. Client 38194, for instance, related a specific post-sale and post-training situation:

> For instance, even after the course has ended, it is important to fulfil expectations and grant that everything goes right. I recall that the first time I attended an online course (it was not at EVOLUI.COM), I was promised a deadline for the delivery of my certificate. I recall that I lost my patience when I received my certificate several days after that and it was all wrinkled. When I started to attend training courses at EVOLUI.COM I was told by email how the process would be held and that I would receive my certificate ten days after the end of the course. I thought to myself "yeah, yeah" but the in fact, one week after the course had ended, I received my certificate, well packaged. That meant that the company, even

[8] A qualidade tem tudo a ver com aquilo que o cliente esta a espera. no e-learning quer a clareza dos conteúdos quer a sua riqueza são fundamentais. concordo com alguém que disse que os floreados não são relevantes, embora uma boa imagem seja importante pois como diz o povo e com razão os olhos também comem. a garnde vantagem do e-learning resulta em grande parte da imensa flexibilidade que permite, sem deixar contudo que entre o laissez-faire.

[9] (…) Sim, penso que se torna incompatível. (…) .Em princípio uma formação de qualidade, é aquela em que existe rigor na execução da formação. Se por outro lado, no decorrer da formação se detectar a necessidade de adequar os conteúdos programáticos a uma realidade "especifica", e essa alteração ajudar a atingir os objectivos, então este aspecto deve prevalecer.

[10] Em relação à questão colocada se a qualidade na formação se prende com o processo ou com os resultados eu diria, apenas uma opinião que com ambas as dimensões pois quer parecer que podem co-relacionar-se. Se o processo de formação tiver qualidade e apresente elevada exigência ao nível das metodologias de diagnóstico, concepção implementação e avaliação o resultado da mesma não poderá exibir menos qualidade que o processo. Neste sentido se o processo demonstrar rigor e qualidade os resultados muito provavelmente serão o espelho do processo. Mas também me parece que se for o caso do processo não reunir elevado nivel de qualidade não quer por isso dizer que o resultado não seja de qualidade porém a eficiência no processo poderá efectivamente não ter sido atingida, mas os resultados poderão ser de qualidade. Ou seja em ambas as dimensões se tem de investir na qualidade quer ao nível do processo (facilita e torna eficiente o processo) e nos resultados (exigente e torna eficaz o processo).

> after having the customer's money, even after the course has ended, had quality concerns and that reinforced the image I had, and provided me confidence to attend more courses at EVOLUI.COM[11]

Expectations seem to exist even after the training is over. But even before it began, or during the course, fulfilling expectations, whatever they might be, are also mentioned, but seem to be an instrumental stage of quality. Customer 38386, for instance, said:

> At the end of a course each trainee will consider that the course had quality if it fulfilled her expectations. Those expectations are related to several aspects and are different among trainees. For instance, the contents, the resources that are provided, the calendar, the interpersonal relationship with the trainees and the other trainees, the performance of the trainer, etc. The perception depends on the moment and differs during the course. Even so, in the end of the course, when a retrospective is made, each trainee is able to say if the course had quality or not.[12]

Related to expectations, fulfilling needs seems to be a quality attribute. But it was a surprise to discover what should be obvious: the difference between the corporate needs and the employee needs. *Agency conflicts* seem to exist also in need of fulfilment.

Customer 35051 alerted us to that conflict when she said:

> A high quality training course must fulfil real needs, either the strategic needs of the company or simply self-development needs.[13]

This conflict is also latent in customer 38772's words:

> The evaluation of results is not easy as it depends on the opinion of the trainees, and can be made using surveys. Even so, as in any other business, the quality is always assessed by the final customer and the company only knows the results of that evaluation later, through the market (…).[14]

Process related items were more frequently cited by customers than quality items related with results. Among the 20 most coded nodes, there are only two not related with the training process. Although the nodes "results" and "usefulness" may seem to be similar, we decided not to merge these two nodes for several reasons. First, because references to "results" were sometimes used as the opposite to process.

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[11] Por exemplo, mesmo no pós-venda é importante cumprir expectativas e garantir que tudo corre bem. Eu lembro-me que a primeira vez que frequentei um curso online (não foi no evolui) e tinha-me prometido que o certificado chegava até um determinado dia. E lembro-me da gota de água ter sido o facto do certificado ter demorado imenso tempo a chegar e ter vindo todo amarrotado. Curiosamente, quando depois comecei a fazer cursos aqui no evolui disseram-me por email o processo todo e no fim referiam que ia receber o certificado 10 dias após o fim da formação. eu pensei 'pois, pois' e a verdade é que passado uma semana, nem isso, do curso terminar, chegou o certificado, ainda por cima bem acondicionado num cartão duro. Para mim isso revelou que a empresa, mesmo depois de ter o dinheiro do cliente, mesmo depois até da formação terminar, tinha preocupações com a qualidade e isso reforçou a imagem que eu tinha da empresa e se calhar deu-me confiança para continuar a fazer formação aqui na evolui.

[12] Penso que no final de uma acção de formação, seja presencial ou online, cada um dos formandos considera que foi uma formação de qualidade quando foi ao encontro das suas expectativas. Estas expectativas estão relacionadas com vários aspectos e variam de formando para formando (ex: conteúdos, material entregue/disponibilizado, horário, relacionamento com os formadores, relacionamento com os formandos, desempenho dos formadores, local, etc). A percepção depende do momento e varia ao longo do curso. No entanto, no final da acção, quando é feita uma retrospectiva, cada formando está em condições de concluir se foi uma acção de qualidade ou não.

[13] Uma formação de qualidade deve responder a necessidades reais, sejam elas de cariz estratégico para as empresas ou simplesmente de natureza de desenvolvimento pessoal.

[14] A avaliação dos resultados não sendo fácil, porque depende da opinião do formando, poderia ser feita com os inquéritos. No entanto como em qualquer negócio a qualidade prestada é sempre avaliada pelo cliente final e uma empresa só sabe como está a ser avaliada, ao fim de certo tempo, pelo próprio mercado. Cabe, entretanto, à empresa tomar iniciativas que controlem e avaliem a qualidade.

Customer 36050, for instance, said:

> Results are the outcome of process, which should have quality[15].

The second reason was that results were also often cited in a quite unclear and unspecific way. Whenever customers referred to results as an important quality dimension, they did not specify the kind of results they were thinking of. Customer 38772, for instance, said:

> I agree that the quality of a course is the result of the sum of all those aspects. I believe, though, that in the case of e-learning courses, final results is the priority.[16]

Finally, the last reason to keep these two concepts apart was that sometimes results were used to refer the impacts. Customer 35858, for instance, used the concept of result as opposite to process, but talked about the *training impacts*:

> [Quality is the result of both]: process and results. Even so, we have to define what are the 'results', since they include the evaluation of the training impacts.[17]

Customer 38028 included in *results* several ideas, as the concepts of training satisfaction, learning transfer, and organizational impact, which correspond to Kirkpatrick's four levels of training evaluation and Phillips & Stone's concept of ROI (2002):

> When a company invests in something, it expects tangible results in the short-, medium-, and long-run. In the specific case of training events, those results are not so tangible, in most of the cases. If the training is technical, for example, how to work with a new machine or a new technology, results are almost immediate: an increase of productivity, the use of equipments, an optimization of the labour force instead of hiring specialized workers… but in the case of selling techniques courses or client support, among others, it is more difficult. The company has to define sales objectives or ask customers to answer a survey, which in turn will help to evaluate the application of the knowledge in context. During the training course, this will be based in the commitment and motivation of the trainees. The ROI of e-learning includes a higher satisfaction of trainees, and that motivation, at least right after the course, is seen in an increase of productivity[18].

[15] Os resultados são isso mesmo, fruto do processo, que convêm ser de qualidade.
[16] Eu também estou de acordo que a qualidade do curso resulta da conjugação de todos esses aspectos. Penso, no entanto, que no caso concreto do e-learning o resultado final é uma prioridade.
[17] [a qualidade é fruto dos dois]: processo e resultados. Embora seja necessário esclarecer o que são "resultados", uma vez que nestes entra igualmente a avaliação do(s) impactos.
[18] Quando uma empresa investe, seja no que for, espera sempre, a curto, médio e longo prazo, resultados visíveis.No caso da formação, esses resultados não são tão palpáveis, na maioria dos casos. Se a formação for mais técnica, por exemplo, lidar com novas máquinas ou tecnologia, aí quase no imediato são vistos os resultados: aumento da produtividade, uso dos equipamentos, aproveitamento da força de trabalho existente em vez de contratar pessoal especializado,...Mas para formações baseadas em técnicas de venda ou de atendimento, entre outras, é mais complicado. Uma empresa necessita de traçar objectivos concretos e adequar instrumentos de "medição" de eficácia, por exemplo, traçando objectivos de vendas ou ainda pedindo aos clientes que preencham um questionário que permitirá averiguar a aplicação dos conhecimentos em contexto. Durante a formação, baseia-se na adesão e empenho dos formandos. O ROI no e-learning passará também por uma maior satisfação dos formandos e essa motivação, pelo menos logo após a formação, manifesta-se num aumento da produtividade, seja qual for o campo.

4.1.6. Final Reflections: Utility as a Node to Explore

Most of the results of this exploratory study were more or less expected, even though, in some cases, we were not expecting them to be so relevant. What we did not expect was the need to use the concept of 'utility' to code some citations.

Utility is expressed in *uses* of the training content. Customer 26772, for instance, said:

> A high quality course is one that allows practical applications in my personal and professional life…. That provides me with new know-how. I'm a social educator and often I have to prepare a session, and I do not know where to search for contents… how to organize the session… and then I recall that I had a course on this. I search for the materials and recall the information. Academic information is too theoretical, while vocational training has this advantage[19].

This same customer would later say:

> I require some applicability to the acquired information[20].

This concept of utility emerged as a must-have node after one specific edition of the "e-trainers workshop". This was one of the most productive editions in terms of contributions to our investigation. It was also the group where *results* (level 3 and 4 of training evaluation) were more emphasized. In this group, among the 20 most coded items of quality we can find (see Figure 23):

- Learning transfer;
- Increase of performance;
- Return on investment;
- Behavioural changes;
- *Future utility*;
- Practical uses;
- Professional utility;
- Motivation for future learning;
- Deadline use.
- Motivation.

Changes in behaviour, expressed as use of the new knowledge, were referred to by several customers. Some customers related quality to short-term, problem-related performance needs.

Customer 37245 expressed her perception of quality like this:

> [A high quality course] is one that is able to adapt itself to the trainees and shows the way to solve the problems that people face in their day-to-day[21].

[19] Uma formação de qualidade é aquela que me permite fazer aplicações práticas na minha vida pessoal e profissional... me dá um saber-fazer novo. Sou Educadora Social e muitas vezes tenho que preparar uma sessão e não sei onde ir buscar o material... como organizar a sessão... e lembro-me: eu tenho uma formação disto! Recorro aos materias e recapitulo informação. A informação académica é muito teórica e a formação profissional tem essa vantagem, permite-nos debruçar sobre temas mais práticos e que temos necessidade de aplicar.

[20] Eu preciso que haja uma aplicabilidade da informação adquirida.

[21] [Um curso de qualidade para mim] é aquele que se adapta aos formandos e mostra caminhos para resolução de questões com que as pessoas se deparam no dia a dia.

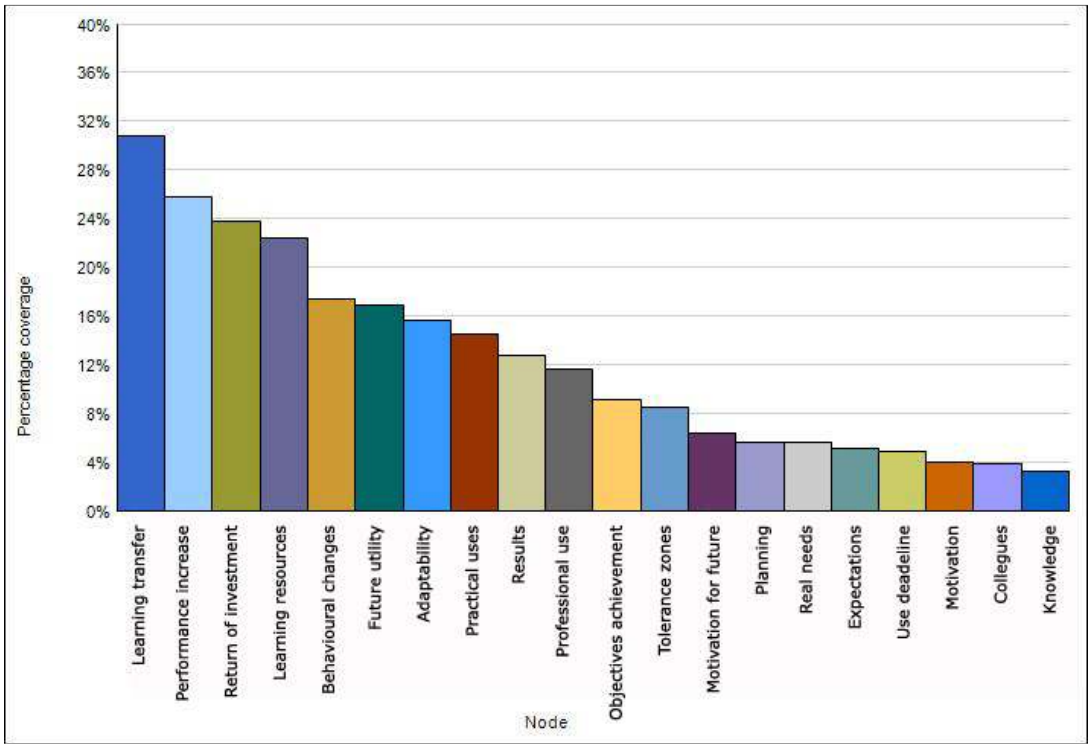

Figure 23: Most coded nodes in a specific forum

Short-term utility was also clear in the perception of quality of customer 39279:

> (…) the quality of a training course is related to what we can learn and use in our professional life. Maybe my academic background influences my opinion (…)[22].

But short-term utility is not the only one to be considered as a quality dimension. Customer 38194, for instance, said that both short-term needs and long-term needs are valuable:

> (…) the course has quality when it fulfils real current training needs or attends to future needs, of career progression. I may not need a certain competence now, but I may need it if I apply to a different function of a company. I may even never get the chance to get that job but the idea that, somehow, the course got me closer to that job, makes me look at the course as a course with quality.[23]

Other customers, when questioned about this short-term *versus* long-term perspective of utility as a quality dimension, revealed they value an e-learning course as an investment in the future, such as customer 38029:

> (…) Imagine a student that is attending high school (…). Maybe the absence of immediate return is what makes families and the State to postpone some investments in education. (…) Is there any return on investment on an e-learning course? Yes! Results will be visible in distinct performances, which will, sooner or later, create competitiveness and well-being.

[22] Para as pessoas, a qualidade da formação é aquela em que o que aprendemos podemos aplicar na pratica do nosso dia a dia profissional. Talvez a minha formação base, onde a teoria está intrinsecamente relacionada com a pratica, condicione a minha opinião.

[23] (…) a formação é de qualidade quando responde a necessidades reais actuais de formação da pessoa ou vai de encontro a necessidades futuras, de progressão da carreira da pessoa. Ou seja, eu posso não precisar de uma determinada competência agora mas vir a precisar dela se quiser concorrer a uma determinada função de uma empresa. E até pode acontecer eu nunca vir a conseguir esse lugar, mas se tiver a ideia de que de alguma forma a formação me aproximou dessa função, considero-a de qualidade.

> (…). Often, in education, the return on the investment is not immediate and we can only expect medium and long-term results.[24]

Others suggested that quality may not only be related to short-term uses, but also to future uses, as stated by customer 38029:

> Frequently, in education, in the process of acquisition of competences, the return on investment is not immediate. It is only expectable in the medium or long-term[25].

Other customers, such as customer 38509, are not able to specify the time frame for this utility:

> I really enjoyed this experience. I believe I have learned a lot, and everything that I learned will be very useful in my professional life[26].

References to a *future utility* may be also found in testimonies where customers relate quality to a *future utility* that is far, not concrete, and, eventually, with a low possibility of realization, as is the case of customer 38763:

> My perception of quality of a training course is related to the acquisition of new competences and ways of knowing how to do[27].

Finally, one customer (customer 38029) related quality, not to a specific and concrete use of the training experience, but rather to a perception of a possible and hypothetical use:

> Probably, it depends more on the motivation and on the perception of applicability of the contents to the professional context[28].

With the testimony of these last customers, we were left with some questions that had to be further analyzed:

- Is utility an important quality dimension in e-learning?
- Is short-term and long-term utility equally valued in terms of perceptions of quality of an e-learning course?
- When does short-term end and long-term utility begin?

[24] Na sociedade de consumo em que vivemos, em que o dinheiro em carteira é, para algum o único valor seguro, poderá parecer descabida a análise que partilho. Investir! Investir no conhecimento! Investir na Educação! Este é um campo, onde , por vezes, os lucros podem não ser imediatos. Pensemos no caso de um aluno de 2º Ciclo, para quem a família, com esforço económico, adquire um PC...Descobre o e-learning e possibilita à criança a frequência de um curso básico de TIC's ou de um Pacote de Cursos. Que lucro imediato obtém a criança, que nem tem idade para trabalhar? Valerá então a pena investir em situações semelhantes? A resposta é sim. Talvez seja esta ausência de retorno imediato que leva famílias e o próprio governo a adiar certos investimentos no campo da educação. Talvez seja este o motivo porque, aos olhos da OCDE, estamos tão mal cotados em termos de literacias. Voltando ao nosso aluno - criança/ adolescente - será que existe retorno possível para o investimento feito num curso e-learning, que frequentou motivado? É evidente que sim. O retorno é basicamente semelhante a todos os níveis. Um saldo positivo, traduzido em perfomances distintas, mais tarde ou mais cedo geradoras de competitividade e RIQUEZA! O reconhecimento da necessidade de investimento na Educação como factor de progresso é responsável por muitas politicas educacionais e múltiplos investimentos e quem sabe não virá, na esfera privada, a relação a procura da formação e- learning. Frequentemente, em educação, na aquisição de competências, o retorno do investimento não é imediato. Só é espectável a médio ou longo prazo.

[25] Frequentemente, em educação, na aquisição de competências, o retorno do investimento não é imediato. Só é espectável a médio ou longo prazo.

[26] Eu gostei muito desta experiência. Acho que aprendi muito e aquilo que aprendi vai ser muito útil na minha vida profissional.

[27] A minha percepção de qualidade de uma formação passa pelo adquirir de novas competências e formas de saber fazer.

[28] Possivelmente depende mais da motivação e da percepção da aplicabilidade dos conteúdos ao âmbito profissional.

These questions were, at this time, added to our initial research questions, which became more refined and with specific research hypothesis attached. They were also the starting point of our next move, which we will describe next.

4.2. Reactions About Quality and Utility

4.2.1. Using Quantitative Data to Confirm Qualitative Conclusions

In order to explore some of the questions raised in our qualitative analysis, we have made a quantitative study. For that purpose, we used EVOLUI.COM's satisfaction survey. This survey is given to every customer at the end of each course. It is made available in the same day of the last class and stays available until the course ends, i.e. five days later. Customers are invited to answer it, but not constrained to do so. We kept the format, the design, and all the elements of the survey and just made changes in the questions and in the scale of measurement.

For this first quantitative study, our purposes were:

- To confirm that perceptions of quality and global satisfaction have asymmetric distributions;
- To identify the variables that explain the *variability* of perceptions of quality;
- To identify the most significant *factors* of quality;
- To distinguish what kind of utility (immediate or future) is more relevant in terms of perceptions of quality;
- To identify the differences in terms of utility regarding the gender of the subjects and the type of course;
- To verify if the perceptions of quality are different according to who pays for the course;
- To understand the role of motivation in the process of evaluating quality;
- To identify the duration of the courses that maximizes the perception of quality;
- To explore the differences in terms of perception of quality and utility in a specific course that has idiosyncratic characteristics.

4.2.1.1. The Choice of a Web-based Survey

To collect data, we used an online questionnaire, which is considered the most widely used data collection instrument for Internet surveys (L. Cohen *et al*., 2007, p. 229). Although Internet-based surveys have many features in common with paper-based surveys, they also have their own particular features (L. Cohen *et al*., 2007, p. 226). Internet-based surveys can be in the form of e-mails, e-mails-plus-attachments, e-mails directing potential respondents to a web site, or simply web sites. We did not use the e-mail option, but directed potential participants to the HTML questionnaire:

- In the welcoming class, trainees are suggested to give their contribution at the end of the course; and
- The questionnaire is located at the end of the list of the available classes, with the same visual importance.

4.2.1.1.1. Advantages and Disadvantages of Web-based Surveys

There are several claimed advantages (for example, Dillman & Bowker, 2000; Roztocki & Lahri, 2003) for the use of an Internet questionnaire in comparison to a paper questionnaire, which are resumed by L. Cohen *et al.* (2007, pp. 229-230):

- It reduces costs (especially with over 500 participants);
- It reduces the time taken to distribute, gather, and process data (data entered onto a web-based survey can be processed automatically as soon as it is submitted by the respondent, rather than holding until it is later keyed by the researcher);
- It enables a wider and much larger population to be accessed;
- It enables researchers to reach difficult populations under the cover of anonymity and non-traceability;
- It may have novelty value (although this decreases over time);
- Respondents can complete the questionnaire from home (rather than, for example, in the workplace), i.e. in self-chosen and familiar settings;
- Respondents can complete it at a time to suit themselves, thereby minimizing organizational constraints on the part of the researcher or the respondents;
- Respondents can complete the survey over time (i.e. they do not need to do it all in one sitting);
- There is a reduction of the researcher's effects;
- Responses in web-based surveys show fewer missing entries than paper-based surveys;
- Human error is reduced in entering and processing online data;
- Additional features may make the survey attractive (for example, graphics, colour, and fonts);
- Greater generalizability may be obtained as Internet users come from a wide and diverse population;
- Because of volunteer participation (i.e., an absence of coercion), greater authenticity of responses may be obtained.

There are also some problems in Internet-based surveys (L. Cohen *et al*., 2007, pp. 231-235):

- Sampling problems: namely under-representation of respondents;
- Ethics problems: e-mail address identifies the respondent and respondents may wish to keep their identity; not knowing anything about the researcher; and informed consent;
- Technical problems: configuration of the questionnaire, network connections, limited bandwidth, software versions, slow loading times, the physical distance between points on an attitude scale may spread out because of configuration differences between machines, or HTML distortions;
- Respondents problems: respondents may be unfamiliar or inexperienced, may send multiple copies of their completed questionnaires, or have difficulties in navigation;
- Layout and presentation problems: screen layout is different from a page layout, and, therefore, surveys must be adapted; instructions have to be clear and simple; the order of items affects response rates; there is a need to take multiple actions in order to answer each question (e.g. clicking on an answer, moving the scroll bar, clicking for the next screen, clicking to submit a screen of

information); not all the option choices may be seen without scrolling down, or instructions may not be understood;
- Reliability problems: respondents may be forced to answer every question when they consider some response categories inappropriate; they may not be telling the truth;
- Dropout problems: respondents may lose interest after a while and abandon the survey, thereby losing all the survey data; they may not know how long the questionnaire is, and so may lose interest; Internet surveys take longer to complete than paper-based surveys; it is easier for someone to quit or cancel an Internet-based survey; non-participation may be high and error messages cause frustration and drop out.

4.2.1.1.2. Choices Made on the Survey's Design

We followed the principles of design of web-based surveys suggested by several authors (Dillman, Smyth, Christian, & Stern, 2003; Dillman, Tortora, & Bowker, 1998b, 1998b; Redline, Dillman, Carley-Baxter, & Creecy, 2002) regarding technical and presentational issues, namely:

- Avoid check-all-that-apply list of factors (as respondents tend to complete those items at the top of the list and ignore the remainder);
- Use a progress bar or a table that indicates what proportion of the questionnaire has been completed so far;
- Create instructions for how to complete the item next to the item itself (and not place all together at the start of the questionnaire);
- Allow respondents to continue even if they have not completed all the items in the screen;
- Avoid branching instructions (for example, if "yes" then go to item 12);
- Start with a welcome screen that will motivate the respondents to continue, which makes it clear that it is easy to complete, and give clear instructions on how to proceed;
- Ensure that the layout of each question is as close as possible to a paper format, as respondents may be familiar with this;
- Ensure that the use of colour keeps the figure/ground consistency and readability, so that it is easy to navigate through the questionnaire;
- Avoid differences in the visual appearance that may happen as a result of different computers, configurations, operating systems, screen displays, and browsers;
- Keep the line length short, to fit in with the screen size;
- Minimize the use of drop-down boxes, and direct respondents to them where they occur.

We also followed other general recommendations (L. Cohen *et al*., 2007, pp. 226-239) regarding the survey design, as the number of words in the question, the number of answer categories, and the localization of each item.

We did not follow some recommendations by L. Cohen *et al.* (2007):

- Use plain versions (as these are more likely to complete a questionnaire than those receiving fancy versions);

- Create a floating window that accompanies each screen which can be maximized for further instructions;
- Create an option for each item with "prefer not to answer" or "don't know".

We allowed respondents to proceed even if they had not completed all the items on the screen in question. Preventing respondents from proceeding until they have completed all the items might ensure coverage, but it could also anger respondents – so much that they could give up and abandon the survey – or prevent them from having a deliberate non-response (e.g. if they do not wish to reveal particular information, or if, in fact, the question does not apply to them, or if they do not know the answer) (L. Cohen *et al*., 2007, p. 227). This explains why we had to deal with missing values. As Smyth, Dillman, Christian, and Stern (2004, quoted in L. Cohen *et al.*, 2007, p. 235) report that asking respondents for some open-ended responses can be more efficient than having them tracking down a long list of subjects to find the one that applies to them, we included in the survey three open questions that are related to 'best things in the course', 'things to be improved', and 'major difficulties found out during the course'. The major conclusions of these three open questions are not presented here as they were not considered as relevant as the quantitative conclusions and did not add any insights to them or to our research questions.

4.2.1.1.3. Single-items *versus* Multi-items Surveys

The literature distinguishes between two types of measures: single-item and multi-item measures. Yet, the literature also reveals some confusion regarding what are single and multi-item scales. Simply put, single-item measures attempt to identify an attitude (quality perception, for instance) on a particular dimension (i.e., objectives fulfilment) with one scale item. In contrast, multiple-item scales normally use a large number of items to measure that particular dimension.

Single-item measures have several disadvantages (Mittal, Kumar, & Tsiros, 1999; Snijders, 2003):

- They do not provide information on the components and do not allow an evaluation of each dimension separately, which means that they may attenuate the estimated relationships and they may not express fully the complexity of a construct;
- It is more difficult to evaluate the internal consistency and reliability of the constructs. The reliability of single-item question is lower than in multi-item measures because in single questions people are less likely to give consistent answers over time: they may choose yes to a question one day and say no the other day, and they may interpret the question differently over time. In multi-item measures, the composite score, based on all questions, is more consistent over time;
- They also have lower validity, as many social characteristics are broad in scope and it is difficult to assess them with a single question. Multi-item measures cover more scope of the measured characteristic.

Even so, single-item scales have several advantages. First of all, they provide short and quick surveys and stimulate sincere answers. In addition, they minimize the disadvantages of multi-item scales, which tend to inflate correlations between errors and

affect the reliability of the responses. In fact, although multi-item surveys are commonly used, they have several problems. LaBarbera and Mazursky (1983), for instance, point out that in longitudinal surveys the use of multi-item scales can affect the response rate adversely, due to longer survey length, and may decrease, rather than increase, overall reliability.

Single-item scales have been employed successfully in large-scale surveys dedicated to performance and satisfaction studies (for example, Mittal *et al*., 1999), and perceptions of quality and value (for example, Bolton & Drew, 1991b) . We have considered single-item measures as adequate for this study. If we had chosen a multi-item measure, we would create three or four components for each quality antecedent, run confirmatory factor analysis to check them, and, most probably, we would use structural equations modelling in this analysis. Yet, as this is an exploratory study, we could not determine the constructs, and therefore, it was senseless to guess those constructs.

4.2.1.1.4. The Variables

The instrument includes 15 questions, related to satisfaction, quality, expectations, performance, motivation, and utility. In the process of definition of the questions, we had concerns with the language used, and defined each question in a way that intended to reduce the research biases and the non-responses. Some of the items were introduced in the survey, not only because they are commonly used to evaluate training performance and satisfaction, but also because the qualitative analysis had told us that they were important to the customer's perception of quality, and we wanted to see if they would correlate with the *global perception of quality*.

Besides the traditional satisfaction items, such as *the platform* and *global satisfaction* (question 1), we introduced in the survey other items, such as:

- *Short-term/immediate utility* (question 12)
- *Future utility* (question 13)
- *Global perception of quality* (question 14)
- *Quality-price relation* (question 15)

We also introduced other items, such as:

- *Expectation's fulfilment* (question 2)
- *Training objectives fulfilment* (question 5)
- *Contents* (question 7)
- *Trainer's performance* (questions 8 and 10)
- *Helpfulness of the supporting team* (question 11)

Finally, we introduced two experimental and exploratory items:

- *Initial motivation level* (question 3)
- *Final motivation level* (question 4)

The questions of the survey were coded into fifteen variables (Table 29).

Code	Question
V1	1. Global satisfaction
V2	2. Fulfilment of expectations
V3	3. Initial motivation
V4	4. Final motivation
V5	5. Fulfilment of training objectives
V6	6. The platform and its functions
V7	7. Training contents
V8	8. The trainer's expertise
V9	9. The contribution of the forum for the learning process
V10	10. The dynamics and help of the trainer in the forum
V11	11. Competence, kindness, and promptness of the staff
V12	12. Immediate professional utility
V13	13. Future professional utility
V14	14. Global quality perception
V15	15. Quality-price relation

Table 29: Codification of the questions of the survey

3.8.1.1.1.1. Satisfaction

One of the variables of the survey is *global satisfaction*. As discussed previously, service quality and customer satisfaction are distinct constructs (Bitner, 1990; Bolton & Drew, 1991a, 1991b; Cronin Jr. & Taylor, 1992; Parasuraman *et al*., 1985, 1988) but the difference between these two constructs and their relationship is not very clear. The literature is divided between authors who defend that satisfaction is a dimension of quality (Bitner, 1990; Bolton & Drew, 1991a, 1991b) and others who defend quality as an antecedent of satisfaction (Cronin Jr. & Taylor, 1992; J. L. Heskett, 1987; Parasuraman et al., 1985, 1988).

3.8.1.1.1.2. Fulfilment of Expectations

Often, researchers cannot identify purchasers before consumption and are constrained to measure expectations at the same time as the level of satisfaction is assessed. There are several reasons why the researcher is forced to rely on expectations *ex post facto*. One of them is that some companies may not wish to suggest possible service experience to consumers before use, and another is that most companies do not have access to their customers prior to the purchase of the service. Expectations are usually measured *ex-post*, which means that they are not anticipatory expectations, but rather post-service judgments of prior expectations. Several problems can arise from this practice: one is the possibility of individuals making a bias judgment of their prior expectations; the other is that individuals may also have experienced other services and have other prior experiences, and expectations retrieval can be confused or biased. Most probably, retrieved expectations will be biased and tend to align with experienced performance. Retrospective expectations are considered valid, especially if the anticipations are clear and related to the particular service under analysis (Oliver, 1997, pp. 87-88). Even so, recalled expectations are higher for dissatisfied and complaining customers than for satisfied and non-complaining consumers: a negative experience will create higher expectancies in retrospect to justify the dissatisfaction (Halstead, 1993). Oliver's (1980, 1993) disconfirmation paradigm of service quality and SERVQUAL (Parasuraman *et al.*, 1985, 1988) influenced the introduction of the question related to the fulfilment of expectation in the survey.

3.8.1.1.1.3. Initial and Final Motivation

Motivation is considered a relevant contributor to the learning process (for example, Holton1996). Motivation to learn has a direct impact on learning. Motivational elements include motivation in different moments of time and different objects. Holton (1996, p. 9) considered motivation to learn, motivation to transfer, and expected utility as motivational elements.

3.8.1.1.1.4. Immediate and Future Utility

Holton (1996, p. 9) considers utility as a motivational element. Perceptions of utility influence motivation to transfer, which, in turn, influences motivation to learn. Learning, individual performance, and organisational results, and, therefore, the overall evaluation made, will influence and be influenced by the perceptions of utility. On one hand, utility is related to changes in performance, which are probably the most important *use* of training courses. On the other hand, quality is defined by Juran (1951, Section 2-2) as *fitness for use*. The qualitative study we have previously made influenced the creation of two specific variables: *immediate utility* and *future utility*. These variables were introduced in the happy sheet also in consonance with the five-level ROI framework (J. J. Phillips, 1994; J. J. Phillips & Holton, 1995), which defines in its first level not only *reactions* but also the *planned action*. The *planned action*, in turn, includes a plan of what participants intend to apply from the course. The two variables were also inspired in the fifth level of the *carousel of development* (Industrial Society, 2000), which is focused on *use* and *reinforce learning*.

3.8.1.1.1.5. Quality and Quality-Price Relation

The perception of overall quality is our main variable, the one that we want to relate to all the others. *Quality-price relation* was introduced because the concept of quality is not absolute: Feigenbaum (1961, p. 13) defended that quality is the best for certain customer conditions, one of those being the actual end use and the other the price. Several other approaches to quality are related to the price paid, such as Broh's (1982, p. 3) definition, which defines quality as the degree of excellence at an acceptable price and the control of variability at an acceptable cost. Garvin's (1983, 1988, pp. 40-46) value-based approach to quality also defines quality in terms of costs and prices: "a quality product is one that provides performance at an acceptable price". Leifler (1982) makes a similar relation of quality to the price paid when he defines quality as "the amounts of the unpriced attributes contained in each unit of the priced attribute". Finally, price is a tangible element from which customers draw conclusions about quality (Kotler *et al*., 1996, p. 589), and, therefore, the *quality-price relation* includes that evaluation.

3.8.1.1.1.6. Other Variables

Several studies related to e-learning quality, such as SEEQUEL (Dondi, 2004b, 2004b), SEEL (2004), and SEVAQ (Schreurs *et al.*, 2008) influenced the decision to use other variables. The variable *competence, kindness, and promptness of the staff* was influenced by the courtesy dimension of service quality (Parasuraman *et al*., 1985),

which later was combined by the authors into the assurance dimension. Ehlers (2004) influenced the introduction of variables such as the *dynamics and help of the trainer in the forum*, the *trainer's expertise*, the *platform and its functions*, and the *contribution of the forum for the learning progress*. The variable *training contents* was introduced because it was the primary variable in our qualitative study and because it is contemplated in several studies (for instance, Rekkedal, 2006, p. 16). The variable *fulfilment of training objectives* was also brought from our qualitative study.

4.2.1.1.5. The Scales

We have based our decisions regarding the scales on the literature about satisfaction.

Satisfaction surveys usually have a slant towards the most favourable levels and have a negative skewness: because consumers tend to rate products positively, most ratings are skewed, with the bulk of responses in the positive half of the scale, and this tendency is more pronounced for scales with a smaller number of points (namely 5 or 7 points scales). While shorter scales tend to have this skewness problems, wider scales have interpretative problems (for instance, 15 points scales), as Oliver (1997, p. 53) alerts.

Fornell (1992) suggests several methods to deal with this problem:

- Using a 1 to 10 scale to allow respondents to make finer discriminations;
- Using multiple-indicator approaches (to achieve greater accuracy);
- Estimating via *partial least squares* (Wold, 1973).

We have decided to use a 1 to 10 scale, which is also used on national satisfaction indexes, as the American Customer Satisfaction Index, and by several researchers (for example, E. W. Anderson, Fornell, & Lehmann, 1994; Fornell, Johnson, Anderson, Cha, & Bryant, 1996). Regarding the type of scale, we have decided to use Likert (1932) scales, as Westbook and Oliver (1991) proved empirically that Likert scales are more reliable than verbal, bipolar, graphic, and inferential scales. All our variables were then represented in 1 to 10 Likert (1932) scales and the meaning of those positions was communicated: 1 was the lowest level and 10 the highest one. *Radios* were put horizontally in each question in order to let respondents select the value they wanted (Figure 24). The variables were later coded for statistical analysis (Table 29, available in page 150). In each question, we admitted the hypothesis of non-response (although technically we could have forced users to respond), and, therefore, we did not feel the need to create a "don't know" option.


Está em: **Área de Membro**: **Criação de Recursos Didácticos em Áudio para e-Learning**: Inquerito de Satisfação

Numa escala de 1 a 10, em que **1 é muito baixo e 10 é muito elevado**, classifique:

	1	2	3	4	5	6	7	8	9	10
1. O seu nível de satisfação global com o curso	○	○	○	○	○	○	○	○	○	○
2. O cumprimento das suas expectativas em relação ao curso	○	○	○	○	○	○	○	○	○	○
3. O seu nível de motivação inicial com o curso	○	○	○	○	○	○	○	○	○	○
4. O seu nível de motivação com o curso no final da formação	○	○	○	○	○	○	○	○	○	○
5. O cumprimento dos objectivos pedagógicos do curso	○	○	○	○	○	○	○	○	○	○
6. A plataforma de formação e as suas funcionalidades	○	○	○	○	○	○	○	○	○	○
7. Os conteúdos das aulas (relevância dos temas seleccionados, rigor, actualidade, etc.)	○	○	○	○	○	○	○	○	○	○
8. O domínio das matérias por parte do formador	○	○	○	○	○	○	○	○	○	○
9. A importância da existência de um fórum de discussão para o resultado da sua aprendizagem	○	○	○	○	○	○	○	○	○	○
10. O dinamismo e apoio prestado pelo tutor no fórum de discussão	○	○	○	○	○	○	○	○	○	○
11. As competências, simpatia e prontidão da resposta da equipa de apoio do EVOLUI.COM	○	○	○	○	○	○	○	○	○	○
12. A utilidade do curso para a melhoria do seu desempenho profissional actual	○	○	○	○	○	○	○	○	○	○
13. A utilidade do curso para o seu futuro profissional	○	○	○	○	○	○	○	○	○	○
14. A qualidade global do curso	○	○	○	○	○	○	○	○	○	○
15. A relação qualidade-preço do curso	○	○	○	○	○	○	○	○	○	○

Figure 24: Screenshot of the survey

4.2.1.1.6. The Pre-Test of the Instrument

The survey was tested online within a convenience sample of three employees of EVOLUI.COM (one of which was attending a course at EVOLUI) and two customers, who, later in May 2008, attended their company's annual training program, provided by EVOLUI.COM. We later made a small change in the survey, after having collected 562 answers, to correct the vertical alignment differentials between the questions and the scales. Most probably, this small detail had never been detected by any user. The final version of the survey is in Figure 24 (above).

4.2.1.2. Sampling Options

There are several concerns about the sampling on Internet-based surveys. Usually, these surveys are based largely on volunteer samples obtained through general posting on the web, or, as it is popular in the social sciences, through announcements to specific newsgroups and interest groups on the web. The issue with this scenario is that the researcher is using non-probability volunteer sampling, and this may decrease the generalizability of the findings. Opportunity samples (for example, of students) may restrict the generalizability of the research (L. Cohen *et al*., 2007, p. 237). Watt (1997, quoted in L. Cohen *et al.*, 2007, p. 238) suggests that there are three types of Internet sample:

- An unrestricted sample: anyone can complete the questionnaire, but it may have limited representativeness;
- A screened sample: quotas are placed on the subsample categories and types (for example, gender, income, or job responsibility);
- A recruited sample: respondents complete a preliminary classification questionnaire and then, based on the data provided in them, are recruited or not.

4.2.1.2.1. The Selected Sample

We have used EVOLUI.COM for several reasons. The main reason is that we wanted to continue the case study that we were doing. But there were other two reasons. The first was the easy access to clients and the freedom to make any changes and experiments. In this perspective, we may say that was an opportunistic sample. The other reason was because EVOLUI.COM is the Portuguese national leader in e-learning services dedicated to the consumer market, and, therefore, it is perhaps the most representative service regarding the Portuguese industry of short-term vocational e-learning. As EVOLUI.COM's satisfaction survey is available to all clients who are about to end a course, we have decided not to exclude any answer. Sample selection was easy and the most natural: it is the population of customers that ended a course at EVOLUI.COM and submitted the satisfaction survey during the period between March 24, 2008 and February 17, 2009. There was no selection criteria, like the course attended, the trainer, previous experience in e-learning, geographical area, or any other criteria.

4.2.1.2.2. Informed Consent and Confidentiality

L. Cohen *et al.* (2007, p. 236) defend that Internet-based surveys are subject to the same ethical rules as paper-based surveys. As trainees are used to complete the satisfaction survey at the end of the training course, we have decided not to disclose the scientific purposes of the changes we have introduced in the survey, in order to avoid influencing their answers. Moreover, because EVOLUI.COM usually collects and processes information, not only to support strategic decisions, but also to respond to external industrial and academic studies, informed consent and confidentiality regarding surveys are made explicit in the general rules of service that all clients must accept or decline during the registration phase.

4.2.2. Collecting and Gathering Processes and The Preliminary Analyses

4.2.2.1. Collecting, Storage and Software Used

Customers had the opportunity to answer the survey online. Answers were automatically collected and stored in a SQL database. From this database, a Microsoft Excel® version is permanently available for download from EVOLUI.COM's back office system. This process ensured that no mistakes were made in the classification of answers, or in the process of copying data to SPSS®, where it was analyzed. We used SPSS® version 15 and, later, version 16, and some partial analyses were even made with SPSS® 16 Mac version, as we explain later.

As the process of collecting data did not involve any human effort, we had the opportunity to focus our efforts on the collected data and make partial analyses during the period of data collection.

We have made full statistical analyses of the available data with three partial samples:

- An initial analysis was made with all the data collected until May, 9, 2008;
- An intermediary analysis was made with all the data collected until November, 25, 2008;
- A final and comparative analysis was made with all the data collected until February 17, 2009.

This allowed us:

- To get used to the data and to start drawing some hypotheses from the beginning (in May, 2008, to be precise, when we drafted some preliminary conclusions);
- To detect biases in a sub-sample that could be due to non-regular phenomena at EVOLUI.COM, as we will discuss later;
- To confirm or disconfirm preliminary conclusions we had drawn with a smaller sample;
- To mature our statistical approach to the data and to get familiarised in SPSS with real, and thus motivating, data, which led us to search for new tools and statistical tests that could be useful in our research.

4.2.2.2. Sample Size and Description

The data was collected from March 24, 2008 until February 17, 2009, which represents 330 days of systematic, 24/7, collecting process, which included Sundays and holidays, such as Christmas day and New Year's Day. Only three service interruptions occurred during this period of time and none was longer than 2 hours or in peak-hours.

2741 answers were collected during this period. Of these, 111 were considered duplicates (see below). From the remaining 2630, only 2278 are totally complete, which corresponds to 86.61% of the total answers (duplicates excluded). In the remaining cases, one or more questions were left unanswered (Table 30). 145 courses and 1085 unique customers were involved in the study. 64% of the respondents were women, 97% of the answers are related to paid courses, and 95% to courses with a tutoring system. 47% of the answers are related to certification courses, which are courses that allow the initial professional certification or the renewal of that certification (Table 31).

The sample includes an abnormal percentage of answers in certification courses because EVOLUI.COM had a specific certification project during this period of time, which led us to handle this situation with care and exclude those cases in some analysis, as we will discuss later.

	May 9, 2008	November 25, 2008 *	February 17, 2009 *
Sub-ample answers	357	1688	696
Accumulated	357	2045	**2741**
Sub-sample duplicates	11	93	7
Accumulated duplicates	11	104	**111**
Sub-sample answers (duplicates excluded)	**346**	**1595**	**689**
Accumulated sample analyzed	346	1941	**2630**
Sub-sample complete answers	307	1353	618
Percentage	88.73%	84.83%	88,79%
Total complete answers	307	1660	**2278**

* From the previous day until this date

Table 30: Sample size and complete answers

	May 9, 2008	November 25, 2008 *	February 17, 2009 *	Complete sample
Paid courses	97%	97%	96%	97%
Courses with tutoring	95%	96%	94%	95%
Certification courses	45%	52%	35%	47%

* From the previous day until this date

Table 31: Types of courses involved in the sample

4.2.2.3. Handling Duplicates

Two different situations of duplicated answers were treated:

- First, for the same course, the customer submitted the survey twice. In this situation, we considered the second answer, as we believe it was a way of correcting the evaluation made. The first answer was discarded. 111 cases were in this situation;
- The second type of duplicate situations was not treated the same way: As several customers took several courses during the period of analysis, they were able to submit several times their answers. In these situations, we agreed that those customers had the right to express their opinion every time they took a course, and that their quality perception could be quite different from time to time and from course to course. In these cases, these duplicate answers were not discarded and were included in the analysis. Therefore, the data is related not to 2630 customers but rather to 2630 registrations. 1085 unique customers participated in our study. This means that, on average, each one has attended 2.42 courses during the period considered. This is the same to say that, on average, each customer made a new registration every 136 days. After dealing with missing values (below), we kept 2481 cases, which correspond to 1041 unique customers.

4.2.2.4. Missing Value Analysis (MVA)

In the preparatory analyses, we have identified the existence of missing values (MV). Several factors may lead to missing values:

- Misunderstanding of the questions: the individual does not understand what is being asked;
- Unavailability of the inquired: the individual may be saturated of answering surveys (which is becoming a more frequent situation), be under time pressure, provide answers in a frivolous way, and be unavailable to reflect on what she is being questioned about;
- Unawareness of missing data: the individual may not be aware that she did not provide an answer to all questions.

There is no consensus in the literature regarding the best way of dealing with missing values. Traditional approaches, as listwise, pairwise, and mean substitution, are confronted with alternatives as single imputation, multiple imputation, and full information maximum likelihood estimation (Acock, 2005). The use of complete case methods that drop subjects missing any observations are commonly seen in practice, but is an approach considered inefficient as well as potentially biased (Horton & Kleinman, 2007). The opposite solution also has problems: models that incorporate incomplete data may lead to a large number of observations with some missing information. Alison (2002) and Little and Rubin (1987) are some of the authors who have been providing an overview of the methods to use in this situations.

13.38% of our cases had at least one missing value. As dropping all these observations and fitting a model to only the complete cases would be "hugely inefficient and potentially biased" (Horton & Kleinman, 2007), we decided to search for other criteria of missing data handling, to decide whether or not to excluded cases with incomplete observations. To better decide which strategy to pursue, we analyzed if the missing data had a random distribution, and if there were cases with more than 10% of missing answers (Allison, 2002), as, beyond this value, there is more probability of bias. 203 cases had one (6,66%) missing value, which represents 7.8% of the total sample. We identified 149 cases with more than 10% of missing values (5.66% of our sample) (Table 32). We decided to eliminate these 149 cases from our sample and only 2481 cases were left (Table 33).

Missing answers	Number of cases	Decision
1	203	Keep
2	69	Exclude
3	30	Exclude
4	23	Exclude
5	13	Exclude
6	3	Exclude
7	1	Exclude
8	2	Exclude
14	1	Exclude
15	7	Exclude
Total	352	13.38%
Total Excluded	149	5.66%

Table 32: Missing patterns I

Description	Cases
Total answers	2741
Duplicates	111
Sample without duplicates	2630
Total complete answers	2278
Missing values cases excluded	149
Total sample with less than 10% MV	2481

Table 33: Sample description after MVA

Yet, we acknowledge that we could have kept some of these cases as:

- Our instrument had only 15 questions, and if the participant did not rate two of those 15 items, according to that criteria, she would be considered excludable;
- No variable was missing more than 5.1% (Table 34 and Table 35);
- Among the missing cases, there were 70 that were exclusively missing data on the *quality-price relation* item (Table 36), which was initially considered the least important variable that we had in the survey. This variable was put last because L. Cohen *et al.* (2007, p. 228) claim that items that are located at the bottom of a page are more likely to elicit a non-response than items higher up a page.

Even though we did not eliminate the cases with one missing answer, we decided to use *listwise* options in our analysis, which means that, whenever one or more variable was analyzed, missing cases would not be considered in the analysis. It was not proved that the missing data had a MCAR (Missing Completely at Random) distribution. Little's (1988) MCAR test had a Chi-square (1036)=1422.655, p=000 (Table 37). As we could not assume total randomness in the missing data, these could be substituted by the *expectation-maximization* (EM) *algorithm* (Dempster, Laird, & Rubin, 1977). This was the reason why we changed to version 16 of SPSS® in the middle of the analysis, as the EM algorithm was one of the most significant changes in the program when compared to version 15. However, we have later decided not to impose this change into our sample.

Univariate Statistics

	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
Satisfaction	2617	7,86	1,617	13	,5	92	0
Expectations	2616	7,76	1,707	14	,5	121	0
Initial_Motiv	2617	7,99	1,644	13	,5	84	0
Final_Motiv	2575	8,01	1,701	55	2,1	109	0
Objectives	2583	8,05	1,639	47	1,8	84	0
Platform	2609	7,99	1,704	21	,8	109	0
Contents	2610	8,13	1,634	20	,8	81	0
Trainer_Expertise	2539	8,62	1,521	91	3,5	130	0
Forum	2577	8,48	1,815	53	2,0	198	0
Tutoring	2522	8,25	1,865	108	4,1	248	0
staff	2567	8,545	1,6486	63	2,4	184	0
Immediate_Utility	2601	8,17	1,739	29	1,1	91	0
Future_Utility	2607	8,36	1,605	23	,9	160	0
Quality	2565	8,28	1,537	65	2,5	296	0
Price_quality	2497	8,042	1,8204	133	5,1	112	0

a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

Table 34: Missing patterns II

Percent Mismatch of Indicator Variables[a]

	Price_ quality
Price_quality	5,06

The diagonal elements are the percentages missing, and the off-diagonal elements are the mismatch percentages of indicator variables.

a. Indicator variables with less than 5% missing values are not displayed.

Table 35: Variables with more than 5% missing values

Tabulated Patterns

Number of Cases	Missing Patterns[a]														Complete If ...[b]	Satisfaction[c]	Initial_Motiv[c]	Final_Motiv[c]	Immediate_Utility[c]	Future_Utility[c]	Quality[c]	Price_quality[c]
	Satisfaction	Expectations	Initial_Motiv	Contents	Platform	Future_Utility	Immediate_Utility	Objectives	Final_Motiv	Quality	staff	Forum	Tutoring	Trainer_Expertise	Price_quality								
2278																2278	7,93	8,03	8,08	8,25	8,44	8,35	8,081
70															X	2348	7,29	7,16	7,43	7,44	7,46	7,47	.

Patterns with less than 1% cases (26 or fewer) are not displayed.

a. Variables are sorted on missing patterns.

b. Number of complete cases if variables missing in that pattern (marked with X) are not used.

c. Means at each unique pattern

Table 36: Missing patterns III

EM Means[a]

Satisfaction	Expectations	Initial_Motiv	Final_Motiv	Objectives	Platform	Contents	Trainer_ Expertise	Forum	Tutoring	staff	Immediate_Utility	Future_Utility	Quality	Price_quality
7,86	7,75	7,98	8,01	8,04	7,98	8,13	8,60	8,48	8,24	8,530	8,16	8,36	8,27	8,008

a. Little's MCAR test: Chi-Square = 1422,655, DF = 1036, Sig. = ,000

Table 37: EM means and Little's MCAR test

4.2.2.5. Reliability – Internal Consistency

Statistical significance is different from theoretical significance. Even in scales that have been widely used, it is suggested (Wilkinson & Task Force on Statistical Inference, 1999) that reliability tests should be repeated. In our case we measured internal consistency and, later, we made a factor analysis, even though this was only exploratory and not confirmatory. In order to evaluate internal consistency, we calculated the Cronbach's (1951) alpha. This is one of the most used items to check internal consistency of a group of variables. It is defined as the correlation between the scale and other hypothetical scales of the same universe, with a similar number of items

that measure the same characteristic. Cronbach's alpha ranges between 0 and 1. In our analyses, Cronbach's alpha was always higher than 0,9 (Table 38) and the complete sample had an alpha of 0.963 (Table 39), which means that internal consistency is *very good* (Table 40), although we are aware that the interpretations of Cronbach's alpha have to be made with caution (Field, 2000, pp. 668-670).

	Cronbach's alpha
Data until May 9, 2008	0.965
Data until November 25, 2008	0.964
Data until February 17, 2009	0.963

Table 38: Cronbach's alphas

Reliability Statistics

Cronbach's Alpha	N of Items
,963	15

Table 39: Final Cronbach's alpha

Cronbach's alpha	Interpretation
Higher than 0,9	Very good
Between 0,8 and 0,9	Good
Between 0,7 and 0,8	Reasonable
Between 0,6 and 0,7	Weak
Lower than 0,6	Inadmissible

Table 40: Cronbach's alpha reference values
Source: Pestana & Gageiro, 2005, p. 526

4.2.2.6. Runs Tests

The *runs test* procedure tests indicate whether the order of occurrence of two values of a variable is random and is used to determine whether the sample was drawn at random. A *runs test* is a special case of the binomial test that examines non-randomness when there is a sequence of binary events, i.e. to determine if the consequence of events is random. This test is related to concerns of randomness and whether the series of events is coming from a random sequence that would produce a binary sequence where the two events are occurring in a random sequence (Coughlin, 1999, p. 11). A *run* is defined as a sequence of like items that are followed or preceded by a different item or no item at all. If there is a much smaller number or larger number of runs than one would expect, then the likelihood is that the sequence is not random, i.e. as a run is a sequence of like observations, if a sample includes too many or too few runs that suggests that the sample is not random. For large samples, one would expect $2p*q*n$ runs where p is the portion in one of the categories, q is the portion in the other ($q = 1 - p$), and n is the number of observations (Coughlin, 1999, p. 11).

The hypotheses are:

H_0: $R = R_o$

H_1: $R \neq R_0$

where R are the runs.

In our case, the sequence selected is the moment of time when the respondent submitted

her answers, i.e. the events were organized in chronological order. Since our items are ordinal, we generated run tests both for the mean (Table 41) and the median (Table 42). The hypotheses were rejected in all the binomial variables we studied. The lack of randomness in the variables that we tested is acceptable, as this is a case study where, for instance, in gender, the population does not have a binomial distribution and has a clear gender bias: about 70% of EVOLUI.COM's sales are made to women and the majority of them are married working mums, and, in this sample, women represent 64%. We believe that, even though total randomness was not possible to prove, that does not influence the reliability of our conclusions.

Runs Test

	Promoter	Gender	The course is paid or free	The course includes tutoring or is self-paced	The course provides professional certification
Test Value[a]	1,20	,64	,97	,95	,47
Cases < Test Value	1995	890	85	114	1325
Cases >= Test Value	486	1591	2396	2367	1156
Total Cases	2481	2481	2481	2481	2481
Number of Runs	577	1055	147	201	967
Z	-13,108	-3,818	-5,530	-4,021	-10,843
Asymp. Sig. (2-tailed)	,000	,000	,000	,000	,000

a. Mean

Table 41: Run tests for the mean

Runs Test

	Promoter	Gender	The course is paid or free	The course includes tutoring or is self-paced	The course provides professional certification
Test Value[a]	1[b]	1	1	1	0[b]
Cases < Test Value	0	890	85	114	0
Cases >= Test Value	2481	1591	2396	2367	2481
Total Cases	2481	2481	2481	2481	2481
Number of Runs	1[c]	1055	147	201	1[c]
Z		-3,818	-5,530	-4,021	
Asymp. Sig. (2-tailed)		,000	,000	,000	

a. Median

b. All values are greater than or less than the cutoff. Runs Test cannot be performed.

c. Only one run occurs. Runs Test cannot be performed.

Table 42: Run tests for the median

4.2.3. Descriptive Statistics of the Sample

Table 43 summarizes the main descriptive characteristics of our variables.

Fulfilment of expectations has the lowest average, followed by *global satisfaction*. All variables register 1 for minimum value and 10 as the maximum, and they all have negative skewness and positive kurtosis. The negative skewness is illustrated in the histogram of global quality perceptions (Figure 25).

	Mean	CI-*	CI+*	5% Trimmed mean	Median	Variance	Min	Max	Skewness	Kurtosis
V1	7.93	7.87	8.00	8.04	8.00	2.545	1	10	-0.975	1.158
V2	7.83	7.76	7.90	7.95	8.00	2.816	1	10	-0.941	0.940
V3	8.03	7.96	8.10	8.14	8.00	2.696	1	10	-0.971	1.049
V4	8.08	8.01	8.15	8.22	8.00	2.785	1	10	-1.200	1.647
V5	8.11	8.05	8.18	8.24	8.00	2.600	1	10	-1.103	1.475
V6	8.05	7.98	8.12	8.19	8.00	2.828	1	10	-1.141	1.486
V7	8.21	8.14	8.27	8.34	8.50	2.548	1	10	-1.118	1.345
V8	8.66	8.60	8.72	8.83	9.00	2.203	1	10	-1.599	3.409
V9	8.55	8.48	8.63	8.77	9.00	3.100	1	10	-1.789	3.727
V10	8.34	8.26	8.41	8.53	9.00	3.289	1	10	-1.557	2.684
V11	8.62	8.55	8.68	8.79	9.00	2.567	1	10	-1.603	3.091
V12	8.25	8.18	8.32	8.41	9.00	2.881	1	10	-1.448	2.798
V13	8.44	8.38	8.51	8.60	9.00	2.392	1	10	-1.450	2.982
V14	8.35	8.29	8.41	8.49	9.00	2.253	1	10	-1.305	2.216
V15	8.08	8.01	8.16	8.24	8.00	3.247	1	10	-1.164	1.374

* Confidence interval at 95%; Lower limit (CI-) and higher (CI+)

Table 43: Descriptive statistics

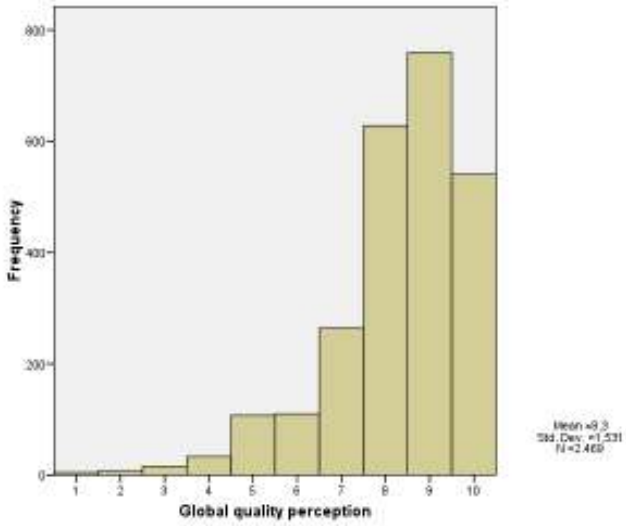

Figure 25: Histogram of global quality perception

Virtually all customer satisfaction and quality research is hampered by highly skewed distributions for the indicators of the satisfaction construct. Even in less than perfect markets, as long as there are available alternatives and/or some elasticity of demand, the distribution of satisfaction and quality scores should be negatively skewed (illustrated Figure 26). Only in captive markets might repeat buyers be dissatisfied in general (Fornell, 1992).

Skewness is a problem, but it is a statistical one. Highly skewed variable distributions do not lend themselves to conventional tests of significance and lead to downward biases in the correlational analysis, low reliability, and, sometimes, misleading arithmetic means. The implications are that it is very difficult to account properly for the variation in satisfaction ratings by the use of other variables and that the results are unstable.

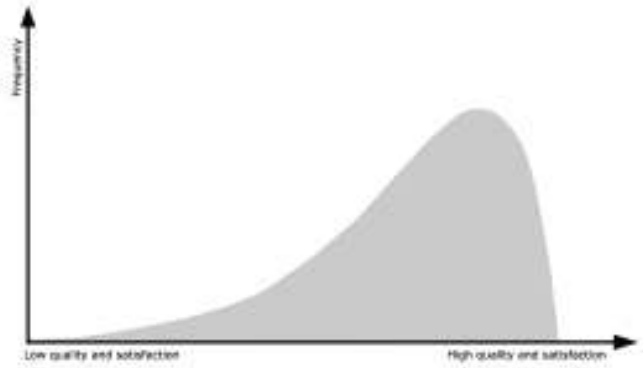

Figure 26: Expected skewness in satisfaction and quality measures

Peterson and Wilson (1992, quoted in Danaher & Haddrell, 1996) provide some explanations to this fact, which include:

- The possibility that the individuals are effectively highly satisfied with what they buy;
- The antecedents of satisfaction influence the shape and ratings of observed distributions;
- The distribution of satisfaction is different from a normal distribution;
- And the level and shape of satisfaction ratings depend on the methods used (the missing data analysis, response rate, data collection methods, characteristics of the individuals, etc).

Table 44 summarizes Spearman's rho and the linear correlation between the variables, which is always positive and high, although not perfect.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Global satisfaction	1	0,898	0,473	0,825	0,810	0,683	0,785	0,673	0,567	0,652	0,610	0,672	0,652	0,816	0,645
2. Fulfilment of expectations		1	0,445	0,835	0,809	0,658	0,766	0,647	0,557	0,629	0,580	0,657	0,643	0,798	0,636
3. Initial motivation			1	0,510	0,464	0,436	0,450	0,409	0,436	0,401	0,454	0,443	0,437	0,434	0,336
4. Final Motivation				1	0,802	0,656	0,750	0,657	0,581	0,630	0,600	0,666	0,667	0,785	0,632
5. Fulfilment of training objectives					1	0,706	0,786	0,700	0,592	0,654	0,643	0,644	0,626	0,782	0,624
6. The platform and its functions						1	0,738	0,628	0,577	0,622	0,629	0,570	0,535	0,699	0,549
7. Training contents							1	0,744	0,607	0,659	0,656	0,661	0,641	0,803	0,621
8. The trainer's expertise								1	0,647	0,742	0,707	0,579	0,571	0,725	0,575
9. The contribution of the forum									1	0,734	0,657	0,543	0,561	0,611	0,477
10. The dynamics and help of the tutor in the forum										1	0,734	0,565	0,566	0,683	0,507
11. Competence, kindness, and promptness of the staff											1	0,590	0,592	0,690	0,516
12. Immediate utility in current job												1	0,855	0,736	0,559
13. Future utility													1	0,732	0,569
14. Global quality perception														1	0,714
15. Quality-price relation															1

** Correlation is significant at the 0.01 level (2-tailed).

Table 44: Spearman's rho correlation between the variables

4.2.3.1. Tests for Normality

There are several ways to test for normality.

The evaluation of skewness and kurtosis can help the researcher determine whether the data reflect a normal or non-normal distribution (Coughlin, 1999, p. 7):

- *Skewness* is a measure of asymmetry of the distribution of numbers. A normal distribution is symmetrical;
- *Kurtosis* is a measure of the presence of extreme values in the distribution. If the distribution is relatively peaked in the middle, kurtosis will be greater than zero. If the distribution is rather flat, the kurtosis will be less than zero. Normal distributions have a kurtosis of zero.

To determine if a distribution is statistically different from a normal distribution, the skewness and kurtosis statistics can be converted to Z scores by dividing the statistic by its standard error. The scores are then compared to 1,96 (*p-value* of .05) and if the Z value is less than that critical value, it can be assumed that the distribution of the set of scores is normally distributed (Coughlin, 1999, p. 7).

The results of Table 43 suggest that normality should be rejected but there are three additional methods that can be used to confirm that:

- The stem and leaf distribution: and normality is rejected if the distribution does not have a normal looking;
- The Q-Q plot: if the observations are very near the line, they reflect a normal distribution;
- Analytical tests, as the Kolmogorov-Smirnov test and the Shapiro-Wilk test.

In order to exclude the hypothesis of normality in the variables, we ran both Kolmogorov-Smirnov and Shapiro-Wilk tests, as these are the most precise methods and could be applied to all variables at the same time. Both tests rejected the normality hypothesis in all variables, with a *p-value* of 0 (Table 45).

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Global satisfaction	,201	2278	,000	,903	2278	,000
Fulfilment of expectations	,192	2278	,000	,908	2278	,000
Initial motivation	,187	2278	,000	,898	2278	,000
Final motivation	,197	2278	,000	,877	2278	,000
Fulfilment of training objectives	,195	2278	,000	,885	2278	,000
The platform and its functions	,197	2278	,000	,883	2278	,000
Training contents	,191	2278	,000	,879	2278	,000
The trainer's expertise	,233	2278	,000	,809	2278	,000
The contribution of the forum for the learning process	,232	2278	,000	,778	2278	,000
The dynamics and help of the tutor in the forum	,222	2278	,000	,817	2278	,000
Competence, kindness and promptness of the staff	,236	2278	,000	,801	2278	,000
Immediate utility	,193	2278	,000	,847	2278	,000
Future utility	,201	2278	,000	,841	2278	,000
Global quality perception	,205	2278	,000	,859	2278	,000
Quality-price relation	,195	2278	,000	,872	2278	,000

a. Lilliefors Significance Correction

Table 45: Normality tests

4.2.4. Utility

4.2.4.1. Description of Immediate and Future Utility

2466 cases (Table 46) had responses in the two questions related to *utility*. One of the questions was related to perceptions of immediate use and the other was related to perceptions of *future utility*. Both utilities had median values of 9, means above 8, negative skewness and positive kurtosis (Table 47). The individual histograms of each utility (Figure 27 and Figure 29) and the equivalent boxplots (Figure 28 and Figure 30) reveal what a comparative boxplot (Figure 31) confirms: that *future utility* perception seems to be higher than *immediate utility*.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Immediate utility	2466	99,4%	15	,6%	2481	100,0%
Future utility	2466	99,4%	15	,6%	2481	100,0%

Table 46: Case processing summary on the two utilities

Descriptives

			Statistic	Std. Error
Immediate utility	Mean		8,20	,035
	95% Confidence Interval for Mean	Lower Bound	8,13	
		Upper Bound	8,27	
	5% Trimmed Mean		8,37	
	Median		9,00	
	Variance		2,988	
	Std. Deviation		1,729	
	Minimum		1	
	Maximum		10	
	Range		9	
	Interquartile Range		2	
	Skewness		-1,421	,049
	Kurtosis		2,608	,099
Future utility	Mean		8,39	,032
	95% Confidence Interval for Mean	Lower Bound	8,33	
		Upper Bound	8,46	
	5% Trimmed Mean		8,55	
	Median		9,00	
	Variance		2,525	
	Std. Deviation		1,589	
	Minimum		1	
	Maximum		10	
	Range		9	
	Interquartile Range		2	
	Skewness		-1,456	,049
	Kurtosis		2,903	,099

Table 47: Descriptive statistics on the two utilities

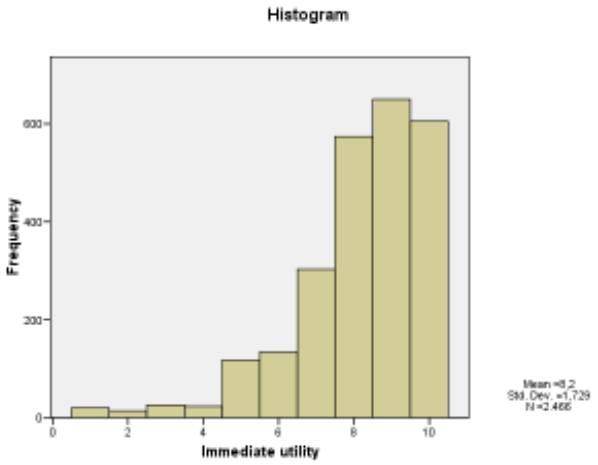

Figure 27: *Immediate utility* histogram

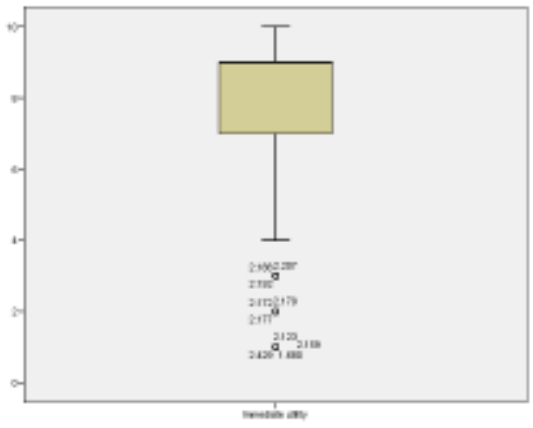

Figure 28: *Immediate utility* boxplot

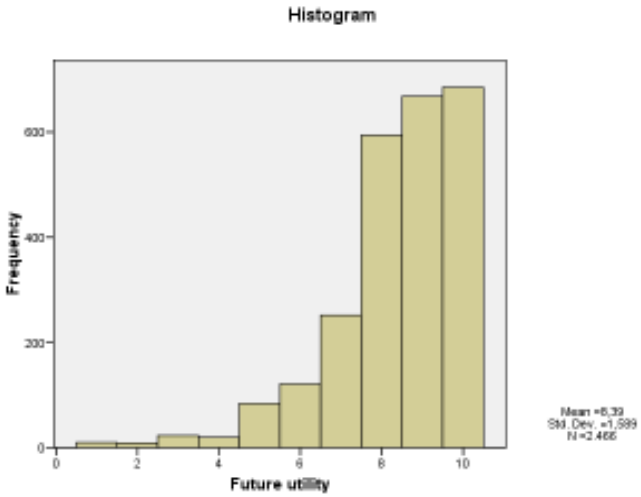

Figure 29: *Future utility* histogram

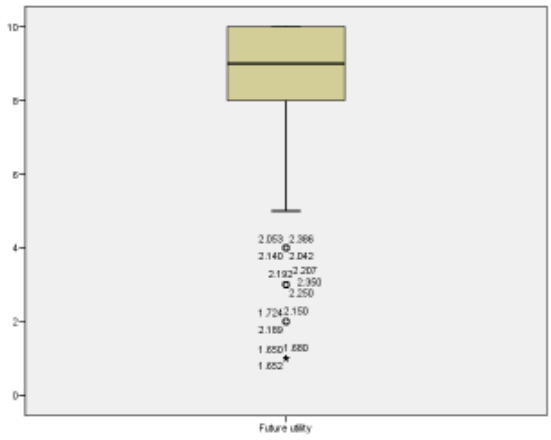

Figure 30: *Future utility* boxplot

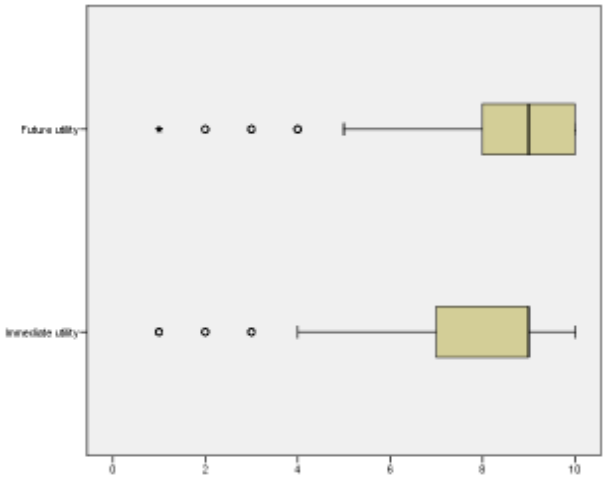

Figure 31: Comparative boxplots on utilities

Had we faced a scenario of high *future utility* with low *immediate utility*, that would suggest that the typical individual was planning to make a career change, that the course she had just attended was not related to her current job, that she was too optimistic about her future opportunities, or that she believed that she would not be given the opportunity to apply what she had just learnt in the current function until her team leader was replaced or some working conditions changed. Yet, that is not the current situation, as we face the coexistence of high *future utility* with a high, although lower, *immediate utility*. We would expect that if *immediate utility* was perceived, then some *future utility* should also be considered (if it is useful now, why not being useful in the future?). To a lesser extent, if the trainee expected *future utility*, eventually some *immediate utility* could occur. This suggests that, if *immediate utility* is perceived, then, most probably, *future utility* will also exist. Yet, the perception of *future utility* does not guarantee *immediate utility*. Therefore, we expected these two variables to be highly, but not perfectly, correlated.

Spearman's (1904b) rho measures the intensity of the relation between ordinal variables, and can be used in populations that are not normal, which is our case. It ranges from -1 and 1 and the closest it is from these extreme values, the higher is the linear association between the variables. The negative sign in Spearman's rho means that the variables vary in opposite ways, that is, higher values in one variable are associated to lower values in the other variable. Kendall's tau b is, as Peason's R, an alternative to Spearman's rho as Pestana and Gageiro (2005, p. 176) suggest. In our specific case, utilities are positive and highly, although not perfectly, correlated (Table 48 and Table 49).

Correlations

			Immediate utility	Future utility
Kendall's tau_b	Immediate utility	Correlation Coefficient	1,000	,796**
		Sig. (2-tailed)	.	,000
		N	2473	2466
	Future utility	Correlation Coefficient	,796**	1,000
		Sig. (2-tailed)	,000	.
		N	2466	2474
Spearman's rho	Immediate utility	Correlation Coefficient	1,000	,855**
		Sig. (2-tailed)	.	,000
		N	2473	2466
	Future utility	Correlation Coefficient	,855**	1,000
		Sig. (2-tailed)	,000	.
		N	2466	2474

**. Correlation is significant at the 0.01 level (2-tailed).

Table 48: Kendall's tau b and Spearman's rho of the utilities

Correlations

		Immediate utility	Future utility
Immediate utility	Pearson Correlation	1	,856**
	Sig. (2-tailed)		,000
	N	2473	2466
Future utility	Pearson Correlation	,856**	1
	Sig. (2-tailed)	,000	
	N	2466	2474

**. Correlation is significant at the 0.01 level (2-tailed).

Table 49: Pearson's R of the utilities

4.2.4.2. Wilcoxon T Test on the Equality of the Means of the Utilities

The simple analysis of the boxplots and the histograms of *immediate* and *future utilities*, as well as the means of both variables, showed that *future utility* is perceived as higher than *immediate utility*: average *future utility* is 8.39, while average *immediate utility* is just 8.20 (Table 50).

	N	Mean	Std. Deviation	Std. Error Mean
Immediate utility	2473	8,20	1,727	,035
Future utility	2474	8,39	1,596	,032

Table 50: Means of the utilities

Yet, we had to test both utilities to know if they were in fact, statistically speaking, differentiated. For that purpose, we ran a Wilcoxon (1945) test for two related (paired) samples (Table 51). The Wilcoxon signed-rank test (Wilcoxon, 1945) is a non-parametric statistical hypothesis test for the case of two related samples or repeated measurements on a single sample. This test is an alternative to the paired Student's t-test when the population cannot be assumed to be normally distributed, as is our case. We could have used the sign test for this purpose, but the Wilcoxon signed-rank test is a more powerful alternative to the sign test. Besides, the Wilcoxon test considers, not only the direction of a difference, but also the magnitude of the difference between pairs, and these are the two main reasons why we decided to use it instead of the sign test. Some literature (for instance, Mayhall, 2004, p. 64) assumes that the Wilcoxon can be applied to ordinal or measurement data, without any additional assumption. Some authors (Coughlin, 1999, p. 15; Easton & McColl, 2009, p. 476; Pestana & Gageiro, 2005, p. 476) defend that, to apply this test, we have to assume that the population probability distribution is symmetric. That is to say that we have to assume that the underlying population from which the sample is drawn is symmetrical about the hypothesized median, leading to the assumption that the difference has a symmetrical distribution around zero. This is not a very hard assumption to make in our case, as the median of the difference between future and *immediate utility* in the sample is 0, the average difference is .19. We, therefore, assume that the population from which this sample is drawn has a symmetrical distribution about zero, regarding the difference of the two variables being analyzed[29]. We also assume this in all the other situations where we use this test.

Our hypotheses were:

H_o: *Immediate utility* is equal to *future utility*
H_1: *immediate utility* is different from *future utility*

While running Wilcoxon test, we excluded cases *test-by-test* but the conclusions would hold true if we had excluded cases *listwise* (Table 51). We rejected the hypothesis of equality of the central tendency of the *immediate* and *future utilities* (Table 52). With the *p-value* obtained, we can even hypothesize a unilateral test and in this case we can conclude, with a 95% confidence, that *future utility* is perceived as higher than *immediate utility*.

Ranks

		N	Mean Rank	Sum of Ranks
Future utility - Immediate utility	Negative Ranks	215[a]	296,30	63704,00
	Positive Ranks	468[b]	363,00	169882,00
	Ties	1783[c]		
	Total	2466		

a. Future utility < Immediate utility

b. Future utility > Immediate utility

c. Future utility = Immediate utility

Table 51: Wilcoxon ranks (*future* and *immediate utility*)

[29] If we had felt that the sample had a severe violation of the assumption of symmetry, or if outliers were present, we would have made a simple procedure of transformation of data to promote normality and then performed a paired t test or used another non-parametric test. That transformation would simply involve taking logarithms of sample values to reduce the skewness. That would allow us to use the paired t test that is more powerful than the Wilcoxon signed-rank test.

Test Statistics[b]

	Future utility - Immediate utility
Z	-10,822[a]
Asymp. Sig. (2-tailed)	,000

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Table 52: Wilcoxon test (*future* and *immediate utility*)

4.2.4.3. Sign Test on the Utilities

Since we made an assumption (above) in order to use the Wilcoxon test, we also ran a sign test to confirm this conclusion. The binomial sign test for matched pairs only requires ordinal scales within each pair. This test does not use the numeric value of the answers, or its differences, but only its signal. With this test, we also reject H_o (Table 53 and Table 54).

Frequencies

		N
Future utility - Immediate utility	Negative Differences[a]	215
	Positive Differences[b]	468
	Ties[c]	1783
	Total	2466

a. Future utility < Immediate utility

b. Future utility > Immediate utility

c. Future utility = Immediate utility

Table 53: Sign test frequencies (*future* and *immediate utility*)

Test Statistics[a]

	Future utility - Immediate utility
Z	-9,643
Asymp. Sig. (2-tailed)	,000

a. Sign Test

Table 54: Sign test (*future* and *immediate utility*)

4.2.4.4. Comparison of Utilities Between Groups of Courses

We tested if *immediate* and *future utilities* were different between two groups: regular vocational e-learning courses and courses that allow professional certification.

Our hypotheses were:

H_o: *Immediate utility* in group i is equal to *immediate utility* in group j
H_1: *Immediate utility* in group i is different from *immediate utility* in group j

And

H_o: *Future utility* in group i is equal to *future utility* in group j
H_1: *Future utility* in group i is different from *future utility* in group j

where i is the group of regular vocational courses and j is the group of courses that allow professional certification.

We ran a two-independent sample non-parametric test for this purpose.

There are two types of tests that can be applied to this situation where two independent samples are compared (Coughlin, 1999, pp. 16-21):

- The median test, which is used when evaluating whether two independent samples with the same distribution have the same median. In this test, the statistic considers the variation in both samples and determines the likelihood that the two samples come from the same distribution with the same median;
- The Mann-Whitney test (1947), which is the non-parametric test that is analogue to the two-sample parametric t-test.

We decided to use the Mann-Whitney (1947) test to analyse the hypotheses.

In both groups, *future utility* was higher than *immediate utility* and the difference was wider in the group of professional certification courses (Table 55 and Table 56). Both utilities were statistically lower in regular vocational e-learning courses than in professional certification courses (Table 57 and Table 58). The Z statistic was -1.857 in *immediate utility* and -0.839 in *future utility*. We, therefore, do not reject the hypothesis of, at a significance level of 5%, the averages of both utilities being equal between regular vocational e-learning courses and courses that allow professional qualification. Even so, we have to be careful with these results, as there may be a misunderstanding of what is a certification course. In fact, at EVOLUI,COM, some courses that allow professional certification are some times attended by individuals who are not looking for that certification. For example, the course 'training management', one of EVOLUI.COM's best-sellers ever, is a certified course that allows professional trainers to revalidate their trainer's certificate. Yet, this course is attended also by individuals who are not trainers, such as training and human resources managers, who usually are looking, not for the certifications that they could get with the course if they were professional trainers, but for help to organize their work. Later (page 218), we will look deeper at a specific case related to professional certification.

Descriptive Statistics (a)

	N	Minimum	Maximum	Mean	Std. Deviation
Immediate utility	1322	1	10	8,22	1,805
Future utility	1319	1	10	8,38	1,675
Valid N (listwise)	1316				

a The course provides professional certification = Regular online course

Table 55: Means of both utilities in regular online courses

Descriptive Statistics (a)

	N	Minimum	Maximum	Mean	Std. Deviation
Immediate utility	1151	1	10	8,18	1,633
Future utility	1155	1	10	8,41	1,502
Valid N (listwise)	1150				

a The course provides professional certification = Certification course

Table 56: Means of both utilities in professional certification courses

Ranks

	The course provides	N	Mean Rank	Sum of Ranks
Immediate utility	Regular online course	1322	1261,27	1667398,50
	Certification course	1151	1209,12	1391702,50
	Total	2473		
Future utility	Regular online course	1319	1248,46	1646714,50
	Certification course	1155	1224,99	1414860,50
	Total	2474		

Table 57: Mann-Whitney ranks according to the type of course

Test Statistics[a]

	Immediate utility	Future utility
Mann-Whitney U	728726,500	747270,500
Wilcoxon W	1391702,500	1414860,50
Z	-1,857	-,839
Asymp. Sig. (2-tailed)	,063	,401

a. Grouping Variable: The course provides professional certification

Table 58: Mann-Whitney tests to the equality of both utilities between regular vocational e-learning courses and certification courses

4.2.4.5. Comparison of Utilities Between Gender

We tested if *immediate* and *future utilities* had differences according to the gender.

Our hypotheses were:

H_o: *Immediate utility* in group i is equal to *immediate utility* in group j
H_1: *Immediate utility* in group i is different from *immediate utility* in group j

and

H_o: *Future utility* in group i is equal to *future utility* in group j
H_1: *Future utility* in group i is different from *future utility* in group j

where i is the group of female users and j is the group of male users.

In both groups, *future utility* was higher than *immediate utility* and the difference was wider among male users (Table 59 and Figure 32). We ran a Mann-Whitney (1947) (as these are two-independent sample) non-parametric test for the hypotheses stated above (Table 60 and Table 61). With *p-values* of 0 (Table 61), we reject the hypothesis of, at a significance level of 5%, the averages of both utilities being equal between male and female users. Female users have, in fact, a higher perception of immediate and *future utility*.

			Female	Male
Immediate utility	Mean		8,31	8,00
	95% Confidence Interval for Mean	Lower Bound	8,23	7,89
		Upper Bound	8,40	8,11
	5% Trimmed Mean		8,49	8,15
	Median		9,00	8,00
	Variance		2,981	2,942
	Std. Deviation		1,727	1,715
	Minimum		1	1
	Maximum		10	10
	Range		9	9
	Interquartile Range		2	2
	Skewness		-1,514	-1,302
	Kurtosis		2,786	2,528
Future utility	Mean		8,47	8,26
	95% Confidence Interval for Mean	Lower Bound	8,39	8,16
		Upper Bound	8,55	8,36
	5% Trimmed Mean		8,65	8,39
	Median		9,00	8,00
	Variance		2,626	2,319
	Std. Deviation		1,621	1,523
	Minimum		1	1
	Maximum		10	10
	Range		9	9
	Interquartile Range		2	1
	Skewness		-1,631	-1,138
	Kurtosis		3,540	1,770

Table 59: Descriptive statistics of *immediate* and *future utility* for female and male users

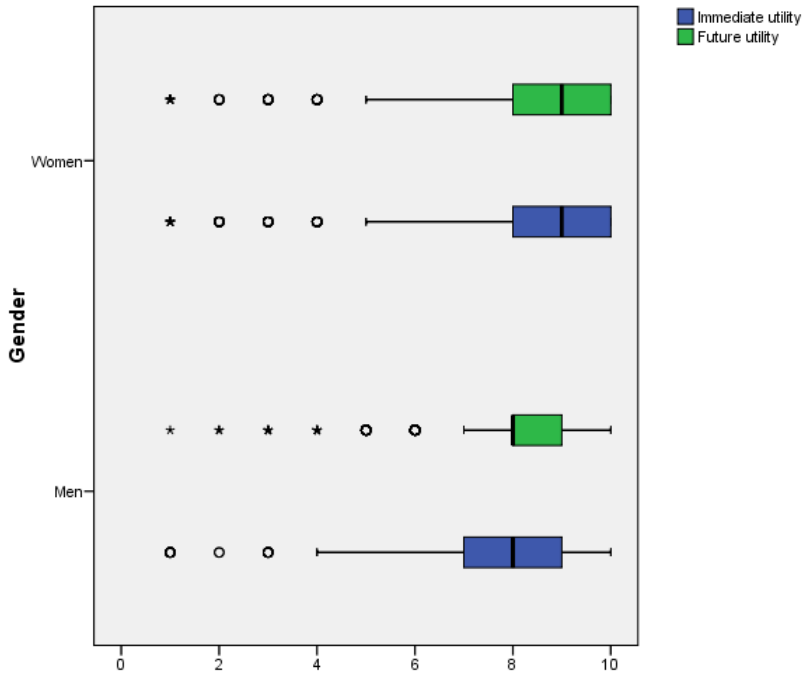

Figure 32: Comparative boxplots on utilities between genders

It would be interesting, in future research studies, to understand why women have higher perceptions of utility than men. For that purpose, we suggest several scenarios that could be converted into research hypotheses:

- Due to family issues/priorities, women have less time available for training programs, so, when they enrol in one course, it is because they really feel they need it: an immediate or future need is strongly felt, and that is why they sacrifice their personal or family well-being;
- Women are more task oriented and choose wiser than men the courses in which they enrol;
- Women are more optimistic and tend to perceive each course as being more useful than it will be;
- The courses, in general, and e-learning courses, in particular, are more women-oriented.

Ranks

	Gender	N	Mean Rank	Sum of Ranks
Immediate utility	Men	889	1133,69	1007847,00
	Women	1584	1294,98	2051254,00
	Total	2473		
Future utility	Men	886	1151,60	1020321,50
	Women	1588	1285,42	2041253,50
	Total	2474		

Table 60: Mann-Whitney ranks in *immediate* and *future utilities* according to the gender

Test Statistics[a]

	Immediate utility	Future utility
Mann-Whitney U	612242,000	627380,500
Wilcoxon W	1007847,000	1020321,50
Z	-5,525	-4,599
Asymp. Sig. (2-tailed)	,000	,000

a. Grouping Variable: Gender

Table 61: Mann-Whitney tests to the equality of both utilities between female and male trainees

4.2.5. Quality Perceptions

4.2.5.1. General Description of Quality Perceptions

Quality perceptions have a positive asymmetry (and a negative skewness as seen in Figure 25) and an average of 8.35 out of 10. There are gender differences (Figure 33) but, at least apparently, no differences according to the type of course (Figure 34).

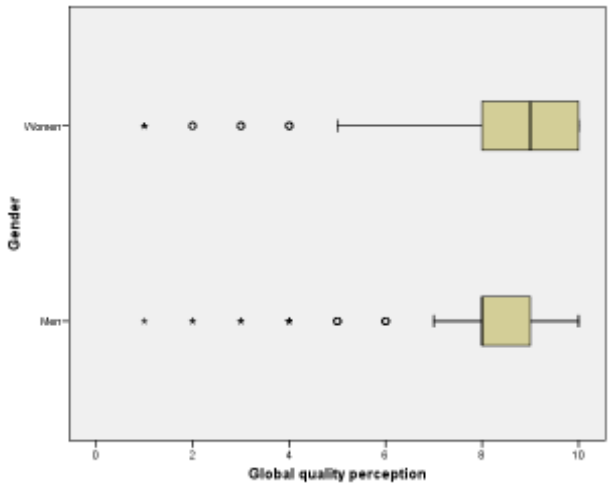

Figure 33: Boxplots of quality perceptions according to the gender

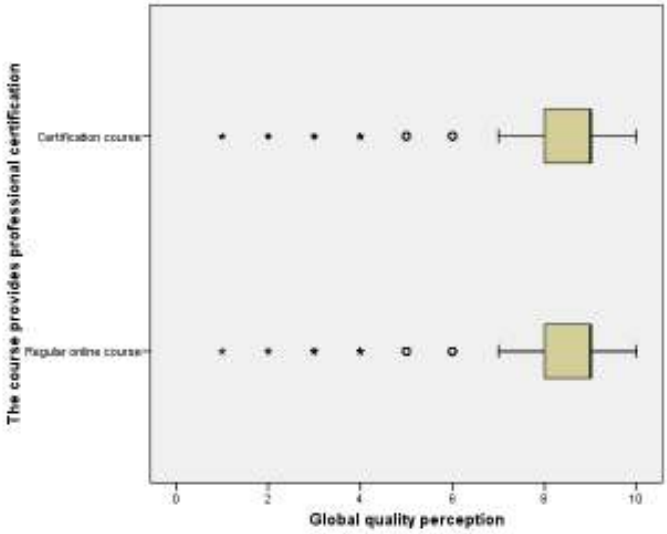

Figure 34: Boxplots of quality perceptions according to type of course

4.2.5.2. Comparison of Quality Perceptions and Quality-Price Relation Between Gender

Women have higher global quality perceptions (mean and median), but in what concerns *quality-price relation*, women have a similar median to men, although a lower mean (Table 62). We tested if quality perceptions and *quality-price relation* had differences according to the gender. We ran a Mann-Whitney (1947) (two-independent sample) non-parametric test for that purpose (Table 62, Table 63, and Table 64).

Our hypotheses were:

H_o: Quality perception in group i is equal to quality perception in group j

H_1: Quality perception in group i is different from quality perception in group j

and

H_o: Quality-price perception in group i is equal to quality-price perception in group j

H_1: Quality-price perception in group i is different from quality-price perception in group j

where i is the group of female users and j is the group of male users.

			Female	Male
Global perception of quality	Mean		8,40	8,20
	95% Confidence Interval for Mean	Lower Bound	8,32	8,11
		Upper Bound	8,47	8,30
	5% Trimmed Mean		8,55	8,31
	Median		9,00	8,00
	Variance		2,51	1,97
	Std. Deviation		1,58	1,40
	Minimum		1,00	1,00
	Maximum		10,00	10,00
	Range		9,00	9,00
	Interquartile Range		2,00	1,00
	Skewness		-1,44	-1,17
	Kurtosis		2,49	2,11
Quality-price relation	Mean		8,03	8,10
	95% Confidence Interval for Mean	Lower Bound	7,93	8,00
		Upper Bound	8,13	8,21
	5% Trimmed Mean		8,21	8,22
	Median		8,00	8,00
	Variance		3,74	2,51
	Std. Deviation		1,93	1,59
	Minimum		1,00	1,00
	Maximum		10,00	10,00
	Range		9,00	9,00
	Interquartile Range		3,00	2,00
	Skewness		-1,17	-1,06
	Kurtosis		1,15	1,43

Table 62: Descriptive statistics of *global perception of quality* and *quality-price relation* for female and male users

With a *p-value* of 0 (Table 64), we reject the hypothesis of, at a significance level of 5%, the averages of global quality perceptions being equal between male and female users, but we do not reject the hypothesis of the judgments on quality-price relation being equal (*p-value* is .368). This means that female users have a higher *perception of quality*, but an equal perception of *quality-price relation*. Several hypotheses can be drawn from this:

- Women are more generous in their appreciations;
- The courses in general, and e-learning courses, in particular, are more oriented to training needs more felt by women;
- Women value different things than men i.e. they have different quality dimensions;
- Women are more price-sensitive than men;
- Women have higher *perceptions of quality* because they perceive higher *utility*.

Ranks

	Gender	N	Mean Rank	Sum of Ranks
Global quality perception	Men	886	1148,34	1017425,50
	Women	1583	1283,51	2031789,50
	Total	2469		
Quality-price relation	Men	873	1189,41	1038358,00
	Women	1538	1215,41	1869308,00
	Total	2411		

Table 63: Mann-Whitney ranks in *global perception of quality* and *quality-price relation* according to the gender

Test Statistics[a]

	Global quality perception	Quality-price relation
Mann-Whitney U	624484,500	656857,000
Wilcoxon W	1017425,500	1038358,000
Z	-4,655	-,901
Asymp. Sig. (2-tailed)	,000	,368

a. Grouping Variable: Gender

Table 64: Mann-Whitney tests to the equality of *global perception of quality* and *quality-price relation* between female and male trainees

4.2.5.3. Correlations of Quality With Other Variables

We used Spearman's rho to measure the correlation between four variables:

- *Global satisfaction*
- *Global perception of quality*
- *Immediate utility*
- *Future utility*

These four variables are positively correlated although not perfectly. Spearman's rho between satisfaction and quality perception is 0.816 and quality is highly correlated with both utilities and satisfaction (Table 65). This suggests that these variables must be relevant to explain quality, even in a linear regression model.

Correlations

			Global quality perception	Global satisfaction	Immediate utility	Future utility
Spearman's rho	Global quality perception	Correlation Coefficient	1,000	,816**	,736**	,732**
		Sig. (2-tailed)	.	,000	,000	,000
		N	2469	2468	2461	2462
	Global satisfaction	Correlation Coefficient	,816**	1,000	,672**	,652**
		Sig. (2-tailed)	,000	.	,000	,000
		N	2468	2480	2472	2473
	Immediate utility	Correlation Coefficient	,736**	,672**	1,000	,855**
		Sig. (2-tailed)	,000	,000	.	,000
		N	2461	2472	2473	2466
	Future utility	Correlation Coefficient	,732**	,652**	,855**	1,000
		Sig. (2-tailed)	,000	,000	,000	.
		N	2462	2473	2466	2474

**. Correlation is significant at the 0.01 level (2-tailed).

Table 65: Correlation between satisfaction, quality, and utilities

4.2.5.4. Explaining Quality Perceptions – A Regression

We adjusted a linear regression with quality as our dependent variable using the *stepwise method* (Efroymson, 1960) in order to follow the successive stages of introduction of variables in the regression model. Had we used another regression method, as the *enter method*, which includes all the variables, we would not have achieved a higher quality model (Table 66), as the R^2 would be the same. With eleven variables (Table 67) included in the best-fit model ($R^2 = .85$) (Table 68 and Table 69), the model can be expressed as:

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + b_9 X_9 + b_{10} X_{10} + b_{11} X_{11} \quad \text{(Equation 1)}$$

where:

Y = *Perception of quality*
X_1 = *Global satisfaction*
X_2 = *Future utility*
X_3 = *Training contents*
X_4 = *Quality-price relation*
X_5 = *Competence, kindness, and promptness of the staff*
X_6 = *Fulfilment of expectations*
X_7 = *Trainer's expertise*
X_8 = *Platform and its functions*
X_9 = *Initial motivation*
X_{10} = *Final motivation*
X_{11} = *Immediate utility*

Including the coefficients extracted by the regression (Table 70), we have:

$$Y = .3 + .125 X_1 + .169 X_2 + .152 X_3 + .133 X_4 + .83 X_5 + .122 X_6 + .7 X_7 + .057 X_8 - .045 X_9 + .069 X_{10} + .044 X_{11} \quad \text{(Equation 2)}$$

The variables *fulfilment of training objectives*, *contribution of the forum for the learning process*, and *dynamics and help provided by the tutor in the forum* were excluded from the regression, i.e., they were considered, by the *stepwise method*, as unimportant to explain quality perceptions. *Satisfaction* is the factor contributing most for the model, which is consistent with the discussions on the marketing literature about quality and satisfaction and the relation between both. Alone, satisfaction explains 71.6% of the variability of quality. *Satisfaction*, as a quality dimension, is followed by *future utility* and then by *contents*, as we were somehow expecting (see the conclusions on the qualitative analysis on page 141). The 11th regression model, which is the one that includes more variables and provides the highest quality of fitness, excluded from the regression the following variables:

- *Fulfilment of training objectives*;
- *Contribution of the forum for the learning process*;
- *Dynamics and help provided by the tutor*.

Immediate utility was only included in the last model of quality perceptions, which means that this variable is a poor contributor to quality perception and is consistent with the conclusion we have reached previously that *future utility* is more important than *immediate utility*. Final motivation had similar low contributions to explain quality.

One advantage of having carried out several temporal and comparative analyses is that we are now able to feel more comfortable with our conclusions. In fact, in all our partial analysis, these conclusions had already been made and our final analysis 'only' confirms the ideas that we had been nurturing. In comparison with the partial analyses, only a small difference has been identified: in our second partial analysis (with all the data collected until November 25, 2008), the best-fit regression model (R^2 = .852) excluded:

- *Final motivation*;
- *Immediate utility*;
- *Contribution of the forum for the learning process*;
- *Dynamics and help provided by the tutor*.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,922(a)	,850	,849	,583

a Predictors: (Constant), Quality-price relation, Initial motivation, Contribution of the forum for the learning process, Immediate utility, Platform and its functions, Competence, kindness, and promptness of the staff, Trainer's expertise, Fulfilment of expectations, Dynamics and help of the tutor in the forum, Training contents, Future utility, Fulfilment of training objectives, Final motivation, Global satisfaction

Table 66: Quality of each regression model that explains *perceptions of quality* (*enter method*)

Variables Entered/Removed(a)

Model	Variables Entered	Method
1	Global satisfaction	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	Future utility	
3	Training contents	
4	Quality-price relation	
5	Competence, kindness, and promptness of the staff	
6	Fulfilment of expectations	
7	Trainer's expertise	
8	Platform and its functions	
9	Initial motivation	
10	Final motivation	
11	Immediate utility	

a Dependent Variable: Perception of quality

Table 67: Variables used in the regression

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,846(a)	,716	,716	,799
2	,883(b)	,779	,779	,706
3	,902(c)	,814	,813	,649
4	,912(d)	,831	,831	,617
5	,916(e)	,839	,838	,604
6	,918(f)	,843	,843	,595
7	,919(g)	,845	,845	,592
8	,920(h)	,847	,846	,589
9	,921(i)	,848	,847	,586
10	,922(j)	,849	,849	,584
11	,922(k)	,850	,849	,583

a Predictors: (Constant), Global satisfaction
b Predictors: (Constant), Global satisfaction, Future utility
c Predictors: (Constant), Global satisfaction, Future utility, Training contents
d Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation
e Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation, Competence, kindness, and promptness of the staff
f Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation, Competence, kindness, and promptness of the staff, Fulfilment of expectations
g Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation, Competence, kindness, and promptness of the staff, Fulfilment of expectations, Trainer's expertise
h Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation, Competence, kindness, and promptness of the staff, Fulfilment of expectations, Trainer's expertise, Platform and its functions
i Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation, Competence, kindness, and promptness of the staff, Fulfilment of expectations, Trainer's expertise, Platform and its functions, Initial motivation
j Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation, Competence, kindness, and promptness of the staff, Fulfilment of expectations, Trainer's expertise, Platform and its functions, Initial motivation, Final motivation
k Predictors: (Constant), Global satisfaction, Future utility, Training contents, Quality-price relation, Competence, kindness, and promptness of the staff, Fulfilment of expectations, Trainer's expertise, Platform and its functions, Initial motivation, Final motivation, Immediate utility

Table 68: Quality of each regression model that explains *perceptions of quality* (*stepwise method*)

ANOVA[l]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3675,130	1	3675,130	5751,951	,000 [a]
	Residual	1454,219	2276	,639		
	Total	5129,349	2277			
2	Regression	3995,434	2	1997,717	4008,064	,000 [b]
	Residual	1133,915	2275	,498		
	Total	5129,349	2277			
3	Regression	4172,969	3	1390,990	3307,380	,000 [c]
	Residual	956,380	2274	,421		
	Total	5129,349	2277			
4	Regression	4263,680	4	1065,920	2798,803	,000 [d]
	Residual	865,669	2273	,381		
	Total	5129,349	2277			
5	Regression	4301,217	5	860,243	2360,099	,000 [e]
	Residual	828,132	2272	,364		
	Total	5129,349	2277			
6	Regression	4324,543	6	720,757	2033,830	,000 [f]
	Residual	804,806	2271	,354		
	Total	5129,349	2277			
7	Regression	4334,687	7	619,241	1768,900	,000 [g]
	Residual	794,662	2270	,350		
	Total	5129,349	2277			
8	Regression	4343,159	8	542,895	1566,833	,000 [h]
	Residual	786,190	2269	,346		
	Total	5129,349	2277			
9	Regression	4350,167	9	483,352	1406,914	,000 [i]
	Residual	779,182	2268	,344		
	Total	5129,349	2277			
10	Regression	4356,398	10	435,640	1277,694	,000 [j]
	Residual	772,951	2267	,341		
	Total	5129,349	2277			
11	Regression	4359,534	11	396,321	1166,598	,000 [k]
	Residual	769,815	2266	,340		
	Total	5129,349	2277			

a., b., c., d., e., f., g., h., i., j., and k. are defined in Table 68
l. Dependent variable: Global perception of quality

Table 69: ANOVA of the regression model that explains *perceptions of quality*

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
11	(Constant)	,300	,084		3,554	,000
	Global satisfaction	,125	,021	,133	5,904	,000
	Future utility	,169	,016	,175	10,402	,000
	Training contents	,152	,016	,162	9,764	,000
	Quality-price relation	,133	,010	,160	13,089	,000
	Competence, kindness, and promptness of the staff	,083	,012	,089	7,022	,000
	Fulfilment of expectations	,122	,019	,137	6,430	,000
	Trainer's expertise	,070	,014	,069	4,989	,000
	Platform and its functions	,057	,012	,064	4,903	,000
	Initial motivation	-,045	,009	-,049	-5,137	,000
	Final motivation	,069	,016	,077	4,277	,000
	Immediate utility	,044	,015	,050	3,039	,002

a Dependent Variable: Global quality perception

Table 70: Coefficients of the regression model

4.2.6. Factor Analysis of Quality Perceptions

4.2.6.1. Description of Factor Analysis

Factor analysis, which was originally developed by Spearman (1904a), is a statistical technique widely used in psychology and the social sciences. It consists of a number of statistical techniques, the aim of which is to simplify complex sets of data (Kline, 1994, p. 3), like human abilities. As Kline (1994, p. 2) exemplifies, with as few as five variables, there are 25 entries in a correlation matrix, which are hard to keep in one's head. In a study with 100 variables, there are 10.000 correlations. These correlations would be incomprehensible without a simplifying procedure, which can help discover what might account for those correlations. Factor analysis aims to simplify human abilities by simplifying the correspondent correlation matrix. Factor analysis is used to explore the interrelationships among variables to discern whether or not the variables can be grouped into a smaller set of underlying factors. There are three primary applications of factor analysis (Coughlin, 1999; Coughlin & Knight, 2003, pp. 180-181). The first is to explore data for patterns: *exploratory factor analysis* reveals patterns among the inter-relationships of the items, and is used for this purpose. The second application is for data reduction: a) factor analysis can be used to reduce a large number of variables into a smaller and more manageable number of factors; and b) it can create factor scores for each subject that represents these higher order variables. The third and last purpose is to confirm the hypothesis of a pre-existing factor structure: when a given factor structure exists, *confirmatory factor analysis* can be conducted to support the validity of this factor structure i.e., to confirm an existing or hypothesized factor structure.

Traditionally, factor analysis has been used to *explore* the possible underlying structure in a set of interrelated variables, without imposing any preconceived structure on the outcome. It is rare to find investigation processes that are made without any theoretical background, as defended in *grounded theory* (Glaser & Strauss, 1967): even open questionnaires and unstructured interviews start with questions that have hunches built into them. Yet, in exploratory factor analysis, although some previous theoretical influences have conditioned the design of the data collecting instruments, there is a free spirit, to which Chid (1970, p. 6) called the "let's see what happens spirit". At the other extreme we find confirmatory analysis, to which Cattell (Hurley & Cattell, 1962, quoted in Child, 1970, p. 7) calls the *Procrustes technique*. Procrutes was, in the Greek mythology, a bandit who tied his victims to a bed and made them fit it, either by stretching them or cutting off their limbs. In confirmatory factor analysis, the Procrutes technique involves testing data to see how closely they fit to a hypothesized factor structure (without cutting or stretching involved). The objective is to confirm or test hypotheses, rather than create them. Confirmatory analysis starts with a hypothesis about the possible structure of a given concept, and only then are the variables carefully chosen to fit the structure. As Child (1970, p. 7) puts it, "it is a little bit like creating a mould and testing an object against the mould to see how well it fits".

Kline (1993, p. 115) differentiates exploratory and confirmatory factor analysis as this:

- Exploratory factor analysis is used to simplify a large set of data, and to map out the most important variables;
- Confirmatory factor analysis is used to support hypotheses and to investigate whether the data fits such hypotheses.

4.2.6.2. Terminology

Factor analysis distinguishes components and factors. *Components* are real factors because they can directly derive from the data of a study. Common *factors* are hypothetical because they are estimated from the data (Kline, 1993, p. 115). Coughlin (1999, p. 181) reports a distinction, which is commonly made in the literature, between *observed variables* (those that are measured by the researcher) and *latent variables* (*unobserved variables* or *hypothetical constructs*, which are not directly measurable, as the researcher only has indicators of these measures). *Factors* are *latent variables*.

Exploratory and confirmatory factor analysis and observed and latent variables are illustrated in Figure 35. *Observed variables* are displayed as squares in the model. *Latent variables* are drawn as circles to indicate that they are not directly measured. The arrows start at the factor and point toward the item. The direction of the arrows is important and is indicative of the fact that the factor or construct is thought to influence the individual's score on the given item. Because errors in measurement always exist, all items have an error component, which are indicated as circles that contain an "e". In the confirmatory factor analysis (right panel in Figure 35), this analysis is used to confirm a two-factor model, which is being hypothesized. Certain items are hypothesized to be associated only with given factors; thus not all factors have arrows to all items.

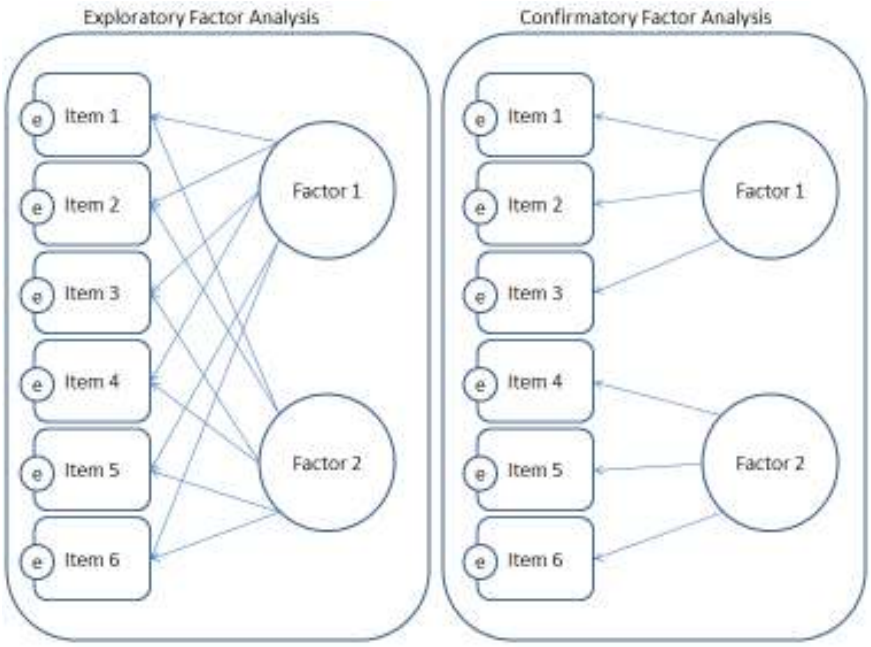

Figure 35: Exploratory *versus* confirmatory factor analysis
Source: Adapted from Coughlin (1999, pp. 182-183)

Each factor is a *dimension* or *construct*, which is a condensed statement of the relationships between a set of variables. A linear combination of variables, any combination, is a *factor*. Combinations may involve differential weightings of each variable, and weightings can be positive or negative for any variable. The factor score of a subject is the combination of her scores on the variables in the combination, each weighted as in the combination, and usually expressed as a standard score (Kline, 1993, p. 116).

A *factor* is a construct operationally defined by its *factor loadings*, which are the correlations of a variable with a *factor* (or *component*) (Royce, 1963). Since a factor score is a score on a given linear combination of variables for each subject, it is clear that this score can be correlated with the score on each variable in the data matrix. These correlations are the factor loadings. These correlations can be positive or negative and of any size (Kline, 1993, p. 116). The meaning of factor loadings is made clear in the component analysis that we discuss later.

It is unlikely that the variance in-group of data can be explained by one factor. After the first factor has been extracted, it is necessary to extract the other factors. The number of factors depends upon the factor loadings on the first and subsequent factors. Very high loadings imply that only one factor is necessary. If the first factor has virtually zero loadings, that means that there is no common factor. In general, the first factor usually has moderate loadings, ranging around .3 and .7, and their sign is irrelevant to the size. In this case, further factors can be extracted (Kline, 1993, pp. 116-118).

The concepts of *factor* and *factor loadings* imply that (Kline, 1993, p. 118):

- The squared factor loading of a variable indicates how much the variance of that variable is explained by the factor. Thus, if the variable loads .8 on factor 1, that means that 64% of the variance of that variable is explained by that factor;
- The average squared loadings of a factor show the percentage of variance in the data that is explained by the factor;
- The sum of the averaged squared loadings indicates the proportion of variance in the matrix that is explained by the factors. The larger this is, the better the factors are in explaining the original variables;
- The sum of squared loadings of a variable on the factors (the rows of the factor matrix) indicates the proportion of variance in each variable that the factors can explain. This is known as h^2 or the *communality*. The more a variable shares common factors with other variables, the larger the *communality* will be. The larger the *communality*, the better the factors account for the variance of the particular variable;
- Variables can be estimated from factor scores. For example, in a three-factor solution the best estimate of variable x_i is obtained from the sum of the standard scores on the three factors, each standard score being multiplied by the regression weights, the beta weights, of the variable x_i on each factor.
- Factor loadings are the correlations of the variable with the factor, but they are also the beta weights for predicting the variable from the factor, where all variables are expressed as standard scores and where the factors are uncorrelated.

Factor loadings are considered high if they are greater than .6 (the positive or negative sign is irrelevant) and moderately high if they are above .3 (Kline, 1994, p. 6).

4.2.6.3. Factor Analysis as a Triangulation Technique

We decided to use exploratory factor analysis in our case, as we did not have any possible previous factor structure that we could use to perform a confirmatory factor analysis. In exploratory factor analysis the aim is to explore the field, and discover the main constructs or dimensions, and therefore the result is a number of factors. Yet, the

meaning of these factors has to be deduced from the factor loadings, which in turn, must be validated against external criteria (Kline, 1994, pp. 6-7). This means that stand alone, exploratory factor analysis would be risky to make. Yet, at this point of our study, we already have some ideas about utility and quality that we have drawn from our qualitative study, which exploratory factor analysis can help validate. On the other hand, those ideas can help us deduce the meaning of the factors that are extracted in factor analysis.

As a researcher should not run exploratory factor analysis on a data set and then use the same data to confirm the factor structure (Coughlin, 1999, p. 182), we only run the exploratory analysis. We are aware that we could have followed Pedhauzer and Schmelkin (1991, quoted in Coughlin, 1999, p.182-183) in their suggestion to use a cross-validation procedure where the researcher randomly splits the sample in half and runs the exploratory analysis on the first sample and the confirmatory analysis on the second sample. Yet, as the data collection effort is residual, we kept collecting data even after February 17, 2009, which means that a confirmatory factor analysis can still be made in the future, whenever a relevant sample is available. Had we chosen to use confirmatory factor analysis, we would have used *structural equation modelling* (Jöreskog & Sörbom, 1999) and LISREL® or AMOS® (Arbuckle, 2003) as the supporting software. For the exploratory factor analysis we used SPSS®.

4.2.6.4. Main Decisions in Factor Analysis

Exploratory factor analysis has three basic decision points:

- Decide the number of factors;
- Choose an extraction method;
- Choose a rotation method; and
- Label the factors.

4.2.6.4.1. The Number of Factors

The aim of exploratory factor analysis is to determine if the items can be validly organized into a smaller set of underlying factors. When determining the appropriate number of factors, one factor is identified for each variable or item. If no relationships exist between the variables, each variable would make its own unique factor. Ideally, a factor reduction will occur. There are several methods for finding the number of factors to be extracted, as the *eigen-one*, the *scree* test, and *parallel analysis*. The most common approach to deciding the number of factors is to generate a scree plot. The scree plot is a two dimensional graph with factors on the x-axis and eigenvalues on the y-axis.

Eigenvalues represent the variance accounted for by each underlying factor. They are not represented by percentages but scores that total the number of items. A 12-item scale will, theoretically, have 12 possible underlying factors, and each factor will have an *eigenvalue* that indicates the amount of variation in the items accounted for by each factor. If the first factor has an *eigenvalue* of 3.0, it accounts for 25% of the variance (3/12=.25). The total of all the *eigenvalues* will be 12 if there are 12 items, so some factors will have smaller eigenvalues. *Eigenvalues* are typically arranged in a scree plot

in descending order (Newsom, 2008). According to this method of determining the number of useful factors, those factors on the initial steep line of the plot should be retained and factors on the *scree*, which is a gradually trailing line, should be eliminated (Coughlin, 1999, p. 189). From the scree plot (Figure 37 in page 191) we can see that the first couple of factors account for most of the variance, and the remaining factors all have small *eigenvalues*. A researcher might examine this plot and decide there are two underlying factors and the rest of the factors are just *scree* or error variation. So, this approach to selecting the number of factors involves a certain amount of subjective judgment (Newsom, 2008).

Another approach is called the *Kaiser-Guttman rule* (Guttman, 1954; Kaiser, 1960), which states that the number of factors is equal to the number of factors with *eigenvalues* greater than 1.0: the researcher is instructed to keep only the factors whose *eigenvalues* are greater than 1.0 and discard the rest. The rationale for choosing the value of 1.0 is that a factor must account for a variance at least as large as the variance of a single standardized variable (which has a mean of zero and a variance of 1). According to Guttman and Kaiser (Guttman, 1954; Kaiser, 1960), when a correlation matrix is factorized, it makes no sense to retain components that explain less variance than the original standardized variables. So, principal components eigenvalues equal or less than 1 are excluded from the analysis. Although the Kaiser-Guttman (Guttman, 1954; Kaiser, 1960) approach tends to produce many factors, we used it as the decision criteria, as it seems more objective, but we also supported our decision on the scree plot.

4.2.6.4.2. The Extraction Method

As Newsom (2008, p. 62) puts it, once the number of factors is decided, the researcher runs another factor analysis to get the loadings for each of the factors. To do this, she has to decide which mathematical solution to use. The extraction method will produce *factor loadings* for every item on every extracted factor. Ideally, results will show what is called a *simple structure*, with most items having a large loading on one factor but small loadings on other factors.

There are several extraction methods:

- Principal components analysis (PCA);
- Principal axis factoring;
- Maximum likelihood (also known as canonical factoring);
- Generalized least-squares;
- Unweighted least-squares;
- Alpha factoring;
- Image factoring.

Principal axis factoring is suggested by some authors (for example, Costello & Osborne, 2005; Coughlin, 1999, p. 186) as the appropriate method for extraction in the case of exploratory factor analysis. While using the principal axis factor extraction, the initial *communalities* (the extent to which an item correlates with all other items) are reviewed: the amount of variability each item shares with all other items is determined and this value is inserted into the correlation matrix, replacing the 1.0 in the diagonal of the matrix. As a result, principal-axis factoring is only analyzing common factor variability, removing the uniqueness or unexplained variability from the model.

The principal components analysis explains all the variance in any particular correlation matrix, including the error variance (Kline, 1994, p. 40). Using the principal-components extraction, all the initial communalities are set to 1.0, indicating the assumption that the model explains all of the variance of each item, which is a flawed assumption according to those authors that defend principal-axis factoring.

Figure 36 contains the SPSS output for the initial communalities from our case study data using both principal-components and principal-axis extraction procedures. Using the principal components extraction method, all the initial communalities are set to 1.0, while using the principal axis factor extraction, all of the items have initial communalities substantially less than 1.0. The tables in Figure 36 can be used for revising or rewording the items or to reduce the amount of variables, as those variables with lower communalities can be excluded. Yet, other criteria for revising or removing items, such as the eigen-one rule, are more commonly used.

Two additional methods are suggested by Coughlin (1999, p. 187):

- The generalized least-squares factor extraction method, which minimizes the sum of the squared differences between the observed and reproduced correlation matrices. A reproduced correlation matrix shows the predicted pattern of relationships between the items when the factor analysis solution is assumed to be correct. Thus, when the factor structure is supported by the data, the reproduced correlations will be close to the observed values. In this method, the correlations are weighted by the inverse of their uniqueness, so that variables with high uniqueness are given less weight than those with low uniqueness;
- The maximum-likelihood factor extraction method provides parameter estimates most likely to have produced the observed correlation matrix if the sample is from a multivariate normal distribution. The correlations are also weighted by the inverse of the uniqueness of the variables, and an iterative algorithm is employed.

The main advantage of these two last methods is that they can be used to produce a goodness-of-fit test for the analysis, because they both create parameter estimates that represent the proposed model (e.g., reproduced correlation matrix), which the observed data can be tested against. This way, the goodness-of-fit test indicates whether or not the proposed factor analysis model fits the data. Even so, principal-components extraction is the most popular extraction method as Costello & Osborne (2005) recognize.

4.2.6.4.3. The Rotation Method

After the extraction of factors, it might be difficult to interpret and name the factors or components, based on their factor loadings. Once an initial solution is obtained, the loadings are usually rotated. Rotation is a process that is used to simplify the interpretation of a factor analysis.

Usually, there are three types of problems within the initial factor structure (Coughlin, 1999, pp. 191-193):

- The first factor explains the most amount of variance and, as a result, most of the variables will have at least some relationship with this first factor. As the first factor accounts for the maximum share of the variance, this means that most variables will have high loadings on the most important factor, and small loadings on the other factors. Thus, this first factor becomes very generalized and difficult to interpret;
- Many factors are bipolar. A *bipolar factor* is one in which both significant positive and negative loadings exist. A negative loading is like a negative correlation coefficient. Bipolar factors, can create negative loadings that cannot be interpreted logically from the data;
- Because of the first factor being a general factor, many variables may load on more than one factor, creating *double factor* loadings.

Rotation is a way of maximizing high loadings and minimizing low loadings, so that the simplest possible structure is achieved. There are two basic types of rotation: orthogonal and oblique:

- Orthogonal means that the factors are assumed to be uncorrelated with one another. Factors are rotated in such a way that they are always at right angles to each other (cos 90º = 0); This is the default setting in all statistical packages but is rarely a logical assumption about factors in the social sciences, albeit it is commonly used as oblique rotation has serious problems (Kline, 1994, pp. 62-63);
- Oblique rotation derives factor loadings based on the assumption that the factors are correlated and gives the correlation between the factors in addition to the loadings (Newsom, 2008). In oblique rotations, the factor axes can take up any position in factor space, which allows more freedom in selecting the position of each factor in the factor space than does orthogonal rotation, where there is the constraint of orthogonality (Kline, 1994, p. 62). The closer the rotation angle is to zero, the higher the correlation between the factors. If the rotation angle is zero, this means that the two factors have merged. If the rotation angle approaches 90º, the relationship between the factors nears zero and approximates the orthogonal rotation method (Coughlin, 1999, pp. 195-196).

Within each rotation method there are several available algorithms (Kline, 1994, p. 68; Newsom, 2008):

- Orthogonal rotation includes Varimax, Quartamax, and Equamax;
- Oblique rotation includes Oblimin, Quartmin, Biquartmin, Oblimax, Covarimin, Binormamin, Promax, and Direct Quartmin;

Varimax rotation (Kaiser, 1958) aims at *simple structure* (Thurstone, 1947) while keeping the factor axes orthogonal. This means that the rotated factors are uncorrelated and the communalities and the ability to reproduce the original correlation matrix are identical to the original factor analysis. Varimax aims to maximize the sum of *variances* of squared loadings in the columns of the factor matrix. This produces in each column (i.e., in each factor) loadings that are either high or near zero (Kline, 1994, pp. 67-68).

We used Varimax as the rotation method because it is considered "an excellent method of reaching orthogonal simple structure and that in many cases oblique solutions are virtually identical because the correlation between the factors is so small as to be negligible" (Kline, 1994, p. 68) and when an orthogonal simple structure rotation is desired, as it frequently does, Varimax should be applied (Kline, 1994, pp. 68, 76). Child (1970, p. 154) supports this choice, indicating Varimax as the favourite orthogonal rotation method and Oblimin as the favourite oblique rotation method. Coughlin (1999, p. 196) also recognizes that Varimax rotation is a commonly applied technique.

4.2.6.4.4. Label the Factors

Researchers are encouraged to apply the principles of *simple structure* (Thurstone, 1947) when the moment of labelling the factors comes. Thurstone's simple structure is a set of guidelines that help the researcher interpret a rotated factor matrix, which includes the following:

- Select items that relate strongly to the proposed factor (i.e. factor loadings of .4 or above);
- Delete or drop items that are double loaded (i.e. factor loadings of .4 or above on more than one factor);
- Delete items that are unique or do not load on any factor (i.e. factor loadings below .4).

This simple structure suggests that each item should be related to only one factor.
Even so, sometimes researchers may keep items with double factor loadings as long as the items logically relate to both factors (Coughlin, 1999, p. 198).

4.2.6.5. Application

We carried out a factor analysis in order to find higher components that could explain the correlation matrix (Table 44, available in page 163) and determine quality factors. As extraction method, we used the principal components method with *eigenvalues* higher than 1 and *Varimax* rotation with *Kaiser* normalization and chose to exclude missing values *listwise*.

Two distinct factors were found (Figure 37, Table 71, and Table 72). The two factors explain 73% of total variance (Table 73). Given the extracted number of factors, the eigenvalues were then recalculated based on the extracted factors only. The second panel in Table 73 displays these values and only the two factors. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test (see, for instance, Kaiser, 1981) (Table 74) returned a value of 0.953, which, being greater than 0.5, means that a satisfactory factor analysis was made. Another indicator of the strength of the relationship among variables is Bartlett's (1937) test of sphericity, which is used to test the null hypothesis that the variables in the population correlation matrix are uncorrelated. The observed significance level is .000, which is small enough to reject the hypothesis and allow us to conclude that the strength of the relationship among variables is strong and the factor analysis made is satisfactory (Coughlin & Knight, 2003) (Table 74).

Labelling the two factors, even following the *simple structure* (Thurstone, 1947), did not come as an easy task: One factor seems to be more related with the technical functionality and human interaction (factor 2), and the other more related to the trainee and her attitudes and perceptions: her satisfaction, her expectations, her motivations, and the utilities that the course had to her (factor 1) (Table 72). Yet, other interpretations could be done: one can be more related with initial predisposition and training process (factor 2), and the other more related with achievements, training results or consequences (factor 1). Even when we used another extraction method, namely principal axis factoring (Table 75, where only factor loadings of .4 or greater are presented), we were not confident enough to label these factors.

Communalities

	Initial	Extraction
Global satisfaction	1,000	,865
Fulfillment of expectations	1,000	,843
Initial motivation	1,000	,315
Final motivation	1,000	,833
Fulfillment of training objectives	1,000	,804
Platform and its functions	1,000	,655
Training contents	1,000	,782
Trainer's expertise	1,000	,745
Contribution of the forum for the learning process	1,000	,773
Dynamics and help of the tutor in the forum	1,000	,813
Competence, kindness, and promptness of the staff	1,000	,767
Immediate utility	1,000	,700
Future utility	1,000	,708
Quality-price relation	1,000	,628

Extraction Method: Principal Component Analysis.

Communalities

	Initial	Extraction
Global satisfaction	,871	,870
Fulfillment of expectations	,857	,838
Initial motivation	,297	,264
Final motivation	,809	,824
Fulfillment of training objectives	,786	,792
Platform and its functions	,623	,613
Training contents	,767	,764
Trainer's expertise	,711	,713
Contribution of the forum for the learning process	,629	,676
Dynamics and help of the tutor in the forum	,730	,785
Competence, kindness, and promptness of the staff	,653	,702
Immediate utility	,758	,633
Future utility	,766	,641
Quality-price relation	,559	,564

Extraction Method: Principal Axis Factoring.

Figure 36: Communalities according to *Principal Component Analysis* and *Principal Axis Factoring*

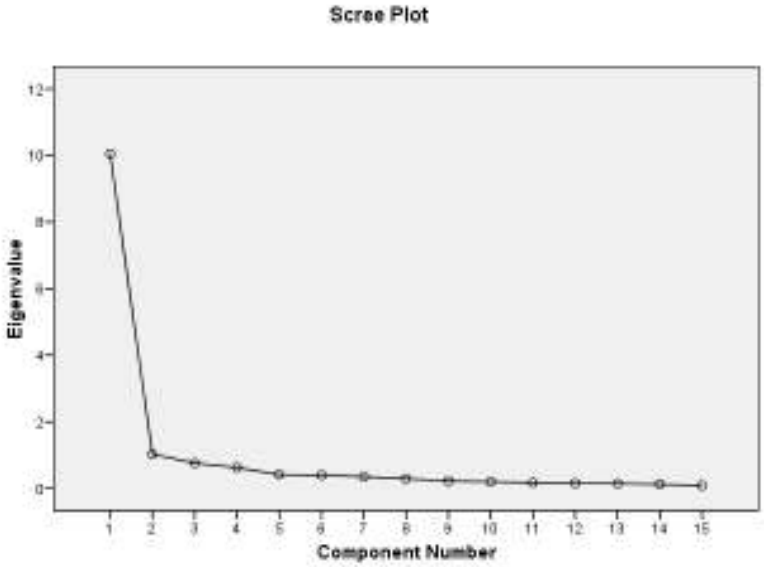

Figure 37: Scree plot on factor analysis

Component Matrix[a]

	Component	
	1	2
Global satisfaction	,904	-,216
Fulfillment of expectations	,883	-,252
Initial motivation	,549	,117
Final motivation	,884	-,228
Fulfillment of training objectives	,888	-,124
Platform and its functions	,799	,127
Training contents	,880	-,084
Trainer's expertise	,831	,232
Contribution of the forum for the learning process	,738	,479
Dynamics and help of the tutor in the forum	,795	,426
Competence, kindness, and promptness of the staff	,781	,396
Immediate utility	,800	-,245
Future utility	,804	-,249
Quality-price relation	,764	-,210

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Table 71: Initial (unrotated) component matrix

Rotated Component Matrix (a)

	Component	
	1	2
Global satisfaction	**,837**	,405
Fulfilment of expectations	**,843**	,363
Final motivation	**,828**	,383
Fulfilment of training objectives	**,766**	,466
Training contents	**,735**	,492
Immediate utility	**,774**	,317
Future utility	**,780**	,316
Quality-price relation	**,725**	,321
Trainer's expertise	,497	**,706**
Contribution of the forum for the learning process	,268	**,838**
Dynamics and help of the tutor in the forum	,346	**,833**
Competence, kindness, and promptness of the staff	,354	**,801**
Platform and its functions	,539	**,604**
Initial motivation	,350	**,438**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

Table 72: Rotated component matrix (using PCA)

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9,229	65,920	65,920	9,229	65,920	65,920	5,933	42,381	42,381
2	1,002	7,156	73,076	1,002	7,156	73,076	4,297	30,694	73,076
3	,749	5,348	78,424						
4	,621	4,438	82,862						
5	,410	2,930	85,792						
6	,394	2,815	88,607						
7	,347	2,481	91,089						
8	,290	2,072	93,161						
9	,220	1,569	94,730						
10	,196	1,403	96,133						
11	,167	1,191	97,325						
12	,151	1,078	98,403						
13	,137	,976	99,379						
14	,087	,621	100,000						

Extraction Method: Principal Component Analysis.

Table 73: Total variance explained in the factor analysis

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,953
Bartlett's Test of Sphericity	Approx. Chi-Square	31776,510
	df	91
	Sig.	,000

Table 74: KMO and Bartlett's test

Rotated Factor Matrix (a)

	Factor	
	1	2
Global satisfaction	,844	
Fulfilment of expectations	,842	
Initial motivation	,378	
Final motivation	,825	
Fulfilment of training objectives	,761	
Platform and its functions	,548	,560
Training contents	,722	,493
Trainer's expertise	,505	,677
Contribution of the forum for the learning process		,759
Dynamics and help of the tutor in the forum		,810
Competence, kindness, and promptness of the staff		,744
Immediate utility	,706	
Future utility	,711	
Quality-price relation	,656	

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

Table 75: Rotated component matrix (using principal axis factoring)

In order to increase the confidence in the labelling process of the factors, we ran a factor analysis for quality perceptions of level 8 (the closest to the average quality perception, which was 8.35). This means that only cases for which global quality perception was equal to 8 were used in the analysis phase. Five rotations were made to define the factors. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test returned a 0.797 value (Table 76), which means that a satisfactory factor analysis was made. Bartlett's test of sphericity also had a significance level of .000 which is small enough to reject the hypothesis and allow us to conclude that the strength of the relationship among variables is strong and that the factor analysis, in this specific case, is satisfactory (Table 76).

KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,797
Bartlett's Test of Sphericity	Approx. Chi-Square	3086,989
	df	91
	Sig.	,000

a. Only cases for which Global quality perception = 8 are used in the analysis phase.

Table 76: KMO and Bartlett's test – factor analysis with only cases for which quality perception was 8

Three distinct factors were found with eigenvalues higher than 1 (Figure 38). In Table 77 absolute values higher than .4 are highlighted for a better reading of the factor loadings in each of these three factors. We also highlighted an item (*quality-price relation*) that has a factor loading close to .4.

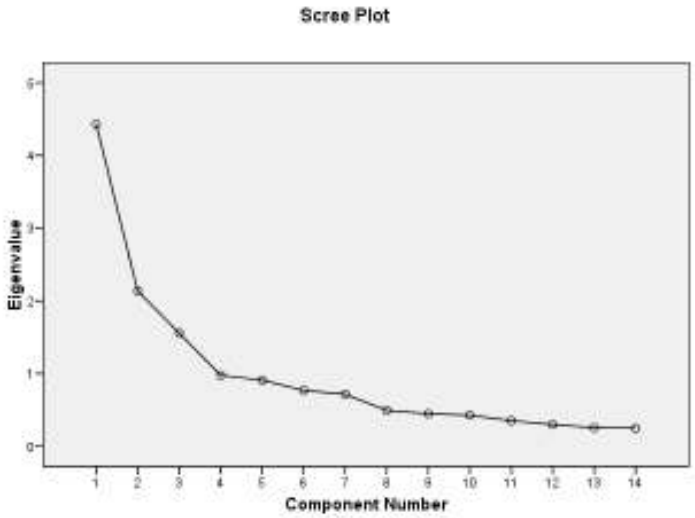

Figure 38: Scree plot on factor analysis only for cases for which quality is 8

Rotated Component Matrix (a,b)

	Component		
	1	2	3
Trainer's expertise	**,704**	,070	,038
Contribution of the forum for the learning process	**,812**	,131	,031
Dynamics and help of the tutor in the forum	**,830**	,152	-,031
Competence, kindness, and promptness of the staff	**,830**	-,004	,098
Platform and its functions	**,597**	,290	,041
Training contents	**,486**	,279	,099
Global satisfaction	,126	**,828**	,064
Fulfilment of expectations	,006	**,848**	,009
Final motivation	,055	**,766**	,254
Fulfilment of training objectives	,303	**,683**	,061
Initial motivation	,207	**,413**	,329
Quality-price relation	,141	**,365**	-,036
Immediate utility	,058	,162	**,879**
Future utility	,032	,002	**,917**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.
b Only cases for which Global quality perception = 8 are used in the analysis phase.

Table 77: Rotated component matrix only for cases for which quality is 8 (PCA)

This analysis helped us to better understand what the previously factors were and enabled us to distinguish not only two, but three factors. In these circumstances, the labelling process of these three factors was easier (Table 78 and Figure 39):

- One factor is related to human interactions with the tutor and the training staff, training contents, and the supporting technology, to which we call "training process";
- Another factor is related to the trainee's attitudes: satisfaction, expectations, motivations, and fulfilment of training objectives, to which we call "training attitudes";
- The last factor is related to the *use* of the recently created knowledge or skills,

which includes both *immediate* and *future utilities*, to which we call "training utility".

Factor	Variables
Training process	Trainer's expertise Contribution of the forum for the learning process Dynamics and help of the tutor in the forum Competence, kindness, and promptness of the staff Platform and its functions Training contents
Training attitudes	Satisfaction Final motivation Fulfilment of expectations Fulfilment of training objectives Initial motivation
Training utility	Immediate utility Future utility

Table 78: Factors and variables

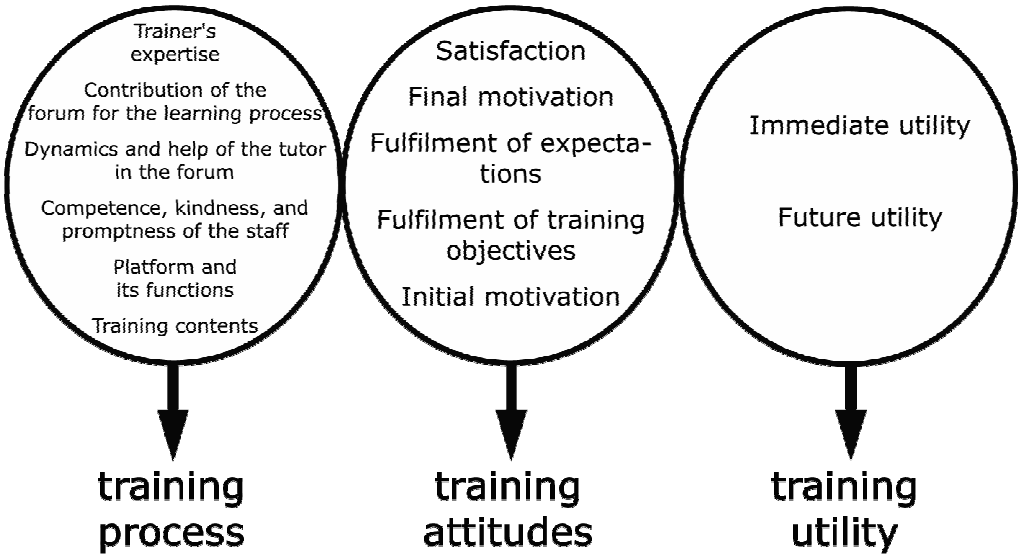

Figure 39: Factors and variables

We double checked the factor structure running an extraction with the principal axis factoring, which confirmed the factor structure, except regarding *initial motivation*, which was dropped out for having a factor loading of .36 with the second factor. In Table 79, only factor loadings of .4 or greater are printed. Since we were being conservative (as we were only considering factor loadings of .4 or greater), we believe that it would be wiser to consider *initial motivation* in the factor structure, since it had a factor loading of .413 with Principal Component Analysis and a factor loading of .36 with Principal Axis Factoring. *Quality-price relation* was not included in both two extractions.

Rotated Factor Matrix(a,b)

	Factor		
	1	2	3
Global satisfaction		,789	
Fulfilment of expectations		,800	
Initial motivation			
Final motivation		,710	
Fulfilment of training objectives		,608	
Platform and its functions	,519		
Training contents	,404		
Trainer's expertise	,602		
Contribution of the forum for the learning process	,774		
Dynamics and help of the tutor in the forum	,808		
Competence, kindness, and promptness of the staff	,787		
Immediate utility			,743
Future utility			,901
Quality-price relation			

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.
b Only cases for which Global quality perception = 8 are used in the analysis phase.

Table 79: Rotated component matrix only for cases for which quality is 8 (PAF)

Figure 40 relates our final factor structure with the quality dimensions of Holton's model (1996). Holton's dimensions are in small boxes and his training outcomes are identified with a dark background. The relation between *immediate utility* and motivation to transfer, and transfer climate seems reasonable to make.

Figure 41 relates our final structure of factors with Kirkpatrick's training evaluation model. The factor *training attitudes* includes Kirkpatrick's training reactions, but also other attitudes, as seen previously. The training process factor is related to Kirkpatrick's learning process, even though Kirkpatrick only evaluates the learning outcomes (*results*), while our factor is focused on the learning *process*. Finally, the two last levels of Kirkpatrick's model (behavioural impact and organizational impact) are related to the unique factor of training utility. This is understandable as the sample is mostly composed by final customers (and Kirkpatrick's model is directed to organizational training), who are not judging any organizational impact, but rather the individual and personal impacts. Even so, behavioural changes are more likely a short-term (immediate) variable, while organizational impact is more likely a long-term (future) variable (changes in behaviour are needed in order to have organizational changes, therefore, these will exist after the former).

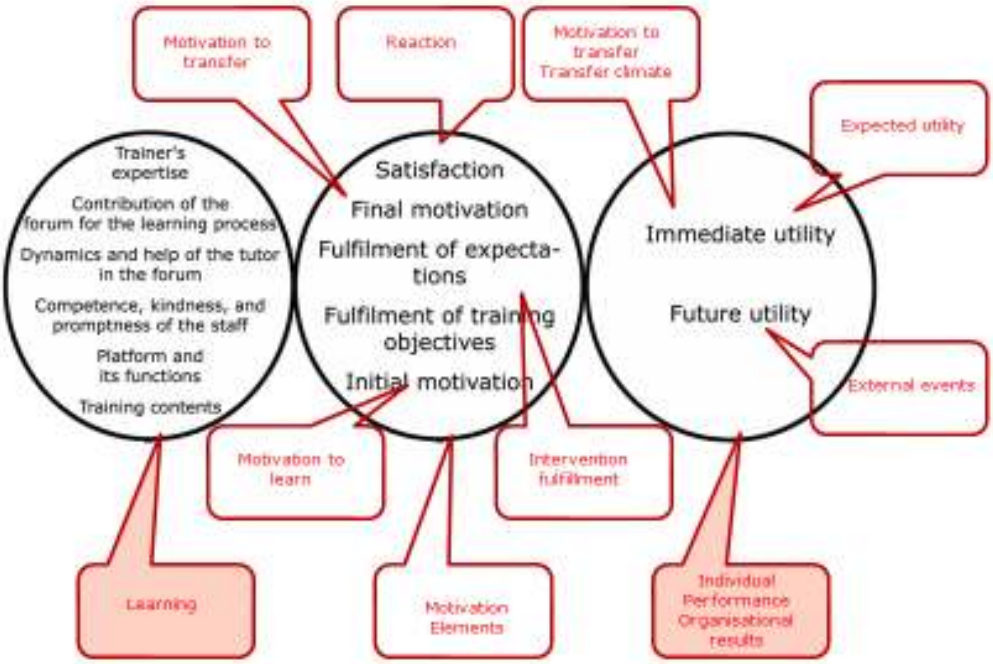

Figure 40: Final Factor Structure Compared with Holton's Model

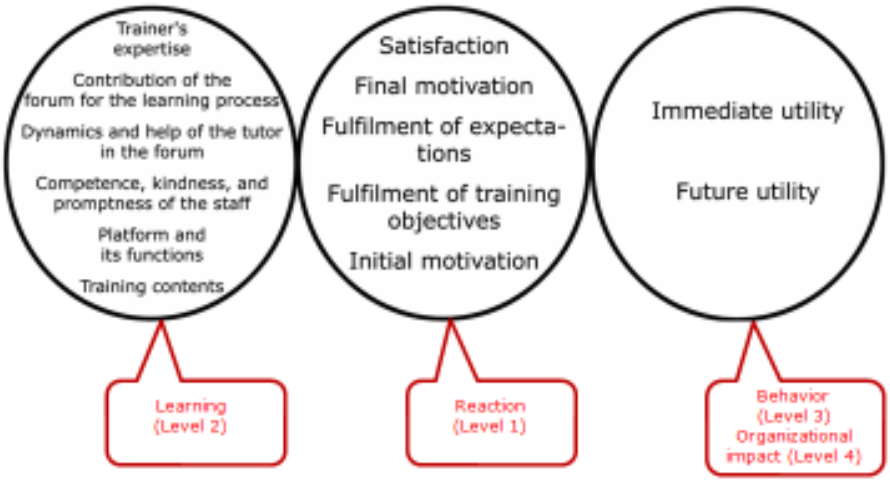

Figure 41: Final Factor Structure Compared with Kirkpatrick's Model

4.2.6.6. Limitations

Although we paid attention to all the considerations that must be attended when carrying out a factor analysis (as pointed out by Child, 1970, pp. 152-154) we have to assume the limitations of this procedure, to which Child (1970, p. 8) alerts:

- We did not double or treble check the findings by using different programs (other than SPSS);
- Labelling factors is very subjective and researchers tend to see what they wish to see, and may be tempted to fit the factors to their hypotheses.

Child (1970, p. 154) also alerts that alternative sources of evidence for the factors, i.e., outside factor analytical methods, should be searched.

4.2.7. Do Quality Perceptions Depend on Who Pays the Bill?

We wanted to know if the fact that the training course is paid not by the trainee herself, but by the company she works for, made any difference, especially in terms of perceptions of quality. We plotted (Figure 42) *global satisfaction*, *initial* and *final motivation*, *immediate* and *future utility*, *global quality perception*, and *quality-price relation* for both cases. The simple analysis of the mean of the 15 variables of our survey according to who had paid for the course showed (Table 80) that the means of all variables are always higher in respondents who paid for the course than in those cases where the course was paid by the company they work for.

These two instruments (Figure 42 and Table 80) gave us important insights:

- All variables have higher ratings when the course is paid by the trainee;
- *Initial motivation* has a wider distribution when the course is paid by the company the trainee works for; and
- Surprisingly, in the case where the trainees do not pay anything to attend the course, they have a lower perception on *quality-price relation*, most probably due to a lower quality perception.

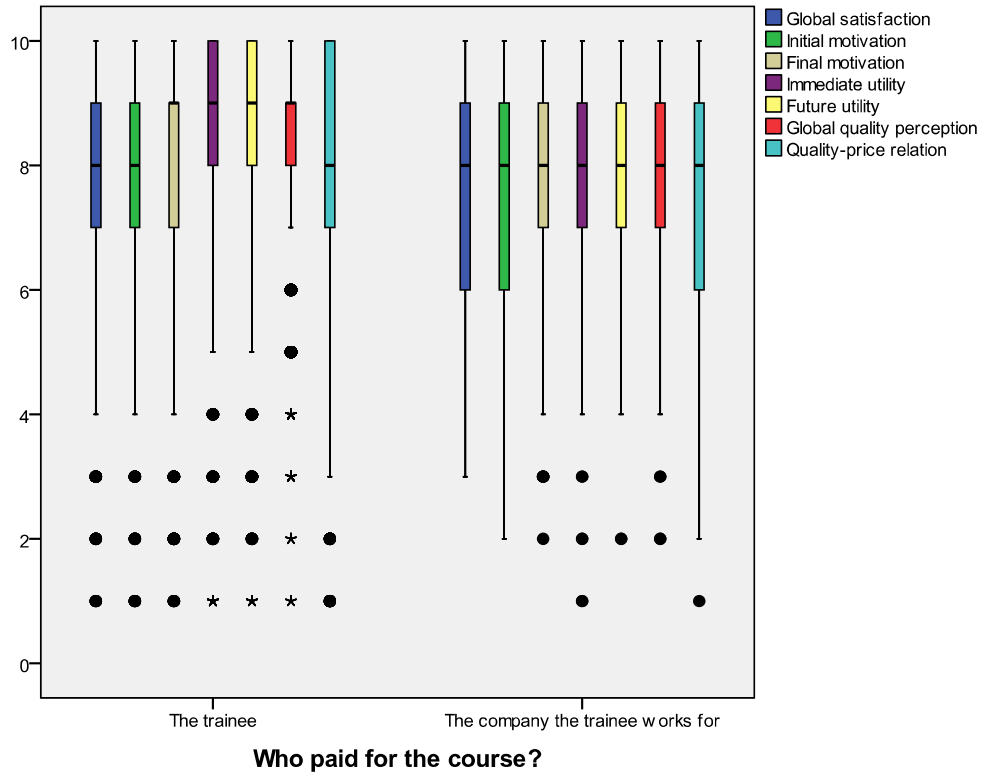

Figure 42: Comparison on main variables according to who paid the registration

Groups	Course paid by the trainee	Course paid by the company
1. Global satisfaction	8.06	7.38
2. Fulfilment of expectations	7.93	7.40
3. Initial motivation	8.17	7.41
4. Final motivation	8.18	7.63
5. Fulfilment of training objectives	8.23	7.58
6. Platform and its functions	8.24	.24
7. Contents	8.36	7.50
8. Trainer's expertise	8.82	7.95
9. Contribution of the forum to the learning process	8.77	7.61
10. Dynamics and help provided by the trainer in the forum	8.55	7.38
11. Competence, kindness, and promptness of the staff	8.89	7.40
12. Immediate utility	8.37	7.69
13. Future utility	8.56	7.95
14. Global quality perception	8.48	7.77
15. Quality-price relation	8.16	7.74

Table 80: Summary of means in the 15 variables according to who paid the registration

This led us to test the hypotheses of the central tendency of each of these variables being different whether the course was paid by the trainee, herself, or by the company she works for.

Our hypotheses were:

H_o: *Global satisfaction* is equal in group i and group j
H_o: *Initial motivation* is equal in group i and group j
H_o: *Final motivation* is equal in group i and group j
H_o: *Immediate utility* is equal in group i and group j
H_o: *Future utility* is equal in group i and group j
H_o: *Global perception of quality* is equal in group i and group j
H_o: *Quality-price relation* is equal in group i and group j

where

- i is the group of cases where the trainees paid for course;
- j is the group of cases where the course was paid by the company the trainee works for.

The corresponding alternative hypotheses (H_1) were the inequality of the central tendency of those variables between groups.

For that purpose, we choose a non-parametric test for independent samples: the Mann-Whitney ranks test. With a 95% confidence level we were able to reject all the initial hypotheses - H_o's - (Table 81 and Table 82): *global satisfaction*, both motivations, both utilities, quality and *quality-price relation* are statistically different (and higher) when the course is paid by the trainee.

Several conclusions can be hypothesized for this, which would require additional research to be confirmed:

- Companies are not offering their workers the most useful courses, that is, those courses that would have immediate impact upon job performance, and therefore

in the results of the company, i.e., need assessments or training planning may be wrong;

- Workers choose better than the company itself, or at least they believe they choose better. This may lead us to hypothesize that the trainee would be a better decider when the moment to define the training plan comes, or that it would be wiser to give trainees a training check and let them decide what courses to take, instead of having the company deciding which courses are the best for them;
- If all of these variables, namely both motivations, have higher means in the group of registrations paid by the trainee, then, there can also be some differences in the learning outcomes (Kirkpatrick's level 2) in both groups, which will also have impact in the *use* of the knowledge created (Kirkpatrick's level 3), and in corporate impacts (Kirkpatrick's level 4).

Ranks

	Who paid for the course?	N	Mean Rank	Sum of Ranks
Global satisfaction	The trainee	1994	1302,44	2597056,00
	The company the trainee works for	486	986,39	479384,00
	Total	2480		
Initial motivation	The trainee	1993	1306,54	2603932,00
	The company the trainee works for	485	964,02	467549,00
	Total	2478		
Final motivation	The trainee	1978	1285,48	2542675,50
	The company the trainee works for	486	1016,88	494204,50
	Total	2464		
Immediate utility	The trainee	1989	1301,95	2589572,00
	The company the trainee works for	484	970,10	469529,00
	Total	2473		
Future utility	The trainee	1989	1308,06	2601738,50
	The company the trainee works for	485	948,12	459836,50
	Total	2474		
Global quality perception	The trainee	1986	1301,99	2585746,50
	The company the trainee works for	483	959,56	463468,50
	Total	2469		
Quality-price relation	The trainee	1975	1232,41	2434009,50
	The company the trainee works for	436	1086,37	473656,50
	Total	2411		

Table 81: Mann-Whitney ranks in the test made to the central tendency of major variables according to who paid for the course

Test Statistics[a]

	Global satisfaction	Initial motivation	Final motivation	Immediate utility	Future utility	Global quality perception	Quality-price relation
Mann-Whitney U	361043,000	349694,000	375863,500	352159,000	341981,500	346582,500	378390,500
Wilcoxon W	479384,000	467549,000	494204,500	469529,000	459836,500	463468,500	473656,500
Z	-8,930	-9,658	-7,633	-9,398	-10,243	-9,752	-4,051
Asymp. Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000

a. Grouping Variable: Who paid for the course?

Table 82: Mann-Whitney statistic in the test made to the central tendency of major variables according to who paid for the course

4.2.8. Motivation as a Quality Dimension

4.2.8.1. Why Look Deeper into Motivation?

Although motivation was not a central issue in our research, we decided to look deeper into it, for several reasons. On one hand, *initial motivation* was included in the final model of linear regression (page 178); yet, final *motivation* was left apart from the model in the two partial analyses we made, and was only considered in the model with the complete sample. The factor analysis also included initial and *final motivation* in the factor related to attitudes (page 189). On the other hand, if quality is *fitness for use* (Juran, 1951, Section 2-2), there is always an *end-in-view* (Dewey, 1939, p. 34) and an expectation of use, which explains the relation of quality with utility. In this scenario, we can hypothesize that trainees will be more motivated if an *end-in-view* exists, even if it is a long-term end. This all suggested us to look deeper into motivation data to understand better the role of motivation in the process of formation of quality perception.

4.2.8.2. Initial and Final Motivation Measured in the End of the Course

In the satisfaction survey that is given to trainees at the end of the course, we asked them to rate their perception of their motivation at the beginning and at the end of the course. That is to say, they were asked, at the end of the course, not only to rate their current motivation, but also their current perception of what had been their motivation at the beginning of the course. We realize that we could have asked them at the beginning of the course to rate their motivation, and then ask them again at the end of the course, but we chose not to do it that way. This way, the individual was able to rank them comparatively. In Table 83 we compare the two options we had. We decided to use the second hypothesis. This means that the collection of data relating to *initial motivation* was made retrospectively. This *ex post fact* research methodology is common in situations where experiments are not possible, are ethically inappropriate, or involve risks of influencing the responses. Many important investigations in education are *ex post facto* designs (L. Cohen *et al*., 2007, p. 267). Medical cohort studies and sociological studies usually are also *ex post facto* studies: for example, doctors will not ask a group of patients to smoke more just to test the impact of marginal cigars in the probability of cancer; likewise, drivers will not be asked to drink an extra glass of wine to test if they have more car accidents.

Our decision to use a retrospective measurement of *initial motivation* was based on two motives:

- We wanted to minimize the risk of influencing the responses: if we had asked the trainee about her motivation at the beginning of the course, she would have to recall that at the end of the course, when she would be faced with this survey. She would be worried to recall what had been her first answer and that would influence her final answer. We cannot be sure that the process of retrieval would not be biased and the risk of not remembering the initial rating was a strong influence in our decision;
- Asking them to rate both motivations at the same time allows respondents to make a comparative judgment: if she rates *final motivation* lower than *initial*

motivation she is expressing conscientiously a decrease of her motivation along the course.

	Hypothesis 1	Hypothesis 2
Description	Measurement of *initial motivation* in the beginning of the course and of *final motivation* at the end of the course.	Measurement of both *initial* and *final motivation* at the end of the course.
Advantages	Attitudes measured in the same time frame to which they are related.	One comparative reaction about two moments of time.
Disadvantages	Two reactions or attitudes measured in two different moments of time, which makes comparisons difficult. The individual may not recall how she rated *initial motivation* (she may be more motivated at the end than at the beginning but have in mind she gave a lower rate to *initial motivation* than she really did, and rate *final motivation* in such a way that it induces a reduction of motivation along the course).	Possible retrieval problems of what was the *initial motivation*.

Table 83: Advantages and disadvantages of each moment of measurement of *initial motivation*

4.2.8.3. Correlation Between Motivations

Initial and *final motivations* have a positive correlation. Spearman's rho, which is the most adequate correlation measure in our case, is .51 (Table 84). Pearson's correlation is .477 (Table 85).

Correlations

			Initial motivation	Final motivation
Spearman's rho	Initial motivation	Correlation Coefficient	1,000	,510**
		Sig. (2-tailed)	.	,000
		N	2478	2461
	Final motivation	Correlation Coefficient	,510**	1,000
		Sig. (2-tailed)	,000	.
		N	2461	2464

**. Correlation is significant at the 0.01 level (2-tailed).

Table 84: Spearman's correlation on initial and *final motivation*

Correlations

		Initial motivation	Final motivation
Initial motivation	Pearson Correlation	1	,477**
	Sig. (2-tailed)		,000
	N	2478	2461
Final motivation	Pearson Correlation	,477**	1
	Sig. (2-tailed)	,000	
	N	2461	2464

**. Correlation is significant at the 0.01 level (2-tailed).

Table 85: Pearson's correlation on initial and *final motivation*

4.2.8.4. Initial and Final Motivation and Global Satisfaction

We could expect that individuals with higher *initial motivation* and higher *final motivation* would have higher *global satisfaction*. The linear correlation between *global satisfaction* and *final motivation* is very high (.859/.825) (Table 86 and Table 87). The correlation between *initial motivation* and *final motivation* is weaker than the correlation between *final motivation* and *global satisfaction*. This makes sense, as these two last variables are measured at the same moment and have common drivers related to the *performed* training process, while *initial motivation* is closer to *expectations* about that training process. Even so, the correlation between *final motivation* and *global satisfaction* is not a perfect correlation, as satisfaction is an affective reaction that is reported to a past event (the course), while *final motivation* is an attitude that is projected into future behaviour (professional performance).

Correlations

		Global satisfaction	Initial motivation	Final motivation
Global satisfaction	Pearson Correlation	1	,468**	,859**
	Sig. (2-tailed)		,000	,000
	N	2480	2477	2463
Initial motivation	Pearson Correlation	,468**	1	,477**
	Sig. (2-tailed)	,000		,000
	N	2477	2478	2461
Final motivation	Pearson Correlation	,859**	,477**	1
	Sig. (2-tailed)	,000	,000	
	N	2463	2461	2464

**. Correlation is significant at the 0.01 level (2-tailed).

Table 86: Pearson correlation on initial and *final motivation* with *global satisfaction*

Correlations

			Global satisfaction	Initial motivation	Final motivation
Spearman's rho	Global satisfaction	Correlation Coefficient	1,000	,473**	,825**
		Sig. (2-tailed)	.	,000	,000
		N	2480	2477	2463
	Initial motivation	Correlation Coefficient	,473**	1,000	,510**
		Sig. (2-tailed)	,000	.	,000
		N	2477	2478	2461
	Final motivation	Correlation Coefficient	,825**	,510**	1,000
		Sig. (2-tailed)	,000	,000	.
		N	2463	2461	2464

**. Correlation is significant at the 0.01 level (2-tailed).

Table 87: Spearman's correlation on *initial* and *final motivation* with *global satisfaction*

We adjusted a regression, with the *stepwise* method, where *global satisfaction* is the dependent variable, with $R^2 = 0.873$ (Table 88). The most important contributors were, in order of importance ((Table 88 and Table 89):

- *Fulfilment of expectations*;
- *Global quality perceptions*; and
- *Final motivation.*

These three variables, alone, explain 86.3% of the variability of *global satisfaction* (model 3 in Table 88). *Fulfilment of expectations*, which is the major contributor to the variability of *global satisfaction*, was, as we saw previously (page 178), excluded from the regression models created to explain *quality perceptions*. Moreover, *final motivation*, which gave low contributions to explain global quality, is considered one important contributor to the explanation of *satisfaction*. This means that *fulfilment of expectations* and *final motivation* help to explain *satisfaction* but does not explain *quality*, at least directly. They influence *satisfaction*, which, in turn, will influence *quality perceptions*.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,909(a)	,827	,827	,665
2	,924(b)	,854	,853	,611
3	,929(c)	,863	,863	,591
4	,931(d)	,867	,867	,582
5	,932(e)	,869	,869	,578
6	,933(f)	,870	,870	,575
7	,933(g)	,871	,871	,574
8	,934(h)	,872	,871	,572
9	,934(i)	,872	,872	,571
10	,934(j)	,873	,872	,570
11	,935(k)	,873	,873	,570

a Predictors: (Constant), Fulfilment of expectations
b Predictors: (Constant), Fulfilment of expectations, Global quality perception
c Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation
d Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents
e Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents, Fulfilment of training objectives
f Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents, Fulfilment of training objectives, Initial motivation
g Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents, Fulfilment of training objectives, Initial motivation, Quality-price relation
h Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents, Fulfilment of training objectives, Initial motivation, Quality-price relation, Immediate utility
i Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents, Fulfilment of training objectives, Initial motivation, Quality-price relation, Immediate utility, Dynamics and help of the tutor in the forum
j Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents, Fulfilment of training objectives, Initial motivation, Quality-price relation, Immediate utility, Dynamics and help of the tutor in the forum, Contribution of the forum for the learning process
k Predictors: (Constant), Fulfilment of expectations, Global quality perception, Final motivation, Training contents, Fulfilment of training objectives, Initial motivation, Quality-price relation, Immediate utility, Dynamics and help of the tutor in the forum, Contribution of the forum for the learning process, Future utility

Table 88: Quality of each regression model that explains *global satisfaction*

Variables Entered/Removed(a)

Model	Variables Entered	Method
1	Fulfilment of expectations	Stepwise (Criteria: Probability-of-F-to-enter <= ,050, Probability-of-F-to-remove >= ,100).
2	Global quality perception	
3	Final motivation	
4	Training contents	
5	Fulfilment of training objectives	
6	Initial motivation	
7	Quality-price relation	
8	Immediate utility	
9	Dynamics and help of the tutor in the forum	
10	Contribution of the forum for the learning process	
11	Future utility	

a Dependent Variable: *Global satisfaction*

Table 89: Variables considered in the regression model that explains *global satisfaction*

4.2.8.5. Differences Between Initial and Final Motivation

Although 2478 individuals rated *initial motivation* and 2464 individuals rated *final motivation*, only 2461 rated both initial and *final motivation* (Table 90). The difference between initial and *final motivation* is quite small: Both have a median of 8 and the average *initial motivation* is 8, while the average *final motivation* is 8.04 (Table 91). The similarities between *initial* and *final motivations* are visually represented in their histograms (Figure 43 and Figure 45) and their boxplots (Figure 44 and Figure 46). The small difference between *initial* and *final motivation* was consistent in each of our partial analysis: in each one, *final motivation* was always higher than *initial motivation* and the difference between them was constant (.04) (Table 92). If *final motivation* is similar to *initial motivation*, that might mean several things, which we cannot test, such as:

- The service did not disappoint the customer, i.e., service performance is good, although not outstanding;
- The duration of the course is well adjusted (as too long courses may tend to decrease motivation, as we will discuss later);
- There was nothing, in the course, that could leverage the customer's motivation;
- Motivation is a garbage-in-garbage-out variable: What you bring to the course is what you will take from it.

We tested the hypothesis of the *initial motivation* being equal to the *final motivation*. Our hypothesis was:

- H_0: *Initial motivation* is equal to *final motivation*
- H_1: *Initial motivation* is different from *final motivation*

We ran a Wilcoxon signed rank test (Table 93 and Table 94) and a sign test (Table 95 and Table 96) and both rejected H_0. Although the average[30] *initial motivation* is not very different from the average *final motivation*, we cannot assume that they are equal.

[30] As these are ordinary variables, in rigor, we should refer that we are testing the "central tendency", but what SPSS (as well as other software of data analysis) does is testing the mean.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Initial motivation	2478	1	10	8.00	1.648
Final motivation	2464	1	10	8.04	1.698
Valid N (listwise)	2461				

Table 90: Cases summary on both motivation variables

Descriptives

		Initial motivation	Final motivation
Mean		8,00	8,04
95% Confidence Interval for Mean	Lower Bound	7,93	7,97
	Upper Bound	8,06	8,10
5% Trimmed Mean		8,11	8,18
Median		8,00	8,00
Variance		2,725	2,886
Std. Deviation		1,651	1,699
Minimum		1	1
Maximum		10	10
Range		9	9
Interquartile Range		2	2
Skewness		-,949	-1,195
Kurtosis		,958	1,575

Table 91: Descriptive statistics on *initial* and *final motivation*

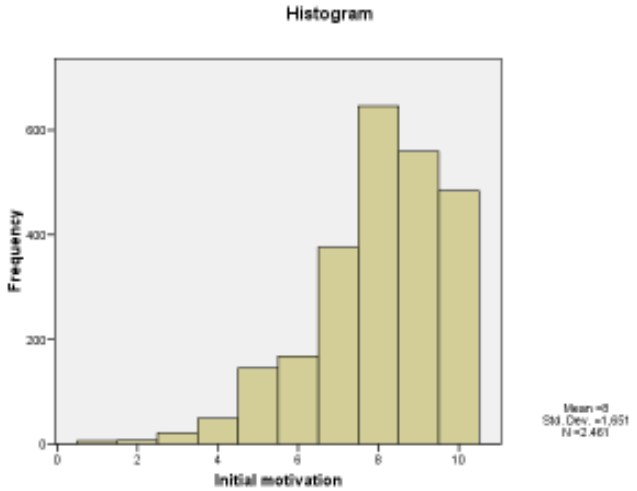

Figure 43: *Initial motivation* histogram

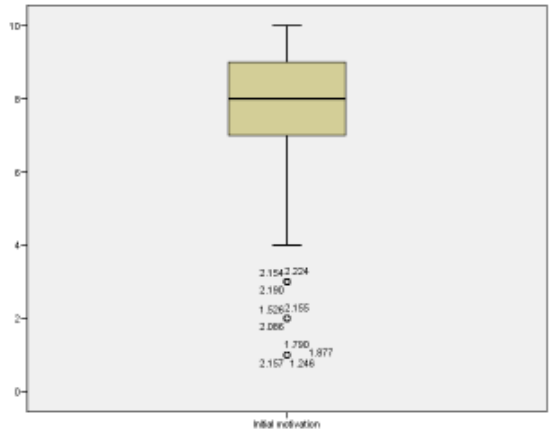

Figure 44: *Initial motivation* boxplot

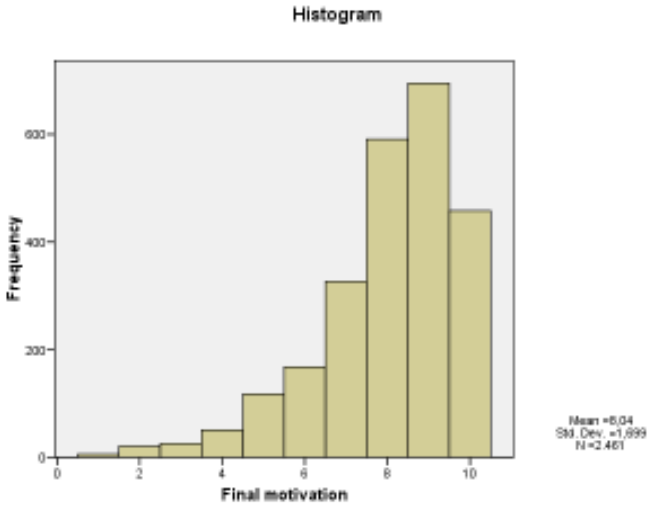

Figure 45: *Final motivation* histogram

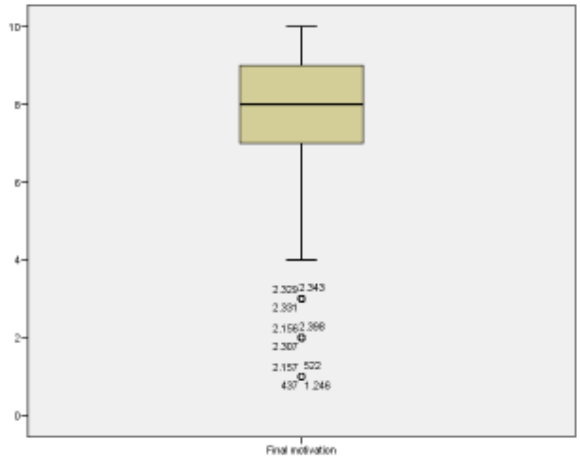

Figure 46: *Final motivation* boxplot

Descriptive\sample		Since 24/03/2008 Until 09/05/2008		Since 09/05/2008 Until 25/11/2008		Since 25/11/2008 Until 17/02/2009		Total	
Motivations		**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**	**Initial**	**Final**
Mean		8,20	8,24	7,90	7,94	8.13	8,17	8,00	8,04
95% Confidence Interval for Mean	LB	8,02	8.07	7,81	7,85	8.00	8.04	7,93	7,97
	UB	8,38	8.42	7,98	8,02	8,25	8.30	8,06	8,10
5% Trimmed Mean		8,36	8,39	8,00	8,08	8,25	8,32	8,11	8,18
Median		8,00	9,00	8,00	8,00	8,00	9,00	8,00	8,00
Variance		2,783	2,693	2,792	2,940	2,489	2.808	2,725	2,886
Std. Deviation		1,668	1,641	1,671	1,715	1,578	1,676	1,651	1,699
Minimum		2	1	1	1	1	1	1	1
Maximum		10	10	10	10	10	10	10	10
Range		8	9	9	9	9	9	9	9
Interquartile Range		3	2	2	2	2	2	2	2
Skewness		-1,152	-1,270	-,858	-1,148	-1.083	-1.291	-0,949	-1,195
Kurtosis		1,353	1,797	,729	1,521	1.526	1,716	0,958	1,575

Table 92: Temporal evolution of *initial* and *final motivation*

Ranks

		N	Mean Rank	Sum of Ranks
Final motivation - Initial motivation	Negative Ranks	619[a]	731,13	452569,00
	Positive Ranks	776[b]	671,57	521141,00
	Ties	1066[c]		
	Total	2461		

a. Final motivation < Initial motivation

b. Final motivation > Initial motivation

c. Final motivation = Initial motivation

Table 93: Wilcoxon signed ranks test to *initial* and *final motivation*

Test Statistics[b]

	Final motivation - Initial motivation
Z	-2,332[a]
Asymp. Sig. (2-tailed)	,020

a. Based on negative ranks.

b. Wilcoxon Signed Ranks Test

Table 94: Wilcoxon signed ranks test's statistics to *initial* and *final motivation*

Frequencies

		N
Final motivation - Initial motivation	Negative Differences[a]	619
	Positive Differences[b]	776
	Ties[c]	1066
	Total	2461

a. Final motivation < Initial motivation

b. Final motivation > Initial motivation

c. Final motivation = Initial motivation

Table 95: Sign test to *initial* and *final motivation*

Test Statistics[a]

	Final motivation - Initial motivation
Z	-4,177
Asymp. Sig. (2-tailed)	,000

a. Sign Test

Table 96: Sign test's statistics to *initial* and *final motivation*

4.2.8.6. The Dummy Variable Called Motivational Gap

As the differences between *initial* and *final motivation* were small (Table 91 in page 206) but we did not reject the hypothesis of equality between the two motivations, we created a *dummy* variable, to which we called *motivational gap*, that results from the difference between *final* and *initial motivation* (Equation 3): positive values of this *motivation gap* mean that *final motivation* is higher than *initial motivation*; negative values means that motivation decreased during the course and that at the end it is lower than at the beginning. In the analysis of this *dummy* variable, we excluded all cases where one of the motivations was not rated. We found 2461 cases (Table 97) where both *initial* and *final motivations* were rated. All the cases where initial, final, or both motivations were not rated were excluded from the analysis.

$$Y_i = X_{2i} - X_{1i} \qquad \text{(Equation 3)}$$

where:

Yi = *Motivational gap* for the observation i
X_{1i} = *Initial motivation* for the observation i
X_{2i} = *Final motivation* for the observation i

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Motivation gap (final-initial motivation)	2461	-9	8	,04	1,713
Valid N (listwise)	2461				

Table 97: Average differences between both motivations

Although the distribution of motivation gap had a configuration quite similar to a normal distribution (Figure 47), the high concentration of values around zero, the negative skewness and the positive kurtosis (Table 98) would lead us to say this was not a normal distribution. These suspicions were confirmed, first visually by the Normal Q-Q plot (Figure 48) and then mathematically by a Kolmogorov-Smirnov test and a Shapiro-Wilk test (Table 99). We rejected, with a 95% confidence level, the hypothesis of the *motivational gap* having a normal distribution.

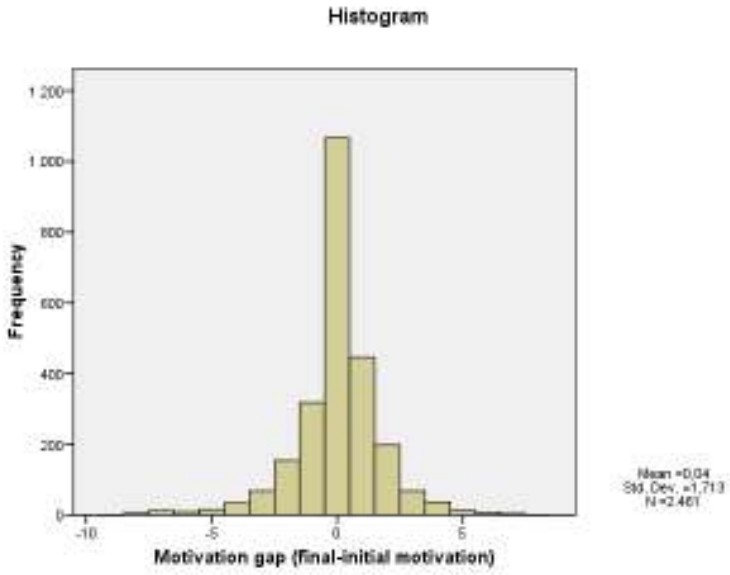

Figure 47: *Motivational gap* histogram

Descriptives

			Statistic	Std. Error
Motivation gap (final-initial motivation)	Mean		,04	,035
	95% Confidence Interval for Mean	Lower Bound	-,03	
		Upper Bound	,11	
	5% Trimmed Mean		,08	
	Median		,00	
	Variance		2,933	
	Std. Deviation		1,713	
	Minimum		-9	
	Maximum		8	
	Range		17	
	Interquartile Range		2	
	Skewness		-,569	,049
	Kurtosis		4,184	,099

Table 98: Descriptive statistics of the *motivational gap*

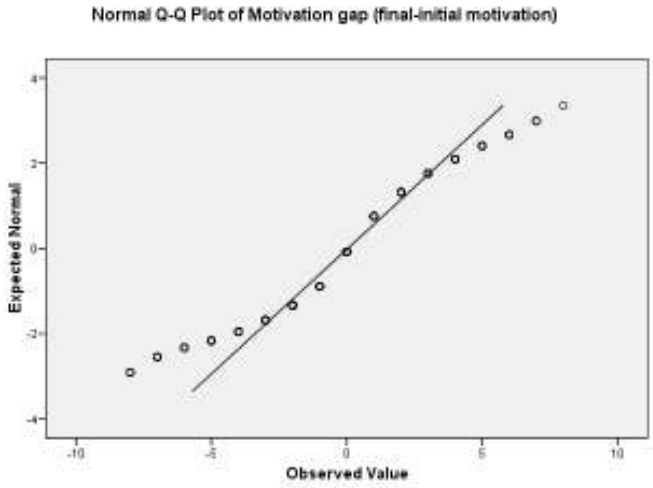

Figure 48: *Motivational gap* Q-Q plot

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Motivation gap (final-initial motivation)	,239	2461	,000	,883	2461	,000

a. Lilliefors Significance Correction

Table 99: Test of normality to the *motivational gap*

4.2.8.7. Motivational Gap and the Course Duration

Due to the interpretation nuances of the average *motivational gap*, we wanted to know how this *dummy* variable behaved. We chose to study its behaviour according to the duration of the course. We were hypothesising that longer courses would lead to a decrease of *final motivation*, which, in turn, would affect the *motivational gap*. We

reorganized our sample according to the duration of the course, in an attempt to discover some leads or patterns in the *motivational gap* (Table 100). For plotting purposes (Figure 49), we removed all cases that had less than 1% of total sample, namely those whose length was 28, 34, 38 and 44 days. Yet, no pattern was found.

Duration of the course (in days)	Number of cases	Mean of *motivational gap*
8	89	.18
10	30	.20
12	27	-.19
13	1146	.26
14	141	-.36
16	160	-.30
18	132	-.27
20	232	.12
22	111	-.26
24	29	-.45
26	248	.03
28	11	-.18
30	44	-.86
34	11	-.55
38	1	-*
44	3	1.67
60	46	-.80
Total	2461**	.04

* only one observation.
** number of cases where *motivational gap* was accounted for (i.e. initial and final motivations were rated)

Table 100: Motivation gap and the duration of the course

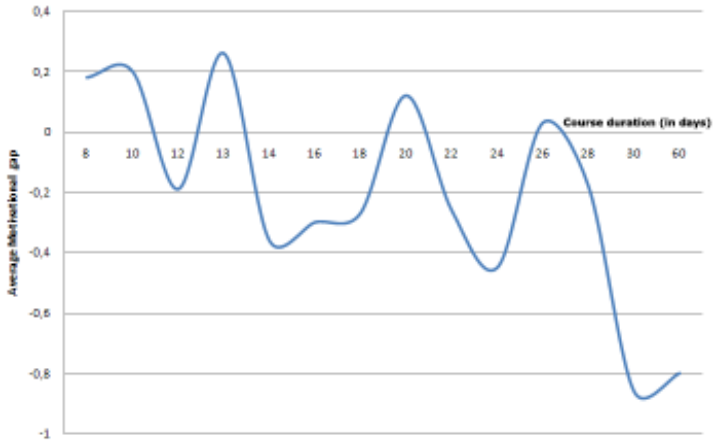

Figure 49: Evolution of the *motivational gap* according to the duration of the course

4.2.8.8. The evolution of Final Motivation

Although *final motivation* was excluded from the linear regression model, the fact that the average difference between both motivations is zero, led us to investigate a little further the evolution of *final motivation* according to the duration of the course (Table 101), as we did with the *motivational gap*. For visual illustration, we eliminated all the durations that did not have at least 1% of the total sample (Figure 50).

Duration of the course (in days)	Mean of *motivational gap*	5% trimmed mean of final motivation
8	.18	8.03
10	.20	8.91
12	-.19	8.22
13	.26	8.19
14	-.36	8.30
16	-.30	8.05
18	-.27	7.91
20	.12	8.26
22	-.26	7.99
24	-.45	7.83
26	.03	8.32
28	-.18	8.31
30	-.86	7.75
34	-.55	8.77
38	-*	*
44	1.67	9.33**
60	-.80	8.21
Total	.04	8.18

* Only one observation
** simple mean

Table 101: *Final motivation* according to the duration of the course

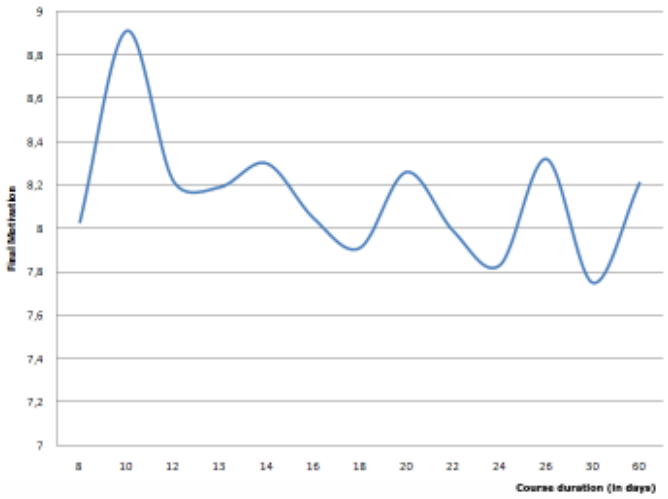

Figure 50: Evolution of the *final motivation* according to the duration of the course

Despite the peak around courses that take 10 days, as it was not clear any specific pattern between the duration of the course and the customer's *final motivation*, especially in longer courses, we decided to group courses according their duration in days. The criterion to determine the groups was the duration in days. Group 1, for instance, includes 1 week courses, group 2 includes two weeks courses, and group 3 includes three weeks courses. The duration of groups 4 and 5 is wider due to sampling representativeness issues. Five groups were created (Table 102) and the variable course duration was recoded into a new variable.

Group	Training length (in days)
1	1 to 8
2	9 to 16
3	17 to 24
4	25 to 38
5	39 to 60

Table 102: Codification of the duration of each course into interval groups

Group 2 is the most frequent, with 1519 cases (Figure 51). Group 4 has the highest average mean, although the highest median value and the highest 5% trimmed mean in *final motivation* belong to group 5 (Table 103). The descriptive statistics are not very different between groups, at least at first sight (Table 104). Yet, graphically, the scatter graph (to which we added curved connections for a better visual perception of evolution), reveals that *final motivation* decreases in courses that belong to group 3 and tends to increase after that (Figure 52).

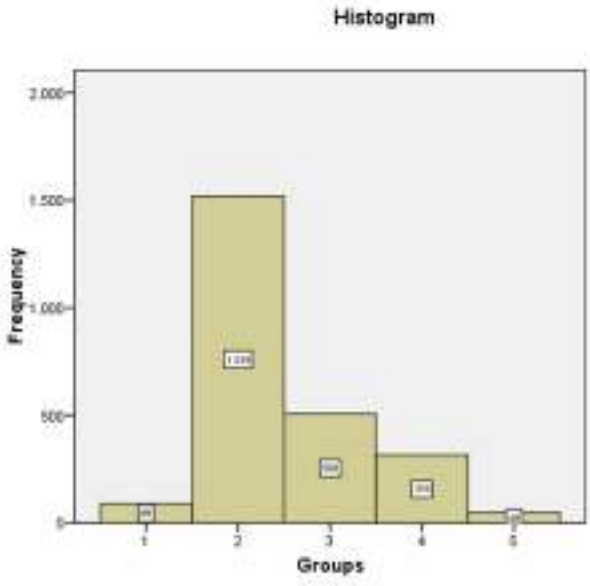

Figure 51: Histogram of groups of duration of courses

Group	Course duration (in days)	Number of cases	Average final motivation	5% trimmed mean of final motivation
1	2 to 8	89	7.89	8.03
2	9 to 16	1519	8.06	8.20
3	17 to 24	508	7.96	8.09
4	25 to 38	316	8.09	8.26
5	39 to 60	49	8.08	8.29
Total		2481	8.04	8.18

Table 103: Brief description of results of recode of the courses' duration

	Mean	CI-*	CI+*	5% Trimmed mean	Median	Variance	Min	Max	Skewness	Kurtosis
Group 1	7.89	7.50	8.28	8.03	8.00	3.419	2	10	-1.012	0.662
Group 2	8.06	7.98	8.15	8.20	8.00	2.808	1	10	-1.183	1.421
Group 3	7.96	7.81	8.10	8.09	8.00	2.804	2	10	-1.084	1.422
Group 4	8.09	7.90	8.28	8.26	8.00	2.915	1	10	-1.461	3.049
Group 5	8.08	7.44	8.72	8.29	9.00	4.993	1	10	-1.275	1.019

Table 104: Major descriptive statistic on *final motivation* of each group

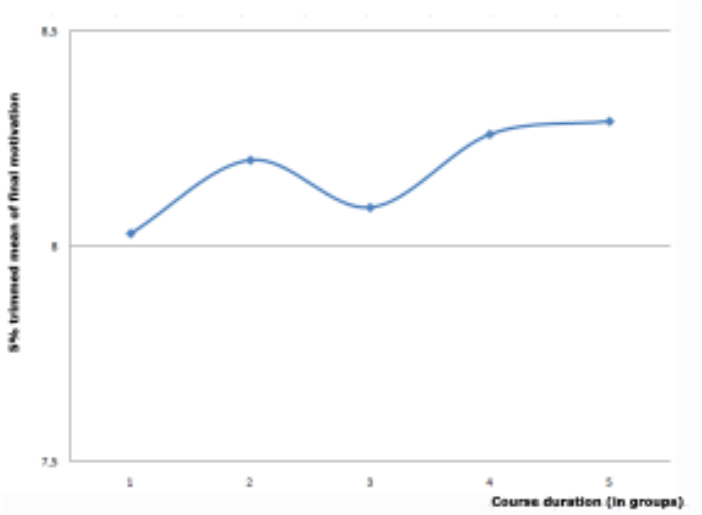

Figure 52: Evolution of 5% trimmed mean of *final motivation* by group of duration

One of the advantages of having made several intermediary analyses (page 156) is that we were able to formulate several hypotheses to compare the preliminary conclusions we made then and those that result from the complete series of data. One of the conclusions we reached when we analyzed the data collected until May 9, 2008, was that group 2 had the highest *final motivation* of all. That led us to some preliminary hypotheses, at that time, namely:

- One week may not be enough and *final motivation* is higher in group 2 because one week courses do not provide enough time to socialize, explore everything, and reach 'cruise velocity';
- Two weeks (group 2) is the exact period of time that maximizes *final motivation* and longer courses lead to a decrease in motivation, probably due to tiredness.

Yet, the introduction of more observations suggested that we should test those hypotheses, as group 4 and 5 revealed higher *final motivation*.

We made several tests to see if the means of *final motivation* could be different from one group to another. Our hypotheses were:

- H_0: The centre of tendency[31] of *final motivation* in group i is equal to the central tendency of *final motivation* in group j;

[31] As this is an ordinary variable, it is more correct to say that we are testing the central tendency, although, in fact, we are testing the mean. This holds true for the following non-parametric tests.

- H_1: The centre of tendency of *final motivation* in group i is equal to the central tendency of *final motivation* in group j;

where, i and j are group 1, 2, 3, 4, and 5, as defined in Table 102.

For that purposes, we used Mann-Whitney non-parametric test for independent samples, which is the most suited to compare central localization measures between two samples in a way that identifies differences between them (Appendix 11 includes these tests). Table 105 summarizes the conclusions of each test. All the null hypotheses were not rejected.

Groups	1	2	3	4	5
1	-	Not rejected	Not rejected	Not rejected	Not rejected
2		-	Not rejected	Not rejected	Not rejected
3			-	Not rejected	Not rejected
4				-	Not rejected
5					-

Table 105: Summary of results of the tests made to the equality of means

4.2.8.9. The Evolution of Final Motivation According to the Promoter

In the final sample, which had 2481 cases with less than 10% of missing values, 2464 cases with complete answers in the variable *final motivation*, most of these (80%) were from courses organized by EVOLUI.COM. In these courses, we could expect higher *initial* and *final motivation* in the trainees as it was them who initially looked for the course and paid for it, as proved before (Table 81 and Table 82). 1978 cases are from courses promoted by EVOLUI.COM. The remaining 486 cases are related to training courses that were planned by commercial companies or public institutes who asked EVOLUI.COM to train their employees. In this last situation, the buying decision, and the consequent training attendance, was decided by the customer (the organization) rather than by the trainee (Table 106).

Promoter	Number of cases
EVOLUI.COM	1978
Corporate client	486
Total	2464

Table 106: Number of answers in the *final motivation* question according to the promoter

Our initial expectations were that there could be some differences according to the promoter. So, we split our sample into two groups, according to the promoter of the training course: in the first subsample, we included all the single/individual registrations in courses off-the-shelf at EVOLUI.COM's, that were paid by the trainee or by her company; in the second, we included all the registrations in courses promoted by corporate clients where the registrations were paid by the company or institution of the trainee. We decided to exclude the second group and restrain our analysis of the groups to the first, for several reasons:

- The first reason was that the sample included some abnormal number of cases of group 2, which was a specific and punctual situation at EVOLUI.COM;
- The second reason was that most of the trainees in those situations work at public institutions and reveal very low levels of motivation at work since they are trapped in a scheme of career progression where only training credits and training hours account for, no matter the topic of course is;
- Finally, because most of those registrations were not only organized and partially paid for by the company or institution they worked for, but also because received European funding that was given to their institution. We believe that external funding creates additional biases, as the financial sacrifice tends to increase the rationality of any decision.

Figure 53 shows the boxplots of *final motivation* according to each group, but restricted to those cases where the promoter was EVOLUI.COM.

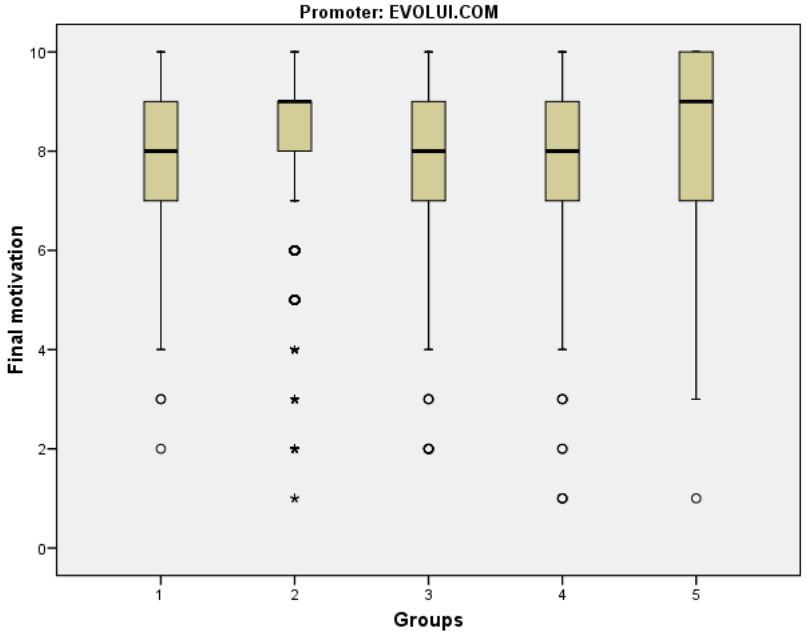

Figure 53: *Final motivation* by groups of course lengths where the promoter was EVOLUI.COM

We ran again the Mann-Whitney tests for *final motivation*. Our hypotheses were made for bilateral and unilateral tests. The bilateral hypotheses were:

H_o: The central tendency of *final motivation* in group i is equal than in group j
H_1: The central tendency of *final motivation* in group i is different than in group j

where, i and j are group 1, 2, 3, 4, and 5, as defined in Table 102, where the promoter was EVOLUI.COM. Similar hypotheses were created for unilateral tests.

Table 107 summarizes the conclusions of the unilateral tests, which are available in Appendix 12. The hypothesis of the *final motivation* of courses of group 2 being equal to that motivation in group 5 was not rejected. Yet, this latter group did not have a

meaningful sample to let us take further conclusions, as group 5 had only 49 cases, which represent 1.9% of the sample being analyzed. But, with 95% of confidence, we accept the hypothesis of the *final motivation* of two-week courses (those with lengths between 9 and 16 days, which is group 2) being higher than shorter courses (group 1) and courses with up to 38 days (groups 3 and 4).

Groups	1	2	3	4	5
1	-	**Rejected***	Not rejected	Not rejected	Not rejected
2		-	**Rejected**	**Rejected****	Not rejected
3			-	Not rejected	Not rejected
4				-	Not rejected
5					-

* For the unilateral test: *p-value*: .045
**For the unilateral test: *p-value*: .028

Table 107: Conclusions on the Mann-Whitney test results made on the central tendency of *final motivation* between groups of length of courses where the promoter was EVOLUI.COM

4.2.9. The Influence of the Duration of the Course in Quality Dimensions

The results regarding the influence of the duration of the course in *final motivation* induced us to test if group 2 was also different in other characteristics. We ran 40 Mann-Whitney tests to compare the central tendency of *global satisfaction, immediate utility*, *future utility*, and *quality perceptions* between the five groups. These tests are available in Appendix 13.

The hypotheses considered included the bilateral and the unilateral options. The bilateral hypotheses were:

H_o: The central tendency of variable x_k in group i is equal than in group j
H_1: The central tendency of variable x_k in group i is different than in group j

Where, i and j are groups 1, 2, 3, 4, and 5 as defined in Table 102 and x_k is *immediate utility*, *future utility*, *quality perceptions*, and *global satisfaction*, and the promoter is EVOLUI.COM. The conclusions of the unilateral tests are summarized in Table 108 to Table 111. As in group 2 several variables have central tendencies statistically different from the other groups, we are able to conclude, with 95% of confidence, that, for the range of courses offered by EVOLUI.COM, courses that take two weeks to be completed will tend to maximize important quality dimensions as *global satisfaction*, *final motivation*, and *immediate* and *future utility*.

Groups	1	2	3	4	5
1	-	**Rejected**	Not rejected	**Rejected***	Not rejected
2		-	**Rejected**	Not rejected	Not rejected
3			-	Not rejected	Not rejected
4				-	Not rejected
5					-

* For the unilateral test: *p-value* = .05

Table 108: Conclusions on the Mann-Whitney test results made on the central tendency of *global satisfaction* between groups of length of courses where the promoter was EVOLUI.COM

Groups	1	2	3	4	5
1	-	**Rejected**	Not rejected	**Rejected***	**Rejected****
2		-	**Rejected**	**Rejected*****	Not rejected
3			-	Not rejected	Not rejected
4				-	Not rejected
5					-

* For the unilateral test: *p-value* = .04
** For the unilateral test: *p-value* = .0046
*** For the unilateral test: *p-value* = .0038

Table 109: Conclusions on the Mann-Whitney test results made on the central tendency of *immediate utility* between groups of length of courses where the promoter was EVOLUI.COM

Groups	1	2	3	4	5
1	-	**Rejected**	Not rejected	Not rejected	Not rejected
2		-	**Rejected**	**Rejected**	Not rejected
3			-	Not rejected	Not rejected
4				-	Not rejected
5					-

Table 110: Conclusions on the Mann-Whitney test results made on the central tendency of *future utility* between groups of length of courses where the promoter was EVOLUI.COM

Groups	1	2	3	4	5
1	-	Not rejected	Not rejected	Not rejected	Not rejected
2		-	**Rejected**	**Rejected**	Not rejected
3			-	Not rejected	Not rejected
4				-	Not rejected
5					-

Table 111: Conclusions on the Mann-Whitney test results made on the central tendency of *perceptions of quality* between groups of length of courses where the promoter was EVOLUI.COM

4.2.10. The Special Case of Trainer's Initial Pedagogical Certification

4.2.10.1. Introduction

Our sample includes surveys that were answered by customers who had been attending the Portuguese national pedagogical certification, which allows trainees to became professional trainers. This course is usually made in a 100% face-to-face, three months duration format, and it usually takes at least 90 hours to be completed.

EVOLUI.COM offers this course in a b-learning, seven weeks and 114 hours format that includes only six face-to-face sessions that take place exclusively on Saturdays. These sessions are usually held at Figueira da Foz or Lisbon (although EVOLUI.COM has already held them in other cities like Aveiro, Águeda, and Albergaria), and, in other cases, at the client's offices (mostly in Lisbon).

This course has a more limited geographical potential when compared to e-learning courses (as the e-learning courses at EVOLUI.COM have regular sales in 28 countries), as it requires the presence of the trainee in five of those six face-to-face sessions. Even

so, during the period of data collection of the survey, EVOLUI.COM welcomed customers who came from other countries (mostly Brazilian dentists) to attend this course.

We consider this as a different course in comparison to the regular educational portfolio at EVOLUI.COM, for several reasons: It is one of the most expensive courses at EVOLUI.COM (even so, its cost is much lower than the market average price), it requires face-to-face sessions, it has a limit of fifteen persons per group, it includes not only a trainer, but a group of four or five trainers, and it allows *initial* professional certification. EVOLUI.COM has 160 courses and only 25 provide professional certification. Among this certification courses, only the trainer's initial professional certification is related to *initial* certification. The other courses allow the renewal of several certifications and are made exclusively in an e-learning format.

During the period of data collection, EVOLUI.COM received more than 1.000 applications to this course and the majority of them was declined. The average waiting list includes fifty candidates. Although EVOLUI.COM has regular editions of the course in Lisbon, it is not unusual to have editions at Figueira da Foz for which the majority of the trainees is from Lisbon. The groups at Figueira da Foz usually include trainees from Braga, Porto, Viseu, Vila Real, Covilhã, Aveiro, Caldas da Rainha, and Leiria, while the groups in Lisbon include trainees from Évora, Beja, Setúbal, and Cascais, which means that there is some geographical training mobility.

Trainees who attend this course usually respond to an additional standardized satisfaction survey. 40% of them were recommended by other customers who completed it before. Most trainees who attended this course rated it as very good but very demanding. The public organism that regulates this certification (the Portuguese employment and vocational training institute – IEFP) has also recognized the work that EVOLUI.COM has been doing in order to improve the 'quality' of professional trainers, and EVOLUI.COM has been asked several times to help to improve the national certification program, which is a work in progress.

4.2.10.2. Are Quality Perceptions Different in Trainer's Initial Certification courses?

When comparing regular vocational e-learning courses with this qualification courses, we wanted to investigate the following hypotheses:

- H_o: *Global satisfaction* is equal in group i and group j
- H_o: *Fulfilment of expectations* is equal in group i and group j
- H_o: *Immediate utility* is equal in group i and group j
- H_o: *Future utility* is equal in group i and group j
- H_o: *Final motivation* is equal in group i and group j
- H_o: *Global perception of quality* is equal in group i and group j
- H_o: *Quality-price relation* is equal in group i and group j

where:

- i is the group of registrations that are not related to the initial certification of professional trainers; and

- j the group of registrations related to the initial certification of professional trainers.

Table 112 summarizes the mean of the fifteen variables in the two groups of courses.

Groups	Initial Trainer's Certification Course	Other Courses
1. Global satisfaction	7.88	7.98
2. Fulfilment of expectations	7.89	7.79
3. Initial motivation	7.83	8.20
4. Final motivation	8.10	8.06
5. Fulfilment of training objectives	8.04	8.17
6. Platform and its functions	7.83	8.25
7. Contents	8.07	8.32
8. Trainer's expertise	8.46	8.83
9. Contribution of the forum to the learning process	8.37	8.71
10. Dynamics and help provided by the trainer in the forum	8.09	8.54
11. Competence, kindness, and promptness of the staff	8.23	8.94
12. Immediate utility	8.22	8.27
13. Future utility	8.47	8.42
14. Global quality perception	8.31	8.39
15. Quality-price relation	8.17	8.01

Table 112: Summary of mean in the 15 variables according to the type of course

We ran Mann-Whitney tests to compare the central tendency of the fifteen variables between the two groups. Table 113 synthesizes the *p-value* of each test, the decision regarding the hypothesis stated above, and the final conclusions.

Groups	*p-value*	Decision	Conclusion
1. Global satisfaction	.056	Not reject	May be equal
2. Fulfilment of expectations	.645	Not reject	May be equal
3. Initial motivation	.000	Reject	Are different
4. Final motivation	.793	Not reject	May be equal
5. Fulfilment of training objectives	.007	Reject	Are different
6. Platform and its functions	.000	Reject	Are different
7. Contents	.000	Reject	Are different
8. Trainer's expertise	.000	Reject	Are different
9. Contribution of the forum to the learning process	.000	Reject	Are different
10. Dynamics and help provided by the trainer in the forum	.000	Reject	Are different
11. Competence, kindness, and promptness of the staff	.000	Reject	Are different
12. Immediate utility	.063	Not reject	May be equal
13. Future utility	.401	Not reject	May be equal
14. Global quality perception	.137	Not reject	May be equal
15. Quality-price relation	.008	Reject	Are different

Table 113: Summary of Mann-Whitney tests to the central tendency in the 15 variables according to the type of course

As seen previously (Table 78 in page 195) our factor analysis produced three factors:

- Factor 1: is related to the training process: human interactions, with the tutor and the training staff, the training contents, and the supporting technology;
- Factor 2: is related to the training attitudes: satisfaction, expectations, motivations, and fulfilment of training objectives;
- Factor 3: is related to training utility, which included both *immediate* and *future utilities*.

If we organize Table 113 according to the factors obtained from factor analysis (Table 78 and Figure 39 in page 195), we are able to conclude that perceptions on factor 1 (training process) are different, but there are no statistical differences in terms of perceptions of utility (factor 3). Conclusions on factor 2 cannot be drawn as there are two elements of the factor that are not congruent with the others (Table 114).

	p-value	Decision	Conclusion
Factor 1: Training Process			
8. The trainer's expertise	.000	Reject	Are different
9. The contribution of the forum to the learning process	.000	Reject	Are different
10. The dynamics and help provided by the trainer in the forum	.000	Reject	Are different
11. Competence, kindness, and promptness of the staff	.000	Reject	Are different
7. Contents	.000	Reject	Are different
6. Platform and its functions	.000	Reject	Are different
Factor 2: Training Attitudes			
1. Global satisfaction	.056	Not reject	May be equal
2. Fulfilment of expectations	.645	Not reject	May be equal
3. Initial motivation	.000	Reject	Are different
4. Final motivation	.793	Not reject	May be equal
5. Fulfilment of training objectives	.007	Reject	Are different
Factor 3: Training Utility			
12. Immediate utility	.063	Not reject	May be equal
13. Future utility	.401	Not reject	May be equal

Table 114: Summary of Mann-Whitney tests to the central tendency in the 15 variables according to the type of course, organized by factors

4.2.10.3. Are Quality Perceptions Different in Trainer's Initial Certification courses? - The Case Where the Promoter Was EVOLUI.COM

We split again our sample according to whether the course (initial professional certification of trainers) was planned, organized, and paid for by the company the trainees work for, or, rather, if trainees had enrolled in editions of that course that were planned by EVOLUI.COM. In both situations, the courses were given by EVOLUI.COM with the same pedagogical team, platform, training mode, duration, and contents. The only difference was in the supporting staff, as in courses that are promoted by others, there is usually a training manager who serves as intermediary between EVOLUI.COM and the trainee.

We tested again the following hypotheses:

- H_o: *Global satisfaction* is equal in group i and group j
- H_o: *Fulfilment of expectations* is equal in group i and group j
- H_o: *Immediate utility* is equal in group i and group j
- H_o: *Future utility* is equal in group i and group j
- H_o: *Final motivation* is equal in group i and group j
- H_o: *Global perception of quality* is equal in group i and group j
- H_o: *Quality-price relation* is equal in group i and group j

where:

- i is the group of registrations that are not related to the initial certification of professional trainers;
- and j the group of registrations related to the initial certification of professional trainers promoted by EVOLUI.COM.

All the H_1, the alternative hypotheses, express the inequality of those variables.

The output of these tests is available in Appendix 14. Table 115 synthesizes the *p-value* of each test, the decision regarding the hypothesis stated above, and the final conclusions. The results are organized according to the factors we got in the factor analysis (Table 78 and Figure 39).

	p-value	**Decision**	**Conclusion**
Factor 1: Training Process			
8. Trainer's expertise	.137	Not Reject	May be equal
9. Contribution of the forum to the learning process	.214	Not Reject	May be equal
10. Dynamics and help provided by the trainer in the forum	.103	Not Reject	May be equal
11. Competence, kindness, and promptness of the staff	.000	Reject	Are different
7. Contents	.229	Not Reject	May be equal
6. Platform and its functions	.774	Not Reject	May be equal
Factor 2: Training Attitudes			
1. Global satisfaction	.001	Reject	Are different
2. Fulfilment of expectations	.000	Reject	Are different
3. Initial motivation	.331	Not Reject	May be equal
4. Final motivation	.000	Reject	Are different
5. Fulfilment of training objectives	.041	Reject	Are different
Factor 3: Training Utility			
12. Immediate utility	.000	Reject	Are different
13. Future utility	.000	Reject	Are different

Table 115: Summary of Mann-Whitney tests to the central tendency in the 15 variables according to the type of course, organized by factors, where the promoter was EVOLUI.COM

The hypotheses of *global satisfaction*, *fulfilment of expectations*, *final motivation*, *fulfilment of training objectives*, *immediate utility*, and *future utility* being equal between the two types of courses are all rejected with 95% confidence. This means that training attitudes (factor 2) and training utility (factor 3) are different among regular online courses and certification courses, i.e., the professional qualification courses are highly rated in these items, and is consistent with the fact that global quality perceptions are different (Table 116 and Table 117). The only exception is for *initial motivation*, which was included in factor 2 with some precautions (page 196). Factor 1 was not

rejected, which is consistent with the fact that the training model, the platform, and even some contents are shared between the two types of courses. The rejection in *competence, kindness, and promptness of the staff* makes sense since there were differences in the supporting staff.

What we cannot tell is if these differences between the two groups are due to the fact that this specific course guarantees a professional certification, because it is a way to become a professional trainer (which is a free-lancing profession seen as paying above average, and which, most of the times, is compatible with another profession), or if it is because it is done in a b-learning format, rather than in e-learning.

Ranks[a]

	The course is trainer's initial certification course	N	Mean Rank	Sum of Ranks
Global quality perception	Not a Trainer's Initial Training Course	1322	955,24	1262823,50
	A Trainer's Initial Training Course	664	1069,68	710267,50
	Total	1986		

a. Promoter = EVOLUI.COM

Table 116: Mann-Whitney ranks in the test made to the central tendency of global quality perceptions between types of courses, with EVOLUI.COM as the promoter

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	388320,500
Wilcoxon W	1262823,500
Z	-4,338
Asymp. Sig. (2-tailed)	,000

a. Promoter = EVOLUI.COM

b. Grouping Variable: The course is trainer's initial certification course

Table 117: Mann-Whitney statistic in the test made to the central tendency of global quality perceptions between types of courses, with EVOLUI.COM as the promoter

4.2.11. Final Reflections

We conducted an online survey to better understand the perceptions on quality in e-learning courses. A quantitative analysis was carried out on 2630 answers that were considered. All the variables under study had a negative skewness, as expected, and for which Peterson and Wilson (1992, quoted in Danaher & Haddrell, 1996) provide reasonable explanations (page 161). *Immediate* and *future utilities* are highly correlated, but we proved they are statistically different, and that *future utility* perceptions are higher than *immediate utility*. This suggests that trainees value the course not only for the contribution it can bring to their current job performance, but also for the hypothetical *uses* they could have in the future for having attended the course. Both *immediate* and *future utilities* are higher in female trainees than in males. Women also have higher perceptions of quality, may be because they perceive higher utility in the courses.

According to the regression analysis, *global satisfaction* and *future utility* are the variables that explain most of quality. *Immediate utility* is a poor contributor to quality. This provides evidence that quality is a more long-term attitude than a short-term attitude (Cronin Jr. & Taylor, 1994; Oliver, 1981).

The technique used for data reduction provided three factors that explain quality: the *training process*, the *training attitudes*, and perceptions of *training utility*. This factor structure was crossed with the most used models of training evaluation, namely Kirkpatrick's (2006) and Holton (1996; Holton III, Coco, Lowe, & Dutsch, 2006). These two models are focused in the evaluation of training courses from an organizational point of view: they emphasize the changes in performance and the effects of that change on the organizational results. From the trainee's point of view, these models may not be the best fitting conceptual representations. Our factor structure, which was drawn from a significant sample of mainly residential trainees, identifies the most crucial quality dimensions perceived by the trainee – and not by her company. Trainees may not be interested in the organizational impact of the courses they have attended, but they certainly are interested in the *future utility* of that course. We believe that this three-factor structure of quality dimensions should be further investigated, especially if the organizations continue to delegate to the trainees the responsibility for choosing their professional development and training.

Even though in periods of economical and political instability companies tend to decrease even more their investments in training, we must acknowledge that the delegation on the trainee of that responsibility is more or less independent of the economical cycle and of the financial situation of the company. That delegation is consistent with the current approaches to the *psychological contracts* (for example, Lester & Kickul, 2001), which rule the beliefs concerning the obligations that exist between the employee and the organization, as we discuss in the next section. That delegation has an impact on quality perceptions and overall training evaluation: *global satisfaction*, *initial* and *final motivation*, *future* and *immediate utility*, *quality perception*, and *quality-price relation* are statistically higher when the course is paid by the trainee. This suggests that the psychological contract should also include the delegation of the training responsibility, even though it is not clear if, from the organization's point of view, that would be better. In other words, when the trainee assumes the payment of the course, the course receives higher quality ratings, which is the best scenario for the training company, but not necessarily the best for the company the trainee works for, since it does not guarantee the maximization of performance and

organizational impacts. The middle term would be a situation that gathered the interests of the three stakeholders involved. This optimal solution would probably include 1) a training needs assessment and training planning made by the company, to assure the performance and organizational changes, 2) the delegation of the choice of the training provider and the specific course to the trainee, and 3) the payment of that registration by the trainee but with some psychological and/or financial compensation given by the company.

The assumption of the financial sacrifice by the trainee has a major impact on the quality factor (the training attitudes factor). This financial sacrifice made by the trainee was related to higher *global satisfaction* and higher *initial* and *final motivation*. It was also related to higher *immediate* and *future utility*, and *global perception of quality*. *Final motivation* is highly correlated to *global satisfaction* and is a better indicator of potential behaviour changes, either being organizational changes, or other uses. *Final motivation* is not an expressive contributor to the explanation of quality, but is a relevant variable in the explanation of satisfaction, which, in turn, is the most explicative variable of quality.

Initial and *final motivations* are not statistically equal, although the average *motivational gap* was about zero. *Final motivation* is statistically higher, in the range of courses offered by EVOLUI.COM, when the courses take two weeks to be completed. Courses that have this duration have, not only higher *final motivation*, but also higher perceptions of *global satisfaction*, *quality*, and *immediate* and *future utility*.

Initial certification courses have higher ratings on *global satisfaction*, *fulfilment of expectations*, *final motivation*, *fulfilment of training objectives*, and *immediate* and *future utilities*, when the courses are planned by EVOLUI.COM and not by the companies the trainees work for. These courses are very specific in the context of EVOLUI.COM's portfolio, and, therefore, the reasons for these differences should be further investigated, as several factors can account for that, and were not included in our research.

4.3. Insights on Perceptions of Value and Motivation and the Role of Utility in the Presence/Absence of Training

4.3.1. Objectives

We wanted to explore some hypotheses we had in terms of value perceptions and know more about the motivation of the trainees. After making the first partial analysis of our quality survey, we were hypothesizing that, if quality perceptions were related to utility perceptions, then value perceptions would also be related to *use*, namely to *utility*. We were also hypothesizing that if motivation was related to quality, then some behaviours associated with motivation (namely training initiatives, financial sacrifices associated with training courses, and general motivational attitudes towards training) would be associated with perceptions of utility. Finally, we were expecting that the presence or absence of training courses could have different impacts in terms of the type of utility that would be felt or missed.

Our objectives were:

- To identify the type of value that is associated with an e-learning course;
- To check if perceptions of value are related to perceptions of utility;
- To identify the main motivational drives of the trainees and their attitudes towards training;
- To understand the role of utility in the presence or absence of training.

4.3.1.1. Design Decisions

We created an online survey that was filled in at the end of the welcome online class. This class is optional to every trainee, although new customers tend to attend it. The survey was presented to the trainees as a self-assessment motivational kit. It was an optional survey and no efforts were made to persuade customers to answer it. We decided not to use ordinary scales in this survey, as we did in the other survey. As check-all-that-apply list of factors are not recommended (Dillman *et al.*, 2003), we used a check-the-most-suited-option format. We did not force inquiries to answer *all* questions, which explain the fact that we have some missing values. The general design of the survey followed the suggestions described previously (page 147). The final version of the survey is in Appendix 15.

4.3.1.2. The Variables

The instrument included 13 questions related to value perceptions, motivation, and attitudes towards training. Regarding value perceptions, question 7 was designed to accommodate different meanings of value such as: value as *exchange* (Smith, 1776), as *sign* (for example, Belk, 1987; Bourdieu, 1984; Csikszentmihalyi & Rochberg-Halton, 1981), as *promise* (Levitt, 1981, p. 94), as *experience* (Cagan & Vogel, 2002, p. 62; Pine & Gilmore, 1999), and value as *use* and as *utility*. We also included some value perceptions derived from Holbrook's (1999c) typology of customer value. To avoid creating inflated conclusions due to the tendency to select the first in the list, the option

of *utility* – which was the one we wanted to confirm - was put in sixth place (out of seven) in the list of answer options.

Operant conditioning (Skinner, 1969) and *classical*, *respondent*, or *Pavlovian condition* (C. D. Green, 2008; Pavlov, 1927) were tested in question 5 where we wanted to know if trainees were attending the course for its *consequences* or for its *antecedents*. The source of need and motivation was tested in question 1, where the *restoration* option ("to suppress current difficulties, to find a new job or solve a current problem") was confronted to the *enhancement* one ("to progress and increase own skills in general). The distinction between *needs* and *motivation* was reflected in question 9. Murray's (1938) needs and EPPS (A. L. Edwards, 1959) were used as an inspiration to create question 10. Alderfer's (1969, 1972a, 1972b) ERG theory is reflected in question 11.

General and intrinsic motivation to learn (Cropley, 1985; P. K. Cross, 1981; Knowles, 1980; Wlodkowski, 1999) were approached in question 8, which was followed by the motives for that attitude. Attitudes towards training were included in question 2 (which surveyed who had the idea for the registration in the course and, therefore, proactive *internal* motivation *vs. external* motivation), in question 3 (to find out who had made the financial sacrifice), and in question 4 (to find what trainees would do if they had to pay for the course, instead of the company they work for). Attitudes were also surveyed in questions 12 and 13. The first one assessed attitudes regarding the *motivational effect* of training in job performance. The second assessed the motivational effect of the *absence* of training. Question 6 was designed to indentify the major drivers in recent training experiences in order to confront them with the general *sources of need* reported, or, in the case of absence of recent training, the *barriers* to training.

4.3.2. The Pre-Test of the Instrument

A pre-test was made among 66 trainees who were attending b-learning courses that qualify professional trainers and traditional face-to-face courses. These latter included the annual training program of a local company. This training program was organized by EVOLUI.COM. After that test, we added additional items to some questions and others were rewritten. For instance, in the question 'do you think you have an innate need for learning?' 100% of the inquiries said they did. We concluded that the question was not well enunciated and was tendentious, and we changed it to 'do you think that you have a permanent need for training?' This made comparisons between the answers collected previously and the new ones impossible, so we had to discard those 66 cases. Moreover, traditional face-to-face courses are not EVOLUI.COM's regular market and we only used this sample, opportunistically, to test the instrument. We made three tests to the survey while it was available online, in order to check if the survey was ok. Those cases were deleted.

4.3.3. Preliminary Analysis

4.3.3.1. Handling with Tests, Duplicates, Incompletes and Incongruent Answers

Between June 2, 2008 and March 11, 2009, we collected 1237 cases. Before analyzing them, we made a pre-analysis that included the following steps:

1. Dealing with online tests we had made;
2. Dealing with duplicates;
3. Identifying incomplete cases;
4. Dealing with incongruent answers.

We had to deal with duplicates. Two different situations of duplicated answers were treated:

- First, situations in which, for the same course, the inquired submitted twice her survey. In this situation, we considered the second answer, as we believe it was a way of correcting her first answer. The first answer was then discarded. 63 cases were in this situation. At the end of this step, we kept 1171 cases.
- The second type of duplicate situations was not treated the same way: as several customers made several courses during the period of analysis, they were able to submit several times their answers. 220 cases where in this situation. In these situations, we agreed that those customers had the 'right' to express their opinion every time they made a course and that their perceptions could be different from time to time and from course to course. In these cases, the duplicate answers were not discarded and were included in the analysis. After making this decision, we had data from 951 unique customers (later, as discussed below, we eliminated 3 additional cases for having incomplete answers, so our final data had 218 duplicates and 950 unique customers).

We recognize that some questions would be more correctly analysed if only unique customers were included (namely, questions 6, 7, 8, 11, 12, and 13) but the others (questions 1, 2, 3, 4, 5, 9, and 10) should not have that restriction.

4.3.3.1.1. Procedures to Handle with Non Responses and Incongruent Responses

In the 1171 cases that we kept, 73 cases were incomplete, which represents 6.23%. Among the incomplete cases 3 of them were totally incomplete (cases number 404, 841, and 850), so we decided to remove them. 1168 cases were kept. Of those, 11 cases (less than 1%) had incongruent answers in some questions. For instance, the respondent said "yes", but selected motives for the "no" option. We decided to delete the incongruent answers but keep the rest of the case (Table 118).

Item	Description
Pre-test	66 cases collected in paper at face-to-face and blended courses
Dates	Cases collected between June 2, 2008 and March 11, 2009
Total cases	1237 cases collected online
Internal online tests	3
Duplicates	63
Cases after handling duplicates	1171
Cases with incongruent answers	11 cases
Incomplete cases	73 (including the cases where incongruent answers were deleted)
Deleted cases	3 (totally incomplete)
Analyzed cases	1168
Completed cases*	1062 (90.92%)
Final sample	1168
Number of courses	148
Unique customers	950
Respondents' gender	68% of women

* The subject answered all questions

Table 118: General information of the third part of the investigation

4.3.3.1.2. Missing Value Analysis (MVA)

We ran a missing value analysis to define the profile of the missing values and discard the possibility of having questions that had not been answered by more than 10%, which would jeopardize our conclusions, as discussed previously (page 157). Among the 1168 cases, none of the questions were in that situation (Table 119). Questions 8 ("*do you have a permanent need to learn?*") and 13 ("*do you feel discomfort if your company does not provide you training courses?*") were the ones that had more missing answers (Table 120).

Univariate Statistics

	N	Mean	Std. Deviation	Missing	
				Count	Percent
Question1	1159	1,74	,441	9	,8
Question2	1163	1,06	,236	5	,4
Question3	1157	1,13	,340	11	,9
Question4	1152	,21	,682	16	1,4
Question5	1160	1,15	,360	8	,7
Question6	1167	1,40	,490	1	,1
Question7	1160	4,26	2,169	8	,7
Question8	1131	1,01	,073	37	3,2
Question9	1162	1,34	,475	6	,5
Question10	1166	5,08	3,943	2	,2
Question11	1164	1,38	,783	4	,3
Question12	1148	1,05	,212	20	1,7
Question13	1135	1,39	,489	33	2,8

a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

b. . indicates that the inter-quartile range (IQR) is zero.

Table 119: Missing percentage in main questions

Tabulated Patterns

Number of Cases	Missing Patterns[a]													Complete if ...[b]
	Question1	Question2	Question3	Question4	Question5	Question6	Question7	Question8	Question9	Question10	Question11	Question12	Question13	
1062														1062
27								X						1089
20													X	1082

Patterns with less than 1% cases (12 or fewer) are not displayed.

a. Variables are not sorted.

b. Number of complete cases if variables missing in that pattern (marked with X) are not used.

Table 120: Missing data analysis

4.3.3.1.3. Partial Comparative Analysis

As we did in our former quantitative instrument, we made two intermediate analyses. The first partial analysis included data until July 5, 2008, and the second included all the data collected until November 27, 2008. Our final analysis included data collected until March 11, 2009 (Table 121). All of the conclusions drawn in our partial and intermediate analysis were confirmed in the final analysis. Comparative tests were made between sub-samples and we never rejected the hypothesis of them being equal. Due to that, and to sample dimension issues, we present solely the final data and analysis.

Analysis	Period of analysis
Partial analysis I	June 2, 2008 - July 5, 2008
Partial analysis II	June 2, 2008 - November 27, 2008
Final analysis	June 2, 2008 - March 11, 2009

Table 121: Partial analyses

4.3.4. General Description

Although we collected 1237 cases, we only used 1168 cases, as described above. Of those, 68% were sent by women, which is close to the normal gender profile of customers at EVOLUI.COM's. Those 1168 cases are related to registrations in 148 different courses and were submitted by 950 different customers (Table 122). Of these customers, 548 answered the other survey (Table 122). This means that 548 customers answered both surveys.

19.78% of the cases correspond to b-learning courses. The remaining cases are related, exclusively, to online courses. 67.29% are related to regular paid online courses, 11.56% to demo courses, and 1.37% to EVOLUI.COM's internal training programs (Table 123). These sample was representative of EVOLUI.COM's regular customer profile in 2008, when analyzed by sales revenue (in the ratio of b-learning and e-learning sales), but not when analyzed in terms of paid registrations.

	Quality Survey	Value perceptions & Motivation Survey
Total cases analysed	2481	1168
Duplicated users	1140	218
Unique users	1041	950
Conjoint unique users	1991	
Duplicated users	548 (answered both surveys)	
Unique users	1443 (answered only one survey)	

Table 122: Conjoint unique users between both surveys

Type of course	Percentage
Regular online courses	67.29%
B-learning courses	19.78%
Demo online courses	11.56%
Internal training program	1,37%

Table 123: Percentage of cases according to the type of course

4.3.5. On Motivation

4.3.5.1. Looking for Consequences (question 5)

Almost 85% (Figure 54) of the people inquired claim that they attended the course *for the consequences* of that, which is consistent with *operant conditioning* approaches. The behaviour, expressed by the *desire*, *interest*, or *want* of attending the course, is motivated by the *anticipated consequences* of the training program.

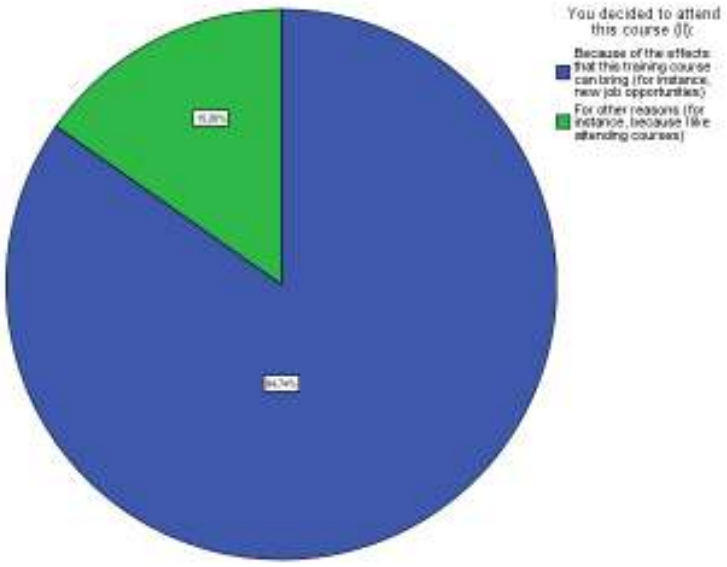

Figure 54: *Operant conditioning* profile

As there are significant differences between the answers in this question, depending on who had the idea and who paid for the course (Table 124), we tested the hypothesis of the means being equal. We ran a Mann-Whitney test to each situation. As the tests provided a *p-value* of .064 and .081, respectively, we did not reject the hypothesis of operant conditioning profile being equal (Table 125 and Table 126).

		Operant conditioning (for the consequences)	Pavlovian conditioning (For other reasons)
Payment	The trainee	84.33%	15,67%
	The company	92,65%	7,35%

Table 124: Differences in question 5 according to who paid for the course

Test Statistics[a]

	You decided to attend this course (II):
Mann-Whitney U	34007,500
Wilcoxon W	36353,500
Z	-1,854
Asymp. Sig. (2-tailed)	,064

a. Grouping Variable: Who had the idea of you attending this course?

Table 125: Mann-Whitney test to the equality of means of question 5 according to who had the idea

Test Statistics[a]

	You decided to attend this course (II):
Mann-Whitney U	72336,500
Wilcoxon W	84117,500
Z	-1,747
Asymp. Sig. (2-tailed)	,081

a. Grouping Variable: Who paid this course?

Table 126: Mann-Whitney test to the equality of means of question 5 according to who paid for the course

4.3.5.2. Restoration and Enhancement (question 1)

Within *operant conditioning*, the two types of operant conditioning – *restoration* and *enhancement* were studied. 73,51% of the respondents decided to attend the course to *increase their skills*, rather than to *suppress any current need*, which means that there was no specific current, or urgent, training need. Only 26,49% mentioned that they had decided to attend the course to cope with current difficulties, to find another job, or to get solutions to a specific problem. This suggests that there may be no concrete and *immediate utility* but, rather, a search for new skills, a desire to know more or perform better, which, in turn, may be useful in the future (Table 127 and Figure 55).

This leads us to conclude that *positive reinforcement*, which is a more long-term strategy that the *restorative* tactics, is the main objective of the trainees. Training is more related to future possible utility (as, for instance, the need to cope with a more defying job), than to immediate use in the current professional context and current specific performance problems. This motivational profile suggests that future use was a determinant buying factor, which is close to the supremacy of future utility over immediate utility, as seen previously in the other study.

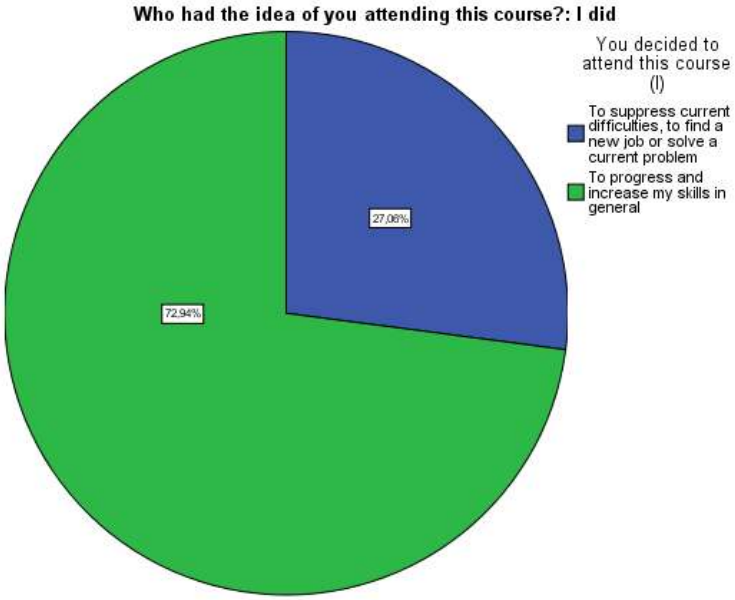

Figure 55: Restoration and enhancement

Why did you decide to take this course?	Percentage
To suppress current difficulties, to find a new job or solve a current problem	26,49%
To progress and increase skills in general	73,51%

Table 127: Motives to attend the course

We split our sample according to two criteria: the former, related to who had the idea of attending the course, and the latter related to who made the financial sacrifice involved in the payment of the course. Four scenarios were created: in the first, the trainee had the idea and paid for the course; in the second, she had the idea but the course was paid for by the company she works for. In the third scenario, the company had the idea and paid for the course, and in the fourth one the company suggested the course to the trainee, who paid for it. The size of the sample according to these four scenarios is detailed in Table 128.

		Payment			TOTAL
		Trainee	The company	Missing	
Idea	Trainee	987	100	7	1094
	The company	15	54	0	69
	Missing	1	0	4	5
TOTAL		1003	154	13	1168

Table 128: Sample size according to who had the idea and who paid for the course

The decision to attend a course to suppress current needs, find a new job, or solve a problem is more common in self-initiative and personal financial sacrifice situations (Table 129). On one hand, we could expect companies to suppress current performance needs with immediate training programs and neglect the investment on skills that their

workers might need in the future, as, most probably, they will not be in the same company at that time. On the other hand, the financial sacrifice made by the trainee is accepted more easily when she perceives current needs, as the ratio cost-benefit is higher.

The data collected suggests that companies are planning training not to increase the immediate performance of their workers and suppress current performance problems, but are rather investing in the skills of their workers in general (Table 129 and from Figure 56 until Figure 59). This long-term perspective conflicts with some tendencies of the labour market, such as precarious contracts. One might ask why bother to invest in the future skills of an employee if she probably will not be working for the company. This apparent conflict may reflect the recent ideas of *psychological contracts* (for example, Lester & Kickul, 2001),which rule the beliefs concerning the obligations that exist between the employee and the organization.

In the past, the relation employer-employee was a long-term contract. Currently, employment is dominated by short-term contracts for highly-skilled professionals, who are dismissed when their specific skills are no longer required by the organization (Dharmawardena, 2009). In this new psychological contract, no promises of future career and corporate care for the future of the employee are compensated by short-term benefits, namely training courses that are not of particular interest to the company but useful for the future career of the employee, probably within another company. Preparing the employee to a career she may have when she leaves the company is a way of relieving the pressure when the time comes to ask her to leave. Yet, two interpretations can be made: the first is that e-learning courses promoted or paid by companies are not related to immediate performance needs, as we have just discussed. The second, is that trainees perceive that they do not have performance handicaps and that the company suggested and/or paid for the course to invest in their careers or to value them. As we will discuss later, caring for and valuing the employee is important to the employee, and the absence of training opportunities is sometimes seen as lack of care and interest.

		Enhancement (to progress)	Restoring (to suppress)
Initiative	The trainee	72.94%	27.06%
	The company	82.35%	17.65%
Financial sacrifice	The trainee	71.47%	28.53%
	The company	86.27%	13.73%
Total sample		73.51%	26,49%

Table 129: Differences in operant conditioning profile according to who had the initiative and who paid for the course

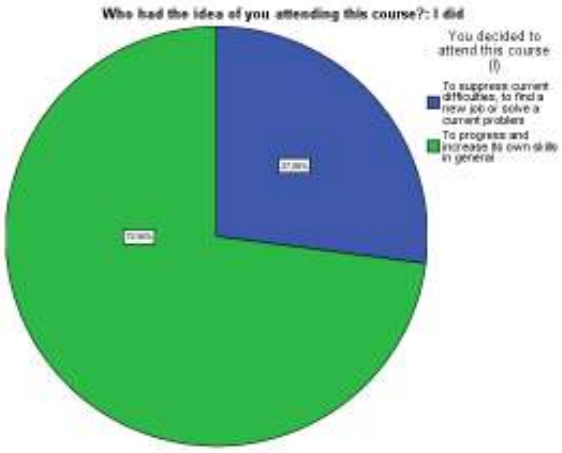

Figure 56: Motives when the idea came from the trainee

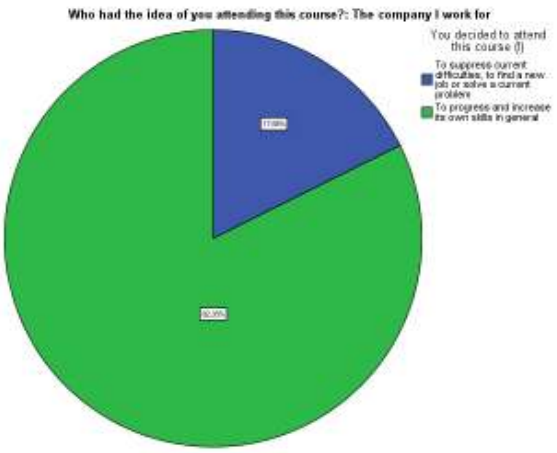

Figure 57: Motives when the idea came from the company

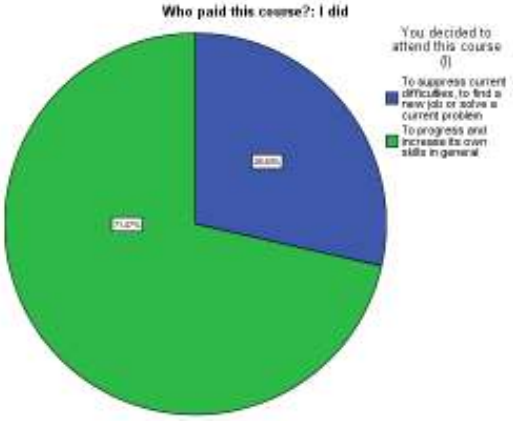

Figure 58: Motives when the payment was made by the trainee

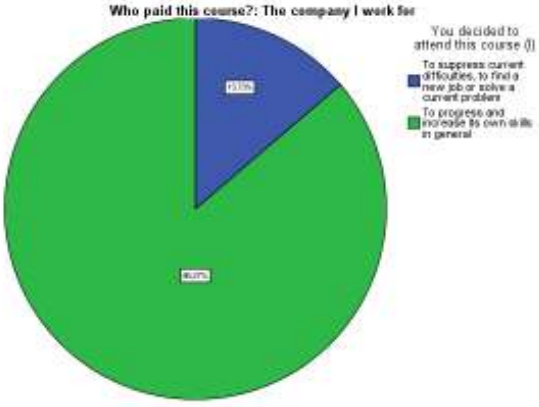

Figure 59: Motives when the payment was made by the company

We tested two hypotheses: the first was related to who had the idea of attending the course:

- H_0: The motives to attend the course are equal, no matter who had the idea for the trainee to attend the course;
- H_1: The motives to attend the course differ regarding who had the idea for the trainee to attend the course.

Using Mann-Whitney non-parametric tests, we reject H_o with a 95% confidence level (Table 130) which enables us to assume that, in respect to initiative, motives are different when the idea comes from the trainee and when it comes from the company. Companies are more interested in progress and future use, while trainees are more worried with current needs. The current psychological contract is also close to this idea: "we care (thus we suggest training courses) about this employee because she is useful and we have to compensate her for the lack of future guarantees; we do not care for those who already have performance problems – it will be easier to replace them".

Test Statistics[a]

	You decided to attend this course (I)
Mann-Whitney U	33570,000
Wilcoxon W	628165,000
Z	-1,706
Asymp. Sig. (2-tailed)	,088

a. Grouping Variable: Who had the idea of you attending this course?

Table 130: Mann-Whitney test to the motives to attend the course related to who had the idea

The other hypothesis that we analyzed is related to who had paid for the course:

- H_0: The motives to attend the course are equal no matter who paid for the course;
- H_1: The motives to attend the course differ regarding who paid for the course

Also using Mann-Whitney tests, which provided a *p-value* of 0, we rejected H_o with a 95% confidence level (Table 131). The fact that the company pays for the course leads to a higher perception that the decision is to reinforce skills, rather than to suppress needs. This reinforces the idea of liberal human resources policies implicit in the current psychological contract: Current performance needs are not in the list of priorities in budgeting training activities: replacements may be seen as a better alternative to training.

Test Statistics[a]

	You decided to attend this course (I)
Mann-Whitney U	65110,500
Wilcoxon W	564610,500
Z	-3,859
Asymp. Sig. (2-tailed)	,000

a. Grouping Variable: Who paid this course?

Table 131: Mann-Whitney test to the motives to attend the course related to who paid for the course

4.3.5.2.1. Does the Company Decide Better Than The Trainee? (question 4)

One question that may arise is whether the trainee feels she would decide better which course to take, rather than being the company to make that decision. The first scenario is usually illustrated with the idea of providing trainees with a training check or budget that they can decide how to use. We wanted to confirm if, in those situations where the company suggested and/or paid for the course, the trainees thought that was not the best decision and would value other courses and take a different decision. We assumed that the financial sacrifice would be the best element to characterize the buying decision.

When questioned if they would pay for the course paid by the company, more than 26% would not make the same decision and 73.47% said they would (Figure 60).

Regarding those that would not take the same decision, 12.24% argued that the course was not an immediate need and other courses would be more relevant, which raises the hypothesis that the company is not as good at planning training as one could think, or that its decisions do not take the trainee's opinion into consideration. 14,29% of the inquiries claim that they could not afford attending the course and they would not buy that course if they had to pay for it. This does not mean that they really did not have the money. Instead, it could be seen as the result of a cost-benefit analysis: trainees could have, objectively, money in their bank account, but the cost-benefit analysis could lead them to say they could not afford it, as other expenditure took priority.

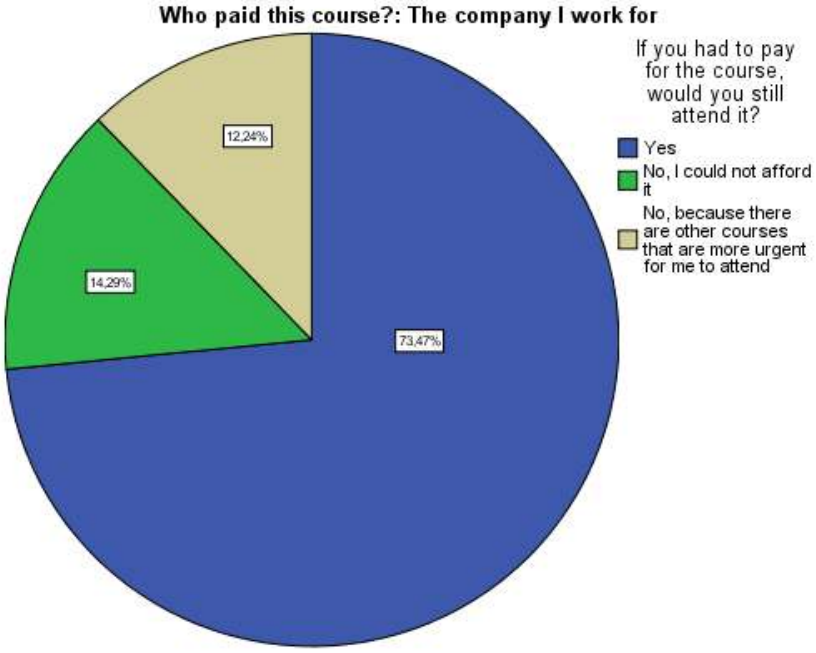

Figure 60: Confirmation of decision if the trainee had to pay for the course

4.3.6. Perceptions of Value

The survey was also used to understand how trainees perceive value in e-learning, as we have been relating *quality* to *utility* and, as we will see, *utility* to *value*. We asked EVOLUI.COM's clients where the value of a course comes from. More than 1/3 of our inquiries said that the value of an e-learning course comes from its *utility*, as we had been suspecting (Figure 61).

Job opportunities, which are a specific kind of utility, were the second most rated option, with 26,55% of all answers, followed by *self-fulfilment* provided by the course (17,16%) and *excellence* or *quality* of the training course (9,31%). No relevant differences were found in value perceptions among male and female respondents (Table 132, Figure 62 and Figure 63). Value perceptions associated with the *price* (or the financial sacrifice), *status*, *self-fulfilment*, *experience*, and *excellence* or *quality*, were not rated as important as *utility* and *job opportunities*.

These value perceptions are more expressive when we analyze the answers relatively to who paid for it and to who promoted it: when the course was paid by the company, value perceptions were, in 52% of the cases, related to *utility* (Figure 64, Figure 65, and Table 133). This means that *value perceptions* are, according to Holbrook's (1999c, p. 12) typology, mainly *self-oriented*, *active* and *extrinsic*.

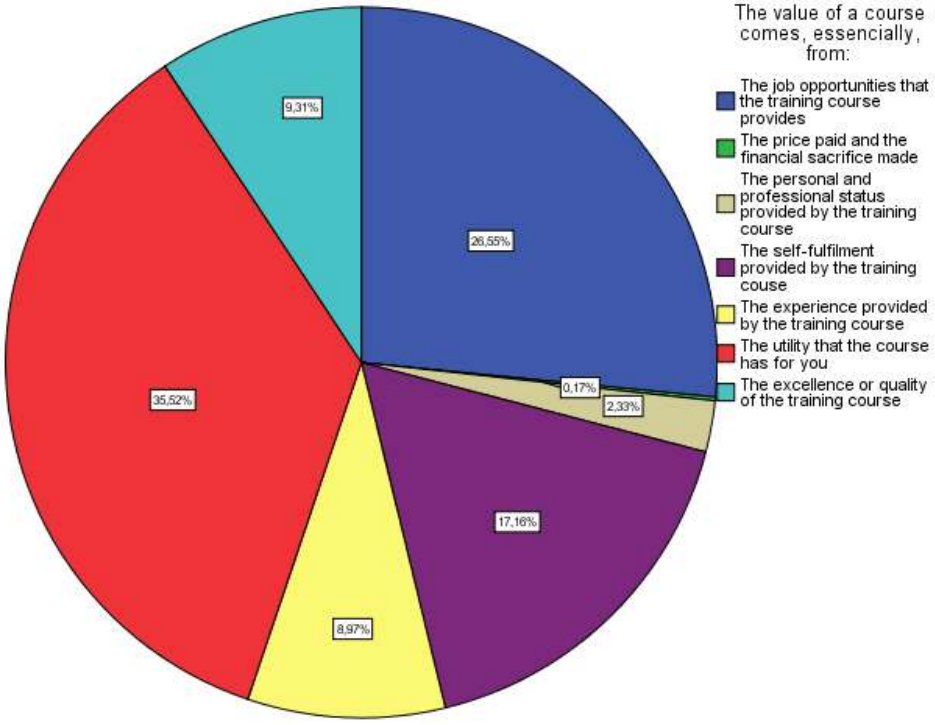

Figure 61: Perceptions of value in e-learning courses

Value perception		Utility	Job opportunities
Gender	Male	33,60%	29,27%
	Female	26,41%	25,28%

Table 132: Differences in value perceptions according to the gender

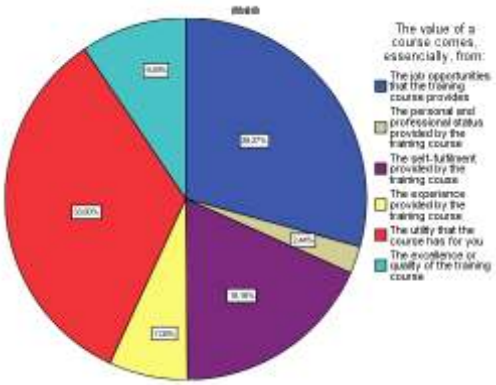

Figure 62: Value perceptions in male trainees

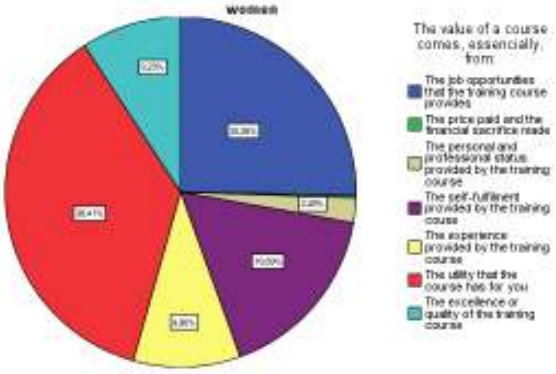

Figure 63: Value perceptions in female trainees

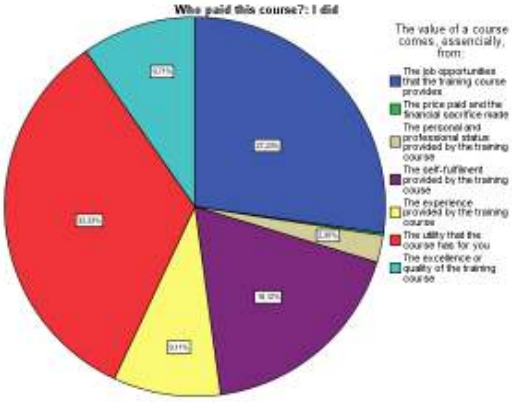

Figure 64: Value perceptions when the trainee herself paid for the course

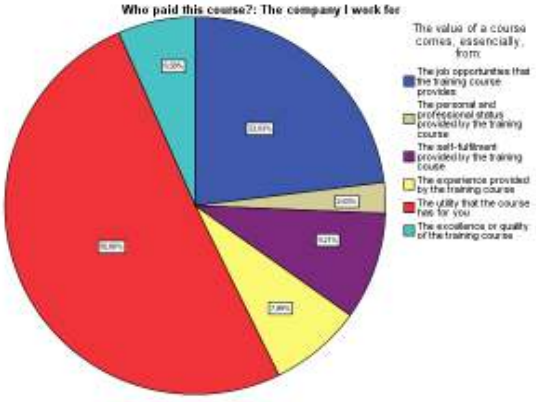

Figure 65: Value perceptions when the course was paid by the company the trainee works for

Value perception		Utility	Job opportunities
Paid by	The trainee	33,33%	27,23%
	The company	50,66%	23,03%

Table 133: Differences in value perceptions according to who paid for the course

4.3.7. Trainee's Attitude Towards Training and Perceptions of the Presence and Absence of Training Programs

99,47% of the inquiries define themselves as having a permanent need for training (question 8), although only 59,90% of them had, in fact, attended training courses in the last six months (question 6). Those who did not attend any course during that period of time justified their answer with the fact that they will not change their job within the company in the next months, timetable incompatibilities, lack of time, the price of training courses, or because they did not need training (Table 134). On one hand, respondents claim that one of the reasons why they did not attend any course in the past months is that they did not need training. On the other hand, they classify themselves as having a permanent need for training. We believe that these two answers are not incompatible, as the latter may be seen as a need to grow and to develop and the former as *restorative need.*

Among those who attended courses in the six months prior to the survey, 32% said they did it because their job required them to keep updated (which means that training has an *immediate utility*), 23% said it was because they like to attend courses for self-enrichment, 10% claim they had an urgent need and the course would help them perform better (which is *immediate utility*), and almost 10% said they might need it in the future (that is, *future utility*).

We questioned the individuals about the reasons why they felt more or less motivated when their company provided them a training course (question 12). The answers are mainly related to immediate job utility (Table 135): those who felt motivated with the training programs claim that it is because of performance improvements (*immediate utility*) obtained, while those who do not feel motivated say that it is because it would

not have any impact or utility. *Future utility* is present in *discomfort factors* when the trainee is not provided with training by the company (question 13): Of the respondents who say that they feel uncomfortable if the company does not provide training courses, 56% claim that the reason for that is that they may need in the future (Table 136 and Figure 66).

Reasons for attending training courses		Reasons for not attending training courses	
The job requires permanent updates	32,09%	Do not intend to change their job within the company in the next months	60,59%
Like to attend courses for self-enrichment	23,21%	Incompatible timetables	11,84%
Urgent need to improve performance	10,17%	Prices are too high	9,25%
May need in the future	9,46%	Lack of time	7%
Résumé improvement	8,60%	Did not need	5,45%

Table 134: Most cited reasons for having and for not having attending courses in the last 6 months

Reasons for being more motivated when the company provides training courses		Reasons for not being more motivated when the company provides training courses	
Performance improvements	73,88%	No changes in the job	48,16%
Knowledge increase	11,42%	No job opportunities are offered after	29,63%
Demonstration of care	13,88%	Lack of utility in the function	14,81%
Increase of job satisfaction	0,82%	Job dissatisfaction	7,41%

Table 135: Most cited reasons for being and for not being more motivated when the company provides training courses

Reasons for being uncomfortable when the company does not provide training courses		Reasons for not being uncomfortable when the company does not provide training courses	
May need in the future	56,33%	I pay for the courses	77,23%
It means they do not care	29,40%	Not a demanding/ revindicative person	12,95%
I really needed it	11,64%	The job does not require	7,37%
Legal right	2,62%	Training is not a solution for current job problems	2,46%

Table 136: Most cited reasons for being and for not being uncomfortable when the company does not provide training courses

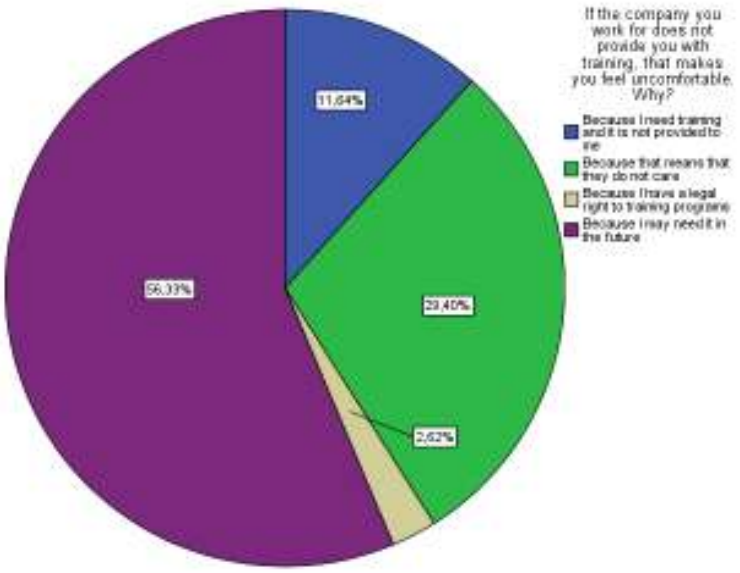

Figure 66: Discomfort factors when the company does not provide training to the workers

4.3.8. Final Reflections

One of the most permanent questions we had along our work was about the kind of relation that exists between quality and value perceptions. Previously, we had related quality to three factors: the trainee's attitudes, the training process, and training utility, which included immediate and *future utility* perceptions, but the relation between quality and value perception was not clear.

This survey helps us discard some approaches to the value of a training course, namely those that relate value with the price paid and some types of value that are commonly considered by the literature. Value perceptions are mainly *self-oriented*, *active*, and *extrinsic* (Holbrook, 1999c, p. 12). The perception of value in e-learning courses is related to the utility of the course, especially in the cases where the registration is paid by the company. The perceptions of utility are also present in the trainee's attitudes, both when the company provides them training programs and when it does not:

- *Immediate utility*, on one hand, is a motivating factor when the trainee receives training;
- *Future utility*, on the other hand, is considered an important *discomfort factor* in situations of absence of training.

What motivates trainees to the course is the *anticipation of some consequences*, an operant conditioning reaction, which suggests that an end-in-view (Dewey, 1939, p. 39) is present. Those consequences are not related to the *restoration* of lost skills, but rather to *improvement and enhancement* of highly ranked skills. This suggests that the courses are carefully planned, having in mind strategic and long-term objectives, rather than being short-term responses to current problems or difficulties. Future, rather than immediate, utility is, therefore, more emphasized. This is also true in situations where the course was paid for by the company, and we believe this is related to current tendencies of the psychological contracts, where companies discard long-term

obligations towards employees by compensating them with long-term skills that they can use elsewhere. In this sense, the value of a course could be regarded as the *promise* (Levitt, 1981, p. 94) of a future career, in exchange for a short-term labour relation.

Even so, we must recognize the limitations of this study. Trainees suggest that they attended the courses to improve their skills, rather than to suppress current performance problems. Yet, this could not be confirmed. Trainees can perceive that they do not have performance handicaps while their supervisors may think otherwise. Moreover, trainees may believe that they are being offered the course because the company cares for them, which, in turn, may look like the company wishes to keep them indefinitely. Another limitation of our analysis is that we are not looking to who is on the other side of the barrier - the company, and the real motives why the company provides training courses to these trainees. We believe that the consequences of the *psychological contract* in training decisions should be further analysed. In addition, we cannot be sure if value perceptions are more related to *immediate utility* or, rather, to *future utility*. Job opportunities, for instance, can be considered as much in the short as in the long-term.

Chapter 5
Conclusions

Our empirical research aimed at discovering what trainees think the quality of e-learning is and what the primary dimensions of quality of e-learning courses are. We started with an exploratory qualitative study of messages posted in forums of e-learning courses of EVOLUI.COM, a Portuguese provider of asynchronous e-learning for professional training. Most references made to the quality of e-learning were related to the training process, namely the training contents, the trainers, the supporting staff, and the colleagues. We also found references to attitudes such as expectations, training needs, and objectives, as well as references to training results. Regarding training results, the trainees referred to several related ideas, such as the changes or transformations that the course enabled. The uses and the applicability of the course, as well as its utility, were so expressive that utility was considered a relevant concept to be further explored. In the following study, we used an online survey with 15-items in a 1-10 Likert scale that was carried out at the end of the courses and received 2630 answers. This survey was intended to identify the variables that explained the variability of the *perceptions of quality* and the most significant *factors of quality*. It was also used to identify differences in terms of *perceptions of utility* and the influence of the duration and the type of the course in the *perception of quality*. In the range of courses offered by EVOLUI.COM and for the sample analyzed, although *immediate* and *future utility* were highly rated and correlated, the perception of *future utility* was statistically higher than the perception of *immediate utility*. This suggested that the courses are valued not only for the contribution they can bring to immediate performance or immediate objectives, but also, and mainly, for *future uses* that they might enable in the future. The regression that was adjusted has shown that *global satisfaction* and *future utility* were the variables that explained most of the *perception of quality*, while *immediate utility* was a poor contributor to *quality*. This confirms that *quality* is a long-term attitude, as it as been claimed by Cronin and Taylor (1994) and Oliver (1981), rather than a short-term one.

Using factor analysis, we extracted three factors that explain quality: the *training process*, the *training attitudes*, and the perceptions of *training utility*. This suggests that all the concepts that are associated to quality can be reduced and classified into one of these three factors of quality. This is a complex variable that needs to be simplified to be better understood. The results of the factor analysis are consistent with the qualitative study that we had done previously. Yet, the factor analysis emphasizes the importance of the *training attitudes* in the *perception of quality*, namely *global satisfaction*, *motivation*, and the perception of *fulfilment of expectations* and *of training objectives*. Besides satisfaction, t*raining attitudes* are not usually included in the models of quality of e-learning or in the models of training evaluation. Yet, our study revealed that motivation is a relevant variable that must be taken into consideration when evaluating the *perceptions of quality*. Specifically, *final motivation*, which is a variable that is closer to behavioural changes, is an important variable that explains *global satisfaction*, which in turn, is the most relevant variable to explain *quality*. The three-factor structure was crossed with the most used models of training evaluation where the attitudes of the trainees, besides satisfaction, are not included. These models follow the point of view of the organization the trainee works for, and may not be the most adequate for the evaluation of quality from the point of view of the trainees. The trainees may not be interested in some traditional levels of training evaluation, such as organizational

impact, but they are certainly interested in the *future utility* of the course for them, within the company or at another company, or for any other future purpose.

In the sample that we analyzed, *initial* and *final motivations* were not considered statistically identical, although what we called the *motivational gap*, which is the difference between final and initial motivation, was about zero. Yet, *final motivation* was statistically higher when the courses took two weeks to be completed. We found out that the *duration of the course* is a relevant variable to take into consideration when evaluating the quality of an e-learning course at EVOLUI.COM, since the courses that took two weeks to be completed, not only maximized the *final motivation*, but also led to higher *perceptions of global satisfaction*, *immediate* and *future utility*, and *quality*. The trainee's *attitudes* were also consistently different when they paid for the course, instead of the company. *Global satisfaction*, and *initial* and *final motivation* were higher when the trainee paid for the course. In those circumstances, the *training utility* was also higher: *immediate* and *future utility* were higher. Moreover, the *perception of quality* and the *quality-price relation* were statistically higher when the trainee paid for the course. Certification courses also had higher ratings in those variables, which is consistent with the fact that these courses have more impact on career opportunities and external recognition of one's abilities. A specific and popular course - the trainer's initial pedagogical certification course - also showed to lead to different perceptions in the *utility factor* of quality.

Among the trainees of EVOLUI.COM that were inquired, we found that whenever the course was paid by the trainee, and not by their company, there was a higher *global satisfaction*, higher *initial* and *final motivation*, and also a higher perception of *immediate* and *future utility*, and a *higher perception of quality*. The influence of the paying agent, in addition to the influence of the duration of the course on motivation, led us to launch another quantitative study to explore the main motivational drives of the trainees and their initial attitudes towards the course. Of the 1237 cases collected, we found that what motivates trainees to the course is the *anticipation of some consequences*, an *operant conditioning* (Skinner, 1969) reaction, which suggests the existence of an *end-in-view* (Dewey, 1939, p.39). The majority of the trainees decided to attend the course to increase their skills, rather than to suppress existing needs. This *positive reinforcement* is a more long-term strategy than the *restorative* tactics of suppressing existing needs, and is consistent with the higher perception of *future utility* that we had found previously. Yet, the decision to attend a course to suppress current needs or solve a current problem is more common in scenarios of self-initiative and personal financial sacrifice, i.e., the trainee had the idea to attend the course and paid for it. On one hand, the financial sacrifice made by the trainee is easily accepted when she perceives urgent training needs, as the benefits are perceived as immediate. On the other hand, we could expect that companies would be more interested to suppress current performance needs and neglect the investment on skills that the workers might need in the future, as, most probably, the trainees will not work for that company in the long-run. Yet, this is consistent with the *psychological contract* (D. M. Rousseau, 1989). In 1762, Jean-Jacques Rousseau wrote about conventions, such as social order or family, which, despite being unnatural and an alienation of human innate freedom, had privileges that supported the social association, or contract. Rousseau (1762, p. 117) defined a *contract* as "the act of a man who said to another 'I give you all my goods on condition that you give me back as much of it as you please'". The contract involves a recripocal engagement between two parties, and, as he claimed (1762, pp. 51-52), the slightest modification of the contract would turn it void. The *social contract*, as

idealized by Rousseau, may never have been formally stated, but it is "everywhere the same, everywhere tacitly admitted and recognized" (p. 50) and can be considered the roots of the modern corporate *psychological contract* (D. M. Rousseau, 1989). Denise Rousseau (1989, 1995) claims that a *psychological contract* refers to unwritten expectations that operate between employees and managers and emerge when an individual perceives that the contributions that she makes obligate the organization to reciprocity (and vice versa). The belief in an *obligation of reciprocity* suggests that workers are willing to abdicate a life-long relation with the company and accept short-term contracts if they are given extra benefits, such as training courses, that might be helpful in the future. The absence of a life-long protection provided by the company is compensated by long-term skills enabled by training courses that may not be of particular interest to the company but are useful for the future career of the employee, within another company. The *promise* (Levitt, 1981, p.84) of a future successful career is provided in exchange for a short-term labour relation with the company: preparing the employee to a career that she may have when the company does not need her anymore suggests that the training courses provided by the company target the future uses she might have, rather than current needs, which is consistent with our empirical conclusions.

The second quantitative study was also used to test if there was another variable that could influence the *perceptions of quality* and that we had not included in our first quantitative study, as the exploratory qualitative study did not provide any clue in that direction. Specifically, we wanted to know if a higher-order and abstract variable, the *perception of value*, could somehow be related to the *perception of quality*. For this purpose, we used this quantitative study to identify the type of value that was associated with an e-learning course, to check if the *perceptions of value* were related to the *perceptions of quality* and understand the role of *utility* in the presence or absence of training provided by the company. The attitudes of the trainees towards the presence and absence of training programs provided by the company are related to utility: trainees reveal to be *motivated* when their company provides training courses because they perceive *immediate utility* in those courses. Yet, the perceived loss of *future utility* makes trainees feel *unmotivated* when the company does not provide training courses. In other words, *immediate utility* is a *motivating factor* when the trainee receives training from her company, and *future utility* is a *discomfort factor* in the *absence of training*.

Value is a complex and subjective construct that can have different meanings and interpretations. Yet, EVOLUI.COM's trainees perceived that the *value* of the e-learning course is related to its utility and to the job opportunities that it might provide, rather than to the price paid, the status provided, the experience they lived, or any other type of *value*. Some common approaches to *value* were discarded and the *value* of an e-learning course, in the sample analysed, can be considered as *self-oriented*, *active*, and *extrinsic* (Holbrook, 199c, p.12), and *utility* is, for the trainees that we studied, the common link between *quality* and *value*.

Based on a large sample and on multiple and related instruments and research designs, our study provides the initial contribution to a future model of quality in e-learning in the residential market and a simplified structure of factors of a complex construct – *quality*. It also revealed the role of *utility* as a relevant dimension of *quality* and as the common link between *quality* and *value* of an e-learning course.

Yet, it has some limitations that we must acknowledge. The first is the nature of a case study, which does not let us make any generalizations of the findings. Our conclusions hold just for the case of EVOLUI.COM and for the concrete set of data that we analyzed, and may even not hold true for a different sample within EVOLUI.COM. Therefore, generalized conclusions cannot be made. Second, qualitative studies have, in general, sampling issues and include a significant degree of participation of the researcher who, despite her best intentions, may conduct a biased collection of data and influence the responses. Moreover, our first quantitative study, which was based on the major conclusions of the previous qualitative study, was a single-item survey, and we acknowledge that multiple-item surveys are more reliable and provide higher validity. In addition, several trainees answered the three studies we have made, which suggests that some saturation may have occurred. Third, there are some conclusions to which we cannot provide reasoned or data-supported explanations, but just formulate logical hypotheses. For instance, we concluded that perceptions of *immediate* and *future utility*, as well as the overall *perception of quality*, are higher in female trainees than in males, although they have a perception of *quality-price relation* similar to male trainees, but we had no means to find out why this gender difference exists. The case of the trainer's initial pedagogical certification course is another example, since we cannot tell if the differences that we found are due to the professional certification that it provides or because it is done in a b-learning format. The last limitation is related to the subjects that we inquired: the trainees. Trainees suggest that they do not have current performance problems and that they attended the courses to improve their skills. Yet, this information was not crossed with the opinion of their hierarchical superiors or supervisors, who may have a different opinion. Moreover, trainees may be too optimistic regarding their ability to retrieve, in the future, what they have learnt in the course. Also they may have provided a too optimistic evaluation of *future utility*, and therefore, of *quality*.

We suggest that training companies should include in their reaction surveys other variables, such as *final motivation* and perceptions of *immediate* and *future utility*. These variables express expectations, rather than just affective reactions, and are more behaviour-oriented than satisfaction. They can also be used to measure the expected use and, therefore, can be used to evaluate the *fitness for use* (Juran, 1951, section 2-2), i.e., the *perceived quality*. We also suggest that the models of training evaluation should be adapted to the point of view of the trainee, rather than include those of the company. This would allow training companies that work with the residential market to have a better framework to evaluate the courses they offer and their quality.

Based on our conclusions, there are several future works that can be done. The three-factor structure of quality factors that was found should be further investigated, in order to provide more adequate models of training and quality evaluation to those companies that offer e-learning courses to the residential market. Those models would also be useful to companies that use e-learning courses as a benefit included in the *psychological contracts*. Another suggestion is related to the transformation of expectations of utility into effective use: first, the deadline of an immediate use – the moment in time when it becomes a future use, should be defined, as well as the moment in time when the perceived utility becomes effective use, and the possible barriers to the retrieval process or effective use, should be identified. Regarding the trainer's initial pedagogical certification course, as we were not able to find what justifies the higher *utility* and *perception of quality*, we believe that comparative studies that included other training formats (namely face-to-face, instead of the b-learning solution) and trainees

with other attitudinal profiles (for example, trainees of funded courses) could be helpful and provide relevant insights to the study of one of the most popular training courses in Portugal. The relation and the differences between *quality* and *value* could also be the object of future work. Namely, several questions should be addressed: Is value a shorter-term attitude? Is value more than a conviction, rather than an experience-based attitude? Are trainees more interested in the *value* of a course and companies more interested in the *quality* of the course? Does quality include risk and uncertainty as value does? Finally, the influence and the consequences of the *psychological contract* in the training decisions should be further analysed.

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Appendixes

Appendix 1: Quality Management Principles

The following tables include the key benefits and major implications of the ISO *principles of quality management* (ISO/TC 176: Quality Management and Quality Assurance, 2007).

Principle: Customer Focus	
Organizations depend on their customers and, therefore, should understand current and future customer needs, should meet customer requirements, and strive to exceed customer expectations.	
Key benefits:	Applying this principle typically leads to:
• Increased revenue and market share obtained through flexible and fast responses to market opportunities; • Increased effectiveness in the use of the organization's resources to enhance customer satisfaction; • Improved customer loyalty leading to repeat business.	• Researching and understanding customer needs and expectations; • Ensuring that the objectives of the organization are linked to customer needs and expectations; • Communicating customer needs and expectations throughout the organization; • Measuring customer satisfaction and acting on the results; • Systematically managing customer relationships; • Ensuring a balanced approach between satisfying customers and other interested parties (such as owners, employees, suppliers, financiers, local communities, and society as a whole).

Table 137: Key benefits and implications of customer focus

Principle: Leadership	
Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.	
Key benefits:	Applying this principle typically leads to:
• People will understand and be motivated towards the organization's goals and objectives; • Activities are evaluated, aligned, and implemented in a unified way; • Miscommunication between levels of an organization will be minimized.	• Considering the needs of all interested parties including customers, owners, employees, suppliers, financiers, local communities, and society as a whole; • Establishing a clear vision of the organization's future; • Setting challenging goals and targets; • Creating and sustaining shared values, fairness, and ethical role models at all levels of the organization; • Establishing trust and eliminating fear; • Providing people with the required resources, training, and freedom to act with responsibility and accountability; • Inspiring, encouraging, and recognizing people's contributions.

Table 138: Key benefits and implications of leadership

Principle: Involvement of people	
People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.	
Key benefits:	Applying this principle typically leads to:
• Motivated, committed and involved people within the organization; • Innovation and creativity in furthering the organization's objectives; • People being accountable for their own performance; • People eager to participate in and contribute to continual improvement.	• People understanding the importance of their contribution and role in the organization; • People identifying constraints to their performance; • People accepting ownership of problems and their responsibility for solving them; • People evaluating their performance against their personal goals and objectives; • People actively seeking opportunities to enhance their competence, knowledge, and experience; • People freely sharing knowledge and experience; • People openly discussing problems and issues.

Table 139: Key benefits and implications of involvement of people

Principle: Process approach	
A desired result is achieved more efficiently when activities and related resources are managed as a process.	
Key benefits:	Applying this principle typically leads to:
• Lower costs and shorter cycle times through effective use of resources; • Improved, consistent, and predictable results; • Focused and prioritized improvement opportunities.	• Systematically defining the activities necessary to obtain a desired result; • Establishing clear responsibility and accountability for managing key activities; • Analyzing and measuring of the capability of key activities; • Identifying the interfaces of key activities within and between the functions of the organization; • Focusing on the factors such as resources, methods, and materials that will improve key activities of the organization; • Evaluating risks, consequences, and impacts of activities on customers, suppliers, and other interested parties.

Table 140: Key benefits and implications of process approach

Principle: System approach to management	
Identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.	
Key benefits:	Applying this principle typically leads to:
• Integration and alignment of the processes that will best achieve the desired results; • Ability to focus effort on the key processes; • Providing confidence to interested parties as to the consistency, effectiveness, and efficiency of the organization.	• Structuring a system to achieve the organization's objectives in the most effective and efficient way; • Understanding the interdependencies between the processes of the system; • Structured approaches that harmonize and integrate processes; • Providing a better understanding of the roles and responsibilities necessary for achieving common objectives and thereby reducing cross-functional barriers; • Understanding organizational capabilities and establishing resource constraints prior to action; • Targeting and defining how specific activities within a system should operate; • Continually improving the system through measurement and evaluation.

Table 141: Key benefits and implications of system approach to management

Principle: Continual improvement	
Continual improvement of the organization's overall performance should be a permanent objective of the organization.	
Key benefits:	Applying this principle typically leads to:
• Performance advantage through improved organizational capabilities; • Alignment of improvement activities at all levels to an organization's strategic intent; • Flexibility to react quickly to opportunities.	• Employing a consistent organization-wide approach to continual improvement of the organization's performance; • Providing people with training in the methods and tools of continual improvement; • Making continual improvement of products, processes, and systems, an objective for every individual in the organization; • Establishing goals to guide, and measures to track, continual improvement; • Recognizing and acknowledging improvements.

Table 142: Key benefits and implications of continual improvement

Principle: Factual approach to decision making	
Effective decisions are based on the analysis of data and information.	
Key benefits:	Applying this principle typically leads to:
• Informed decisions; • An increased ability to demonstrate the effectiveness of past decisions through reference to factual records; • Increased ability to review, challenge, and change opinions and decisions.	• Ensuring that data and information are sufficiently accurate and reliable; • Making data accessible to those who need it; • Analyzing data and information using valid methods; • Making decisions and taking action based on factual analysis, balanced with experience and intuition.

Table 143: Key benefits and implications of factual approach to decision making

Principle: Mutually beneficial supplier relationships	
An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.	
Key benefits:	Applying this principle typically leads to:
• Increased ability to create value for both parties; • Flexibility and speed of joint responses to changing market or customer needs and expectations; • Optimization of costs and resources.	• Establishing relationships that balance short-term gains with long-term considerations; • Pooling of expertise and resources with partners; • Identifying and selecting key suppliers; • Clear and open communication; • Sharing information and future plans; • Establishing joint development and improvement activities; • Inspiring, encouraging and recognizing improvements and achievements by suppliers.

Table 144: Key benefits and implications of mutual beneficial supplier relationships

Appendix 2: Characteristics of Services

1. Defining Services

We cannot study deeply the quality of e-learning services without looking at what the literature means by service and what are the characteristics of services and their impact on quality. The main reason to do this is that services "are - in the extreme – different from goods" (Schneider & White, 2004, p. 4). Although service companies, in general, are closer to customers than product companies, and have an easier job assessing *fitness for use*, which may help them deliver quality (Juran, 1951, p. 473), the quality of services is more difficult for the consumer to evaluate than the quality of goods. In addition, quality evaluations are not to be found solely on the *outcome* of a service but also involve evaluations of the *process* of service *delivery* (Grönroos, 1990a).

Services are usually defined in an ambiguous and vague way:

- A service is "work performed for someone else" and a service company is "an organized system of special skills and facilities" that sells the benefits of this system to its clients (Juran & Bingham Jr., 1951, p. 472);
- A service is "any activity or benefit that one party can offer to another which is essentially intangible and does not result in the ownership of anything" (Kotler *et al.*, 1996, pp. 588, 935);
- "Services are performances rather than objects" (Parasuraman *et al*., 1985);
- "Services are deeds, processes, and performances" (Zeithaml *et al*., 2006, p. 4).

2. Services Characteristics

Services are distributed in a hierarchical network and not randomly distributed within the spatial-economic landscape. Lamprecht (1994, pp. 61-62) gathered several spatial studies and identified three basic concepts: *threshold*, *range*, and *order*:

- *Threshold* is the minimum amount of sales needed per time period to bring a firm into existence and keep it in business; it is the minimum market that is needed to bring the company into existence and to keep it going;
- The *range* is the average maximum distance people will go to purchase it. Lamprecht exemplifies the range characteristic quoting Abler, Adams, and Gould (1972, pp. 364-365) who claim that the range for a loaf of bread is shorter than that for a gold bracelet;
- The *order* is a direct function of its threshold. Expensive and infrequently purchased goods or services (cars, jewellery, or open-heart surgery) often have high threshold and are considered high-order goods.

Services can also be analyzed in terms of their *search*, *experience,* or *credence* properties (Bloom & Pailin, 1995; Darby & Karni, 1973; Nelson, 1974). They can hold *search properties* (attributes which consumers can determine prior to purchasing a product), *experience properties* (attributes that can only be discerned after purchase or during consumption) and *credence* properties (attributes that the consumers may find impossible to evaluate even after purchase and consumption, as appendectomies or brake relinings on automobiles). Most services contain few *search* properties, which are

easier to evaluate, and are high in *experience* and *credence* properties, which, in turn, makes their quality assessment more difficult to evaluate the quality of goods (Zeithaml, 1981). Consumers typically rely on *experience properties* when evaluating service quality (Parasuraman *et al*., 1985). Most of the dimensions of service quality identified by Parasuraman *et al.* (1985) are *experience* properties, except *competence* and *security*, which are considered *credence* properties. This means that most of quality determinants can only be evaluated after the purchase and consumption, and, even then, they will not be able to evaluate some others. *Tangibles* and *credibility* are the only determinants that can be known in advance of purchase (Parasuraman *et al.*, 1985), thereby influencing the choice and the purchase.

Service quality is an abstract and elusive construct because of services' unique features. Bitner, Fish, and Brown (1993) suggest that the literature on services marketing up to 1980 usually came up with four services characteristics: intangibility, inseparability, heterogeneity, and perishability. Services tend to be more heterogeneous, more intangible, and more difficult to evaluate than goods because of four differences between products and services (Table 145). Later, Kotler *et al.* (1996, pp. 589, 935) added a fifth characteristic to services: its *lack of ownership*. Yet, the main literature refers three main services features: intangibility, heterogeneity, and inseparability of production and consumption (Parasuraman *et al.*, 1985; Rathmell, 1966; Regan, 1963). Although some literature (for instance, Hartman & Lindgren, 1993), does not find this last classification the most adequate it will be used here.

Goods	Services	Resulting Implications
Tangible	Intangible	Services cannot be inventoried. Services cannot be easily patented. Services cannot be readily displayed or communicated. Pricing is difficult.
Standardized	Heterogeneous	Service delivery and customer satisfaction depend on employee and customer actions. Service quality depends on many uncontrollable factors. There is no sure knowledge that the service delivered matches what was planned and promoted.
Production separate from consumption	Simultaneous production and consumption	Customers participate in and affect the transaction. Customers affect each other. Employees affect the service outcome.
Non-perishable	Perishable	Decentralization may be essential. Mass production is difficult. It is difficult to synchronize supply and demand with services. Services cannot be returned or resold.

Table 145: Goods *versus* services characteristics
Source: Adapted from Zeithaml *et al.*, 2006, p. 22 (Zeithaml, *et al.*, 2006)

2.1. Intangibility and Lack of Ownership

Purchasing a service may have no physical manifestation, nothing to be packed, put in a bag, and taken home. Intangibility is a defining characteristic of services. Service intangibility means that services cannot be readily displayed, so it cannot be seen, tasted, felt, heard, or smelled, before they are bought, in the same manner tangible goods are sensed (Kotler *et al.*, 1996, p. 589; Zeithaml *et al.*, 2006, p. 22). Services intangibility means that services cannot be easily patented and new services concepts

can easily be copied by competitors (Zeithaml *et al.*, 2006, p. 22).

In most services, tangible evidence is limited to the physical facilities of the service provider, its equipment, and personnel (Parasuraman *et al.*, 1985) (for example, an incision, the bandaging, and the pain, are the only tangible elements of a surgery). Yet, people tend to use nouns as "airlines", "movie", or "hotel" to define services, instead of "air transportation", "entertainment service", or "lodging rental" (Shostack, 1987, p. 34) in an attempt to have some physical evidence in exchange for the price paid for the service and reduce uncertainty. Customers look for tangible elements to reduce this uncertainty. These tangible elements such as place, people, equipment, communication material, and price are signs of service quality from which customers draw conclusions about quality (Kotler *et al.*, 1996, p. 589). Whereas product marketers try to add intangible to their tangible offers (for example, fast delivery and extended warranty), service marketers try to add tangible elements to suggest higher quality to their intangible offers (Levitt, 1981). Even a low tangible element as price (only price tags are tangible) is somehow seen as a quality indicator (Kotler *et al.*, 1996, p. 589). This intangibility means that the service *process* and the *experience* are key features: The *process* is the product of a service (Levitt, 1981) and "services yield psychological experiences, more than they yield physical possessions" (J. D. McConnell, 1968; Zeithaml, 1982).

2.1.1. Degrees of Intangibility

Most services are intangible (Berry, 1980; Lovelock, 1981; Shostack, 1977) but not all services are "pure services". In fact, very few services are purely intangible. Likewise, most products are not totally tangible and have an intangible service component, and so, pure goods and pure services are rare. However, services tend to me more intangible than manufactured products, and are arrayed on a continuum of intangibility. As Schneider and White (2004, p. 7) illustrate, "when people go to a restaurant to eat, they purchase both a physical meal (tangible component) as well as the delivery of the meal (intangible component)". Shostack (1977) suggests a tangibility spectrum (Figure 67): at the extremes, are pure services, which have no tangible component, and pure goods that have no intangible component. However, most fall between the two extremes of the intangibility continuum, holding both tangible and intangible elements. For Shostack (1977), teaching is the most intangible service.

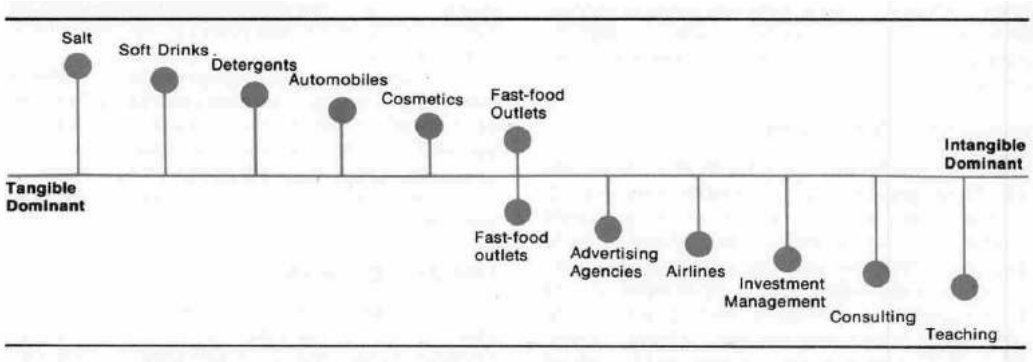

Figure 67: Intangibility Continuum
Source: Shostack, 1977

2.2. Service Inseparability and Perishability

Service inseparability means that services cannot be separated from their providers. That is to say that they cannot be produced, then stored, later sold, and still later consumed. Services are first sold, then produced and consumed at the same time, and in the same place (Kotler *et al*., 1996, p. 589). The fact that production and consumption cannot be separated and are simultaneous poses additional problems: first, no quality-control checks can be done between production and consumption, therefore, no second changes are given to re-done the service after checking for defects. Second, companies must strive to ensure that, when the service is produced, the maximum number of people are available to consume it (Schneider & White, 2004, p. 7), since it cannot be inventoried for later use. For example, a "seat" not sold for a specific edition of an e-learning course will never be able to be sold again. Using total production capacity, although it maximizes profitability, may injure dedication to customers, personalization, special attention, and even customer comfort (for instance, regarding airline seats, all customers would prefer to have the seat next to them available and not taken). At last, an additional difficulty is due to the fact that, when demand rises, increased planning and improvements in productivity are required as demand peaks can lead to unfulfilled supply and unhappy customers.

Service perishability means that services cannot be stored for later sale or use and cannot be returned and resold (for example, a bad haircut cannot be returned and resold to another customer). This perishability is not a problem when demand is steady. Several strategies, as price differentiation, complementary services offered during peak times, and reservation systems, on the side of demand, and part-time employees, rescheduling non-essential task for peak periods, and even shifting tasks to consumers (for example, the registration application), on the supply side, must be considered to deal with variable demand (Kotler *et al.*, 1996, pp. 591-592).

2.3. Variability/Heterogeneity

Service variability means that the quality of services depends on who provides them, as well as when, where, and how they are provided (Kotler *et al.*, 1996, p. 590). Services are heterogeneous because their performance often varies from producer to producer, from customer to customer, and from day to day (Parasuraman *et al.*, 1985). Consistency of personnel behaviour and uniform quality is difficult to obtain (Booms & Bitner, 1981) and ensuring consistency of service is challenging (Zeithaml *et al.*, 2006, p. 23). Different service personnel may perform the service in different ways. The same person can have external factors that influence the way that she performances the service. Moreover, the same customer may present different sets of demands, expectations, and desires to which the service personnel must adapt (Schneider & White, 2004, p. 8). As one person can go to a restaurant to enjoy a loud birthday party and also go to the same restaurant in search for a quiet evening, she can enrol in a learning program for different reasons and motivations (Boekaerts, 2002; Russell Associates, 2006).

Service product and delivery frequently involves the interaction of both service personnel and customers, and both affect the service outcome. The presence of other customers and their behaviour can determine the service delivered (for example, a crowd in a restaurant). Control over the service is also low when consumer participation

is intense, as in a haircut or a doctor's visit, as the client affects the process and her inputs (for instance, the description of how the haircut should look, or the description of symptoms) are critical to the quality of service (Parasuraman *et al.*, 1985). In other situations, as in e-learning courses, the presence of other customers can add value to the *process*, as other experiences are brought to the scene, or reduce value, since the tutor has to share her attention with several trainees.

3. Implications of Service Characteristics in Service Quality on the e-Learning Industry

The combination of characteristics that the services have, imposes several problems (Kotler *et al.*, 1996, pp. 596-597):

- Consumers rarely can compare alternative services offerings in advance of purchase, as a consequence of the intangibility and inseparability of the services;
- Because of that, price is used to differentiate offerings, which leads to a margin erosion and obliges companies to engage in a search for innovative features to differentiate their service offer;
- Service innovations cannot be patented and are easily copied, which makes competitive advantages temporary (see, for instance, the Posner's (1961) technology gap model where he defends that long-term competitive advantages are made of a succession of temporary advantages that end as soon as competitors start to copy innovations);
- Service differentiation can be achieved through people, physical environment, and process (the additional three Ps in service marketing);
- Intangibility and variability mean that a consistent service brand image is not easily built, takes time, and companies have to develop effective and coherent strategies for their product (the service), the price, place, promotion, people, physical environment, and process (also known as the seven Ps of service management);
- Variability implies that standardization is difficult to achieve and consistency in quality is hard to obtain. Service quality varies, depending on the interactions between the company (and its employees) and customers.

In addition, these characteristics of services have a major impact when looking at e-learning services. First of all, because e-learning services, in comparison with traditional educational systems, have a wider service *range* but less consistency problems. They also lack a lot of tangible elements, as the physical presence of the teacher or the printed training documents. Besides that, being a relatively new type of service, e-learning services lack credibility, especially if they are not promoted by traditional education institutions that can transfer some credibility that they already have in traditional education to their e-learning services. E-learning services have other problems related to the *security* quality dimension: freedom from danger, risk, or doubt (Parasuraman *et al.*, 1985) is high, specially because of the alleged Internet risks and, since a great percentage of clients are first-time buyers, their lack of prior experience means that special marketing strategies must be undertaken to promote *experience* clues (Bloom & Pailin, 1995; Zeithaml, 1988).

Appendix 3: Expectations, Zones of Tolerance, Service Recovery, and Critical Incidents

1. Conceptualizing and Measuring Expectations

Customers' expectations play a vital role in quality assessments. Customers' assessment of service quality is made by comparing what they want or *expect* with what they perceive they are *getting*. In other words, in evaluating the quality of the service, consumers compare the service they expect with perceptions of the service they receive (Parasuraman *et al*., 1985). Quality perceptions involve a comparison of expectations with performance, and quality evaluation is a measure of how well the service level delivered matches customer expectations. This suggests that, to earn a reputation for quality service, companies must consistently perform at levels customers perceive as meeting or surpassing their expectations (Berry & Parasuraman, 1991, p. 57).

The term *expectations,* as a comparison standard, is commonly used in two different ways (Berry & Parasuraman, 1991, p. 57):

- What the customers believe *will occur* in a service encounter (predictions);
- And what customers *want to occur* (desires).

Service quality, as perceived by consumers, stems from a comparison of what they feel service companies should offer - their expectations - with their perceptions of the performance of companies providing the service. Expected service (Figure 68) is a critical component of perceived service quality and is the result of word-of mouth, personal needs, past experiences, and external communications (Parasuraman *et al.*, 1985) (Figure 68).

Companies face the challenge of attempting to satisfy their customer requirements even when often most customers are unable to clearly explain the nature of their needs and stating them (Sittig, 1963, 1964). Some needs are disguised, or even unknown to the customer at the time of purchase, and these needs often lead the customer to use the product in a manner different from that intended by the supplier (Juran & Gryna, 1993, p. 243).

There are four types of expectations (Schneider & White, 2004, pp. 41-42), each one with a different meaning and object of attention:

- *Predictive*: How an organization *will* perform or what customers believe (predict) will actually happen in their encounter;
- *Normative*: What people believe *should* happen in an organization whether or not they believe that it actually will;
- *Excellence*: How an excellent service organization should perform. The excellent organization does not have to be the one in question or even another real organization. Respondents can use their imaginations to create an organisation on which to base their expectations of excellence (Parasuraman *et al.*, 1993);
- *Adequate*: Expectations for the minimum level of performance they would be willing to accept.

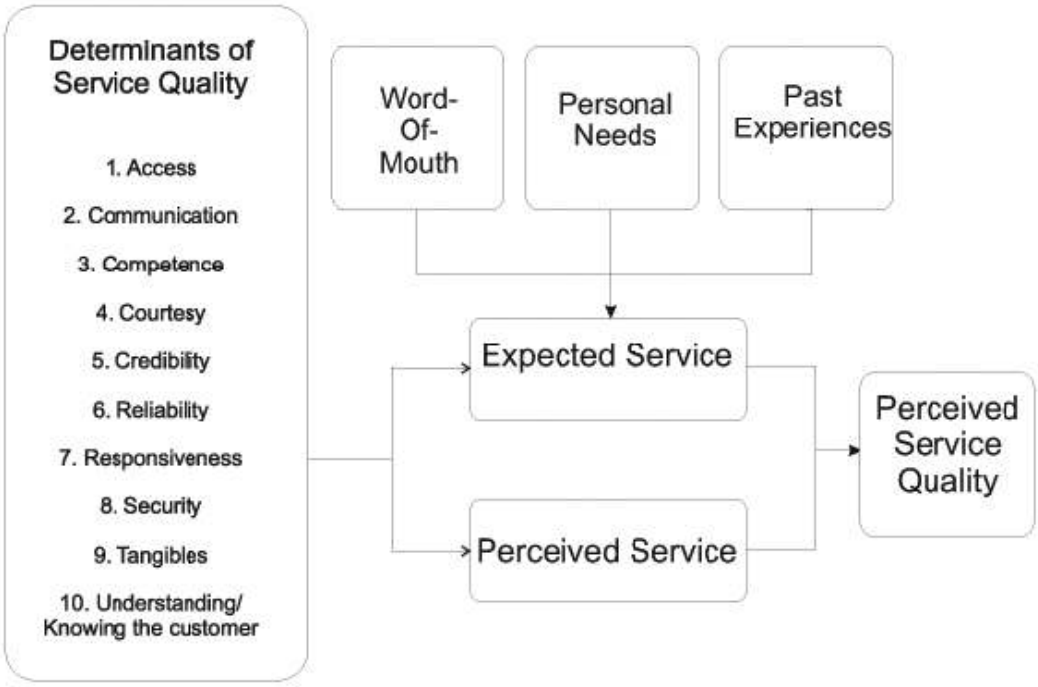

Figure 68: Determinants of perceived service quality
Source: Parasuraman *et al.*, 1985

Parasuraman *et al.* (1991b; Zeithaml, Parasuraman, & Berry, 1991, both quoted in Berry & Parasuraman, 1991, pp.57-58) claim that the customers' expectations exist at two levels:

- A *desired level*, which reflects the service that the customer hopes to receive. It is a blend of what the customer believes that "*can be*" and what "*should be*";
- And an *adequate level*, which reflects what the customer finds acceptable. It is, in part, a function of the customer's assessment of what the service "will be", i.e., the customer's predicted service level.

Ojasalo (1999, 2001, quoted in Grönroos, 2007, pp. 100-101) proposes a dynamic model of expectations where he identifies three long-term types of expectations, closely connected with *relationship* quality:

- *Fuzzy expectations*: Exist when customers expect the service provider to solve a problem, but do not have a clear understanding of what should be done;
- *Explicit expectations*: Are clear in customers' minds in advance of the service processes. They can be divided into *realistic* and *unrealistic* expectations;
- *Implicit expectation*s: Refer to the elements of a service that are so obvious to customers that they do not consciously think about them, but take them for granted.

Exceeding expectations can have different meanings, and consequences, in terms of service quality management if the attribute in question is a *vector* attribute or an *ideal point* one (Schneider & White, 2004, p. 42):

- *Vector attributes*: a vector attribute represents a positive linear relationship between the level of the attribute and service quality. More quality is always

better, and there is no such thing as 'too much';
- *Ideal point attributes*: an ideal point is the performance level beyond which a service attribute loses its *utility*. For ideal point attributes, performance beyond a certain level – the ideal point – reduces quality. Beyond that point, personal attention, for instance, might be seen as intrusive and annoying.

Most service quality attributes are based on the vector attribute model (Parasuraman, Zeithaml, & Berry, 1994b) but customers do not expect always the maximum level of service, and sometimes may experience *disutility* beyond a given level of service (Teas, 1993, quoted in Schneider & White, 2004). In these latter occasions, exceeding expectations may not favour service quality. If some service quality attributes are ideal point attributes, exceeding expectations can actually hurt service quality. Empathy has been discussed as an ideal point attribute. Thus, increasing *empathy* beyond its ideal level would actually reduce the quality of the service. Sutton and Rafaeli (1988, quoted in Schneider & White p.43), for instance, show that in busy convenience stores 'pleasant emotions' - empathy - are an ideal point attribute and customers want fewer smiles and more efficiency.

Customer's expectations have a decisive impact on their perceptions of quality (for example, Grönroos' model of *perceived* quality). Some literature (Grönroos, 2007, pp. 77-78) alerts that over promises raise customers' expectations too high and, consequently, customers will perceive that they get low quality, which leads him to advice that "*it is even better to underpromise and overdeliver*".

2. The Concept of Zone of Tolerance (ZOT) in Expectation Management

Some literature (Liljander & Strandvik, 1993; Nadiri & Hussain, 2005; Parasuraman et al., 1993; Parasuraman et al., 1994a; Teas & DeCarlo, 2004) has been suggesting the existence of a *zone of tolerance* for service quality, as the difference between someone's view of how an excellent organization should perform, and the minimum she is willing to accept. The concept of *zone of tolerance* suggested by Berry & Parasuraman (1991) assumes that customers do not have expectations of a service attribute on one given level, but rather they can tolerate a variation and still consider them acceptable, according to their expectations.

This concept also implies that customers' expectations exist on two levels: a *desired level* (that reflects on what level the service *should* be) and an *adequate level* (that reflects what customers believe it *could* be). The adequate level is the least acceptable level of the service experience. These two levels of expectations form the borders of customers' *zone of tolerance*, i.e., the zone of tolerance separates the desired and adequate service levels (Figure 69). If the real experience of a customer falls in between these borders, it is tolerated and the perceived quality is good. The zone of tolerance ends up acting as a mediator to service quality.

A *zone of tolerance* is, therefore, a range of service performance that a customer considers satisfactory: a performance below the tolerance zone will engender customer frustration, and will decrease customer loyalty. A performance level above the tolerance level will pleasantly surprise customers and strengthen their loyalty (Berry & Parasuraman, 1991).

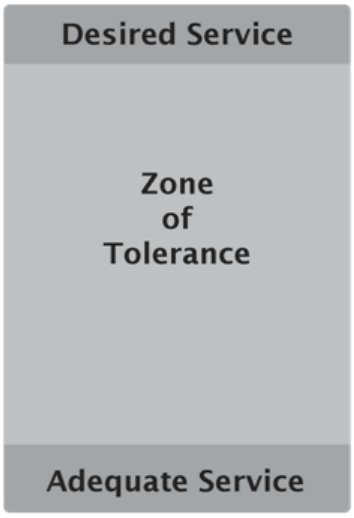

Figure 69: The Zone of Tolerance: Two Levels of Expectations
Source: Berry & Parasuraman, 1991, p. 58 (1991).

Let's consider a customer that is attending an online course and who wishes to have answers to all her posts in online forums within eight working hours (her desired service level). However, based on past experience, the customer is willing to tolerate a 24-hour waiting time (the adequate service level). This means that if the trainer answers are within the range of 8 to 24 hours (the zone of tolerance), the customer will be satisfied with the service. However, a reply delay falling outside the zone of tolerance will make a stronger impression on the customer's perception of speed of service - favourable if the reply is made in less than 8 hours and unfavourable if it is greater than 24 hours.

The *zone of tolerance* can vary from customer to customer, from time to time, and from transaction to transaction, for a given customer. It also varies for different service attributes or dimensions: the more important the dimension, the narrower the zone of tolerance is likely to be. In general, customers are likely to be less tolerant about unreliable service, which means that they have higher expectations for this factor. The greater the importance of a given quality dimension, the thinner the corresponding tolerance zone will be. In fact, customers are likely to be less willing to relax these expectations than those for less important factors, making the zone of tolerance for the most important service dimension (reliability) smaller and the desired and adequate service level higher (Berry, Parasuraman, & Zeithaml, 1993, quoted in Zeithaml, 2006, p. 87).

Berry and Parasuraman (quoting their previous work of 1991, pp. 59-60) argue that, as reliability is the service core, customers are least tolerant to broken service promises. The zone of tolerance for the outcome dimension of reliability tends to be narrower and the boundaries defining the zone of tolerance of this dimension of quality are likely to be higher. Moreover, it is suggested (Grönroos, 2007, p. 119) that, in general, the zone of tolerance is narrower for *outcome*-related service features and broader for *process*-related features (Figure 70).

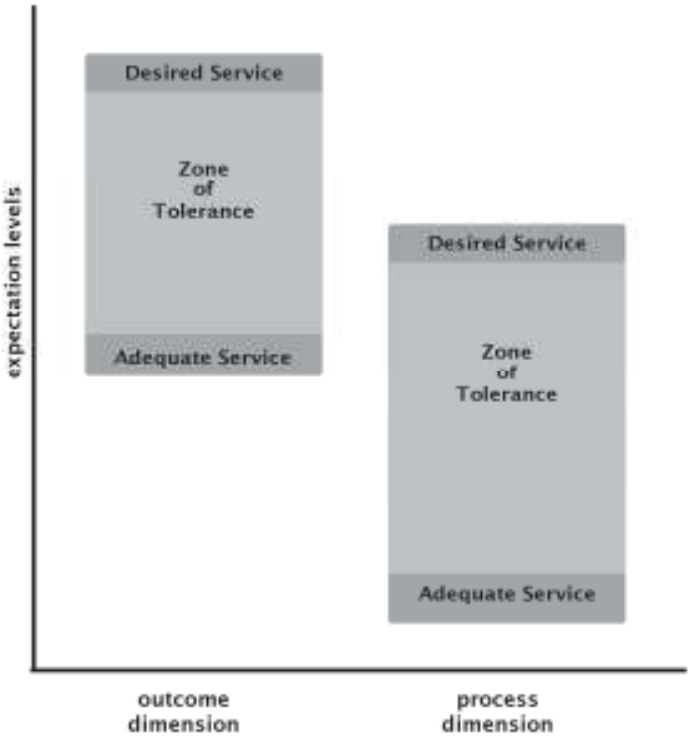

Figure 70: Zones of Tolerance for outcome and process dimensions of service
Source: Berry & Parasuraman, 1991, p. 60 (Berry, *et al.*, 1993, quoted in Zeithaml, 2006, p. 87)

Berry and Parasuraman (1991, p. 59) suggest that the *desired* service level tends to change more slowly and in smaller amounts than the *adequate* service level. The desired service level is also more likely to rise, whereas the adequate service level appears to move readily up or down. This means that the variations in the zone of tolerance are more likely to result from fluctuations in the adequate service level, than in the desired service level. In other words, individual zones of tolerance fluctuate and the variation is more likely due to changes in the adequate service level, than in the desired service level, which tends to move upward smoothly, and incrementally, as experience increases. As customers' expectations of service have these two boundaries, which form this zone of tolerance, it is important for companies to measure it, as it may give useful information about where problems of quality of the service exist. For those attributes where the experience measurement is lower than the adequate level, immediate corrections are needed. The zone of tolerance can be used to identify critical attributes of service quality and help relocate resources in an way that can make a big difference in terms of quality overall evaluation (K.-J. Chen, 1997; C. Cook, 2003; Kettinger & Lee, 1997a; Nimsomboon & Nagata, 2003).

As Yap & Sweeney (2007) point out, the concept of *zone of tolerance* has been encouraging managers not to exceed the desired level of expectations as the expenditure beyond that point would lead to diminishing returns. However, other authors (Teas & DeCarlo, 2004; Yap & Sweeney, 2007; Zeithaml, Berry, & Parasuraman, 1996) have been suggesting that increasing expenditure on quality continues to enhance perceptions and behaviours at the same rate beyond, as within the zone of tolerance, and suggest that increases in service quality are appreciated both within and above the zone of tolerance.

Berry and Parasuraman (1991, pp. 60-62) suggest four factors that can influence customer's expectation level and induce changes in their tolerance zones:

- *Enduring service intensifiers*: factors that intensify the customer's sensitivity to service on an ongoing basis (for example, expectations of an affiliated party such as the customer's customer);
- Personal needs: individual requirements dictated by customer-specific physical, psychological, social, or resource characteristics;
- *Transitory service intensifiers*: factors that heighten the customer's sensitivity to service on a temporary basis (for example, personal emergencies, and problems with the initial service);
- *Perceived service alternatives*: customers' perceptions of the degree to which they have options in obtaining the service;
- *Self-perceived service role:* customers' perceptions of the degree to which they influence the level of the service that they receive;
- *Explicit service promises:* company statements about the service made to customers (for example, advertising, personal selling, and contracts);
- *Implicit service promises:* service-related cues other than explicit promises that lead to inferences about what the service should or will be like (for example, price and tangibles associated with the service);
- *Word-of-mouth communications*: statements made by parties other than the company about what the service will be like. These statements may come from both personal (for example, friends) and "expert" (for example, consumer reports) sources;
- *Past experience:* customers' previous exposure to service that is relevant to the present service.

3. Other Relevant Insights From The Literature on Service Marketing

3.1. Insights From Service Recovery Literature

Mistakes are a critical part of every service, and no matter how hard the service providers try, even the best will make mistakes (Hart, Heskett, & Sasser Jr., 1990). *Service recovery* relates to the ability of the service provider to deal with incidents when the service has failed (for example, a cancelled airline flight, a cancelled event, or a different than announced credit card debt). *Service recovery* has been studied not only by Grönroos (1990b) but also by several others authors (Andreassen, 1999; Bitner, *et al.*, 1989, 1990; Fornell & Wernerfelt, 1984, 1987, 1988; Gilly, 1987) who focus their attention on how the service provider responds to customer problems and complaints, and how they respond to services failures.

Berry and Parasuraman (1991, p. 34) defend that *service recovery* is as critical as the pursuit of error-free service in building a quality-based foundation for marketing services. In other words, errors in service delivery are inevitable, and that instead of pursuing a zero-defect service strategy, service providers must pursue excellency in service recovery. This means that although a "strong recovery effort is not an effective cure for chronic unreliability" (Berry & Parasuraman, 1991, p. 41), strong recovery efforts can improve customers' confidence in the company's service quality.

The first studies dedicated to service problems were conducted by Andreasen and Best

(1977) and by Berry, Parasuraman and Zeithaml (1988), and both studies examined customers' perceived satisfaction with problem resolution in different services, in a time were customers were often looked as being someone who is wrong, or unscrupulous. A big progress was made between these two studies in terms of satisfactory problem resolution, but as Hart, Heskett and Sasser (1990) later found, more than half of the efforts to respond to customer complaints actually *reinforced* negative reactions to a service.

As Berry and Parasuraman (1991, p. 38) state, "customers react to routine services - those performed as planned - in a state of "mindlessness characterized by minimal conscious attention and cognitive activity. In contrast, customers encountering a nonroutine service situation, snap out their mindlessness and scrutinize the service company's handling of the situation".

Recovery efforts have a critical influence on quality perceptions and on customer's willingness to recommend the company after service-recovery situations: a satisfactory problem resolution sharply increases customer's willingness to recommend the company and significantly improves their perceptions of the company's service quality (Berry & Parasuraman, 1991, p. 38) and the average return of investments is above 100% (Sellers, 1988, quoted in Berry & Parasuraman, 1991, p. 38).

The benefits of service recovery are not uniformly high as the company's reputation for being reliable influences the effectiveness of its recovery from failures (Figure 71). Berry and Parasuraman (1991, pp. 40-41) suggest different impacts of weak and strong recovery efforts under different reliability levels:

- Service providers that frequently fail to perform services right at the first time cannot hope to regain customers' confidence merely through strong recovery efforts. Under these circumstances, a strong service recovery, although being more effective than a weak one, will not provide a significant boost to customers' confidence;
- The marginal benefits of a strong, over a weak recovery effort, increase as the reputation for service reliability improves;
- A strong service recovery effort will have maximum impact when the company has a solid reputation for service reliability.

When a service problem is followed by a weak recovery effort, what Bitner, Booms, and Tetreault (1990) call a *double deviation* from customer's expectation, the customer's confidence in the company will drastically decline.

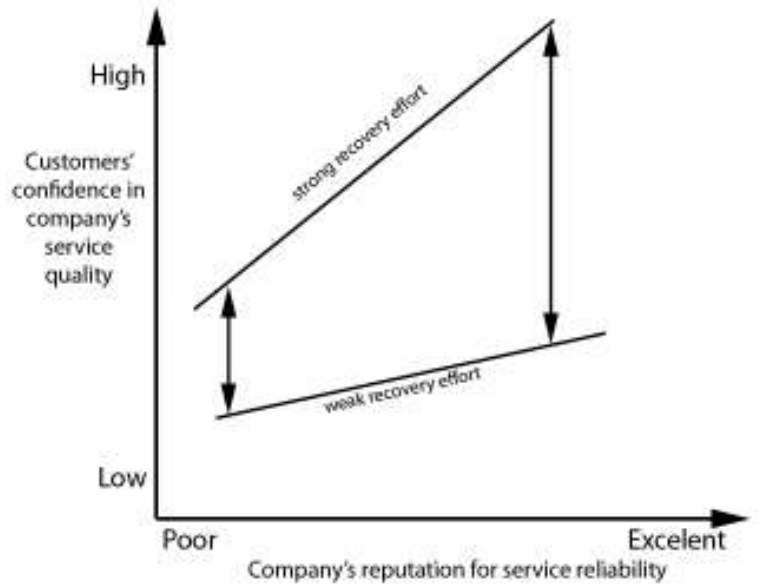

Figure 71: Differential impact of weak and strong recovery efforts under different reliability levels
Source: Adapted from Berry & Parasuraman, 1991, p. 41(1991, pp. 40-41)

Service failure encounters correctly handled can have a positive impact on customer loyalty: customers can become more loyal to the service provider than before the complaint (Fornell & Wernerfelt, 1984, 1987, 1988). Bitner *et al.* (1989, 1990) found that when the customers felt that the service provider managed to recover well from the service failure, customers remembered the failed service encounters favourably, and small initiatives as simply as acknowledging the problem or explaining why the service is unavailable can be enough for that. The importance of service recovery led Boshoff's (1999) to create RECOVSAT, which is an instrument of measurement of satisfaction with service recovery.

Service problems have relevant impacts on customer's zone of tolerance. They elevate the customers' expectations levels during the service recovery. Customers' awareness tends to increase as tolerance goes down. As a consequence, customers' tolerance zones typically shrink and their adequate and desired levels tend to rise for both process and outcome dimensions of the recovery service (Berry & Parasuraman, 1991, p. 65). During service recovery, customers' expectations are higher for both the outcome and process dimensions but the latter provide greater opportunity for exceeding expectations related to the process dimensions. Moreover, customers are more attentive to the delivery process during recovery service than during routine service (Berry & Parasuraman, 1991, p. 69) (Figure 72).

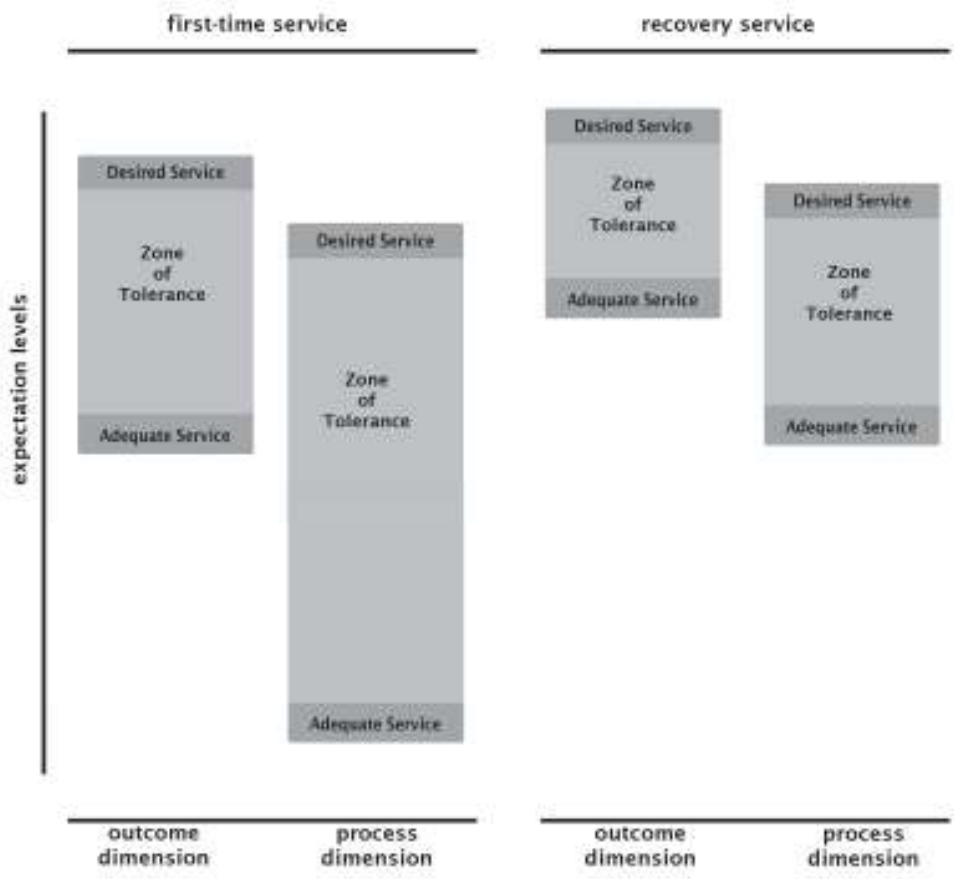

Figure 72: Tolerance zones for first-time and recovery service
Source: Berry & Parasuraman, 1991, p. 65 (Berry & Parasuraman, 1991, p. 65)

3.2. Moments of Truth and The Critical Incidents Approach to Measure Service Quality

Moments of truth and *critical incidents* are two approaches that can be used to study the quality of e-learning. Although they are quite different (*moments of truth* is the result of Carlzon's (1987) experience as a manager, while *critical incidents* is a research technique originally created by Flanagan (1954)), they suggest that quality can be made of small details, specific moments or incidents.

Jan Carlzon (1987) created the concept of *moments of truth* to illustrate the time and place when and where the service provider has the opportunity to demonstrate to the customer the quality of its services. The customer will experience a series of *moments of truth* while interacting with the service provider. *Moments of truth* are also moments of opportunity, windows of opportunities that are open and will be lost when customers will have gone. As president of Scandinavian Airlines, Carlzon was able to realize that businesses face *moments of truth* and are judged whenever they interact with their customers. How the phone is answered, what the invoices look like, and the friendliness of an employee, are all *moments of truth*.

Most of the methods to measure quality are based on attributes and on quantitative measurement of those attributes. The *critical incident method* (CIT) is an alternative

way of creating an understanding of how customers perceive the quality of a given service. It is based on qualitative approaches, it is a very flexible technique, and can even use quantitative methods to analyze data. The critical incident technique was originally developed by Flanagan (1954) an is essentially a set of operations for collecting direct observations of human behaviour in defined situations in such a way as to use the information to solve practical problems, as, for example, assessing educational gaps, obtaining information to improve services, or reducing competitors' competitive advantage. CIT is widely used for research in education, engineering, marketing, psychology, and medicine. An *incident* is any observable human activity that is sufficiently complete to allow inferences and predictions to be made about the person performing the act. In order for the incident to be considered *critical*, it must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effects (Flanagan, 1954). This means that an incident is "critical" when the action taken contributed to an effective outcome (for instance, it helped to solve a problem or resolve a situation). But an incident may also be considered "critical" when the action resulted in an ineffective outcome (for instance, it partially resolved a problem, but created new problems or a need for further action) (Fivars & Fitzpatrick, 2003).

CIT emerged from the assumption that it can facilitate the observation and categorization of human behaviours. It is frequently confused with phenomenology and some literature justifies this with the misinterpretation of Flanagan's definition of *critical incident* – an incident in which the purpose or intent of the act is clear to the observer and the consequences are definite (Byrne, 2001). CIT is very practical as in reports of critical incidents are described situations or actions that are significant - *critical* - in determining the effectiveness or ineffectiveness of the outcome. It is useful in emphasizing the features that will make a system particularly vulnerable and is appropriate for the identification of unusual events, which may not be picked up in other techniques. CIT is considered to be a good method (Bitner *et al.*,1989, 1990) namely in service industries (Gremler, 2004), a good provider of rich material indicating problematic areas and strengths, and a good way to find a basis for further research on actions necessary to improve service quality, as it can give direct indications about the actions needed to be taken (Grönroos, 2007). Yet, CIT also has some limitations and disadvantages: it relies on events being remembered by users and requires the accurate and truthful report of them. There is also a problem of reliability in terms of memory, as many critical incidents may be forgotten or distorted, and, finally, CIT can emphasize only rare events and miss commonplace events (Infopolis 2 Project, 2000).

CIT involves five steps (Flanagan, 1954):

- The first is determining the general aim of the study i.e., a brief statement of the topic under study;
- The second is to plan and specify how factual incidents regarding the general aim of the study will be collected;
- The third is to collect the data and this may occur via interview or may consist of an observer writing reports;
- The fourth is to analyze the data;
- The fifth, and final step, is to interpret and report the requirements of the activity being studied.

The methodological approach of the CIT starts by asking respondents - experienced customers of a given service - to think of situations where the service, or any part of the service process, including the outcome of that process, clearly deviated from the normal, either in a favourable or unfavourable way. Those situations are then considered *critical incidents*. In the next phase, respondents are asked to describe, in as much detail as possible, what happened and what made her consider the incident as critical. Finally, the researcher analyses the descriptions of those critical incidents and the reasons for them to happen, in order to find out what kind of quality problems exist, and why these problems occur, and what kind of favourable quality perceptions do customers have.

Appendix 4: Quality in Technology-Based Services

1. The Paradoxes of Technology

The more technology-oriented the firm is, the bigger is the risk to define quality too narrowly, and to consider the technical specifications of the service the only or the most important feature of perceived quality (Grönroos, 2007, p. 73). However, e-learning services are based in technological infrastructures, therefore, additional considerations have to be made, to include this technological side of e-learning, namely the fact that it depends on physical infrastructures and applications or software. As the service is delivered through technology – in the case of e-learning, the service is delivered online – means that several idiosyncratic situations, called the *paradoxes of technology* (Mick & Fournier, 1998, quoted in Zeithaml *et al.*, 2006, p. 21) will be present. These paradoxes hold both positive and negative sides, which means that technology can help or injure the customer's perception of the quality of the service (Table 146).

Paradox	Description
Control/ Chaos	Technology can facilitate regulation or order, and technology can lead to upheaval or disorder.
Freedom/ Enslavement	Technology can facilitate independence or fewer restrictions. Technology can lead to dependence or more restrictions.
New/ Obsolete	New technologies provide the user with the most recently developed benefits of scientific knowledge. New technologies are already or soon to be outmoded as they reach the marketplace.
Competence/ Incompetence	Technology can facilitate feelings of intelligence or efficacy. Technology can lead to feelings of ignorance or ineptitude.
Efficiency/ Inefficiency	Technology can facilitate less effort or time spent in certain activities. Technology can lead to more effort or time in certain activities.
Fulfils/ Create needs	Technology can facilitate the fulfilment of needs or desires. Technology can lead to the development or awareness of needs or desires previously unrealized.
Assimilation/ Isolation	Technology can facilitate human togetherness. Technology can lead to human separation.
Engaging/ Disengaging	Technology can facilitate involvement, flow, or activity. Technology can lead to disconnection, disruption, or passivity.

Table 146: Paradoxes of technological products
Source: Mick & Fournier, 1998, quoted in Zeithaml *et al.*, 2006, p. 21

2. Software Development Concerns

As e-learning services are delivered online, either using in-house developed or off-the-shelf technology, failures occur, affecting the customer's perception of quality. Because of that, the quality of software development has been given increasing attention (S. McConnell, 1993, 2002; Singh, 1999; Weinberg, 1991).

2.1. McConnell's Software Quality Concerns

For Steve McConnell (1993, 2002), software quality is not only affected by functional requirements but also by common non-functional characteristics, also known as *ities*.

Software has both *external* and *internal* quality characteristics. External characteristics are characteristics that a user of the software product is aware. These external characteristics are the only kind of software characteristics that users care about: users care about whether the software is easy to use, not about whether it is easy to modify. They care about whether the software works correctly, not about whether the code is readable or well structured (S. McConnell, 1993, pp. 557-559). The *ities* that affect the external quality (visible to the customer) of the customer include *usability, reliability, adaptability, and integrity, as well as correctness, accuracy, efficiency, and robustness* (S. McConnell, 2002) (Table 147).

Characteristics	Description
Correctness	The degree to which a system is free from faults in its specification, design and implementation.
Usability	The ease with which users can learn and use a system.
Efficiency	Minimal use of system resources, including memory and execution time.
Reliability	The ability of a system to perform its required functions under stated conditions whenever required – having a long mean time between failures.
Integrity	The degree to which a system prevents unauthorized or improper access to its programs and its data. The idea of integrity includes restricting unauthorized user accesses, as well as ensuring that data is accessed properly – that is, that tables with parallel data are modified in parallel, that date fields contain only data dates, and so on.
Adaptability	The extent to which a system can be used, without modification, in applications or environments, other than those for which it was specifically designed.
Accuracy	The degree to which a system, as built, is free from error, especially with respect to quantitative outputs. Accuracy differs from correctness; it is a determination of how well a system does the job it's built from, rather than whether it was built correctly.
Robustness	The degree to which a system continues to function in the presence of invalid inputs or stressful environmental conditions.

Table 147: External Characteristics of Software Quality
Source: S. McConnell, 1993, pp. 557-558

Software providers also must care about these external characteristics, but also about the internal ones. The *ities* that affect software's internal quality (quality visible to the software's developers) include *maintainability, flexibility, portability, reusability, readability, scalability, testability, and understandability* (Table 148).

Some internal quality characteristics, as well as the external ones, although valuable for themselves, overlap each other. The difference between internal and external characteristics is not completely clear-cut because, at some level, internal characteristics affect external ones (S. McConnell, 1993, p. 559). For example, software that is not internally maintainable impairs the ability to correct defects, which, in turn, affects the external characteristics of correctness and reliability. Some quality characteristics are emphasized to make the life easier for the user, while others are emphasized to make life easier for the programmer. Yet, the attempt to maximize certain characteristics invariably conflicts with the attempt to maximize others. But focusing on a specific characteristic does not always mean a trade-off with another characteristic. While sometimes the attempt to maximize one characteristic may conflict with the attempt to maximize another, other times they may help each other. For example, correctness and robustness may hurt each other and adaptability helps robustness.

Characteristics	Description
Maintainability	The ease with which you can modify a software system to change or add capabilities, improves performance, or correct defects.
Flexibility	The extent to which you can modify a system for uses or environments other than those for which it was specifically designed.
Portability	The ease with which you can modify a system to operate in an environment different from that for which it was specifically designed.
Reusability	The extent to which and the ease with which you can use parts of a system in other systems.
Readability	The ease with which you can read and understand the source code of a system, especially at the detailed-statement level.
Testability	The degree to which you can unit-test and system-test a system; the degree to which you can verify that the system meets its requirements.
Understandability	The ease with which you can comprehend a system at both the system-organizational and detailed-statement levels. Understandability has to do with the coherence of the system at a more general level that readability does.

Table 148: Internal characteristics of software quality
Source: S. McConnell, 1993, pp. 558-559

2.2. Quality-Based Approaches to Software Development

Software development, which was a pure technological area, and information systems, are currently very sensitive to customers' behaviour and perceptions of quality, and it has been receiving influences from psycho-sociological areas (Wade & Schneberger, 2007), such as the *theory of reasoned action* (Ajzen & Fishbein, 1973, 1980; Fishbein, 1967; Fishbein & Ajzen, 1975) and *theory of planned behaviour* (Ajzen, 1985, 1991).The *technology acceptance model* (Davis, 1986, 1989; Davis, Bagozzi, & Warshaw, 1989), which is the theory of reasoned action applied to information systems, and the *unified theory of acceptance and use of technology* (Venkatesh, Morris, Davis, & Davis, 2003) are some examples of that influence.

Extreme Programming (XP) (2007), is currently the most used approach to ensure quality in software development. It is based on customer satisfaction, and presents an alternative to the traditional *waterfall model* of software development: while traditional software development methods are sequential (the software development flows through the phases of requirements analysis, design, implementation, testing, integration, and maintenance), XP is designed to deliver software capable of responding to changing customer requirements, at any moment, even late in the life cycle, as it works with small releases cycles and systematic code tests (Figure 73), which turns it into a " lightweight, low-risk, flexible, predictable, scientific and fun way of develop software" (Beck, 2000, p. xvii). XP addresses common software problems, as schedule slips, project cancellation, high defect rates, business misunderstandings, and changes (Beck, 2000, p. 4) using a simple model based on principles as rapid feedback, simplicity assumption, incremental change, change embracement, and quality work (Beck, 2000, pp. 37-38). This is made possible through two principles:

- Quality control tests are created even before the code is written, which means that as bugs are found, new tests are added and a safety net of tight mesh is created that prevents bugs to happen twice;
- There is an open attitude towards changing requirements: XP gets customer feedback early, while there is still time to change functionality or improve user acceptance.

Other programming approaches, such as SCUM, propose a similar philosophy, although less radical and more pragmatic, while using the same principles of interactive programming.

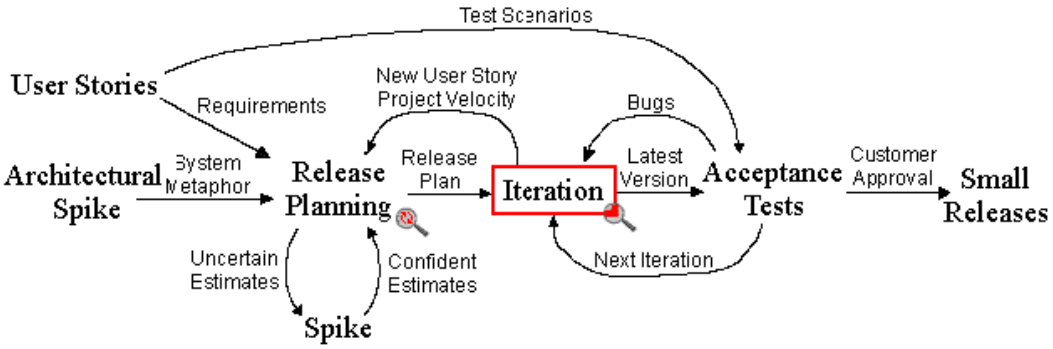

Figure 73: Extreme programming map
Source: Wells, 2007

3. Quality in Information Systems

Some literature on information systems (IS) (for example, Berkley & Gupta, 1994, 1995; Dabholkar, 1996; Zhu, Wymer, & Chen, 2002) has been focusing its attention on the impact that information technologies can have in service quality. Total quality management approaches in information systems have been developed to overcome the limitations of the traditional systems development process in ensuring high quality systems. Moreover, quality concerns have been expressed not only in the ISO standards dedicated to the IS industry, but in the literature dedicated to this area (for instance, Fitzpatrick, 1996; Fitzpatrick & Higgins, 2000; Fox & Frakes, 1997; Pearson, Crosby, & Orwig, 1996-97; Pressman & Ince, 2000, pp. 494-499; Ravichandran & Rai, 1999; Strong, Lee, & Wang, 1997; Stylianou & Kumar, 2000; Stylianou, Kumar, & Khouja, 2007).

McCall's (1994) model of IS quality includes several dimensions of quality, as *correctness, reliability, efficiency, integrity, usability, maintainability, testability, flexibility, portability, reusability* and *interoperability.* Other authors have been proposing new instruments of measurement of the quality of the information systems (Pitt, Watson, & Kavan, 1995; Ravichandran & Rai, 1999), while others as Kettinger and Lee (1997a, 1997b) discuss the applications of SERVQUAL in information systems.

Stylianou and Kumar (2000), for instance, identified six top-level dimensions of IS quality:

- *Infrastructure quality*: the quality of the infrastructure (hardware and enabling software) that is fielded and maintained by IS, which includes, for example, the quality of the networks, and systems software;
- *Software quality*: the quality of the applications software built, or maintained, or supported by IS;
- *Data quality*: the quality of the data entering the various information systems;
- *Information quality:* the quality of the output resulting from the information systems. In many cases, the output of one system becomes the input of another.

In that respect, information quality is related to data quality;
- *Administrative quality:* The quality of the management of the IS function, which includes the quality of budgeting, planning, and scheduling;
- *Service quality:* The quality of the service component of the IS function, which includes the quality of customer support processes such as those related to a help desk.

More recently, Stylianou *et al.* (2007) have been using TQM's tool Quality Function Deployment (QFD) to improve software quality and ensure high quality systems development.

4. Web-Based Service Quality Approaches

Web-based services have been facing both increasing sales and increasing competitive pressure. Buying patrons are now including online shopping as an alternative to conventional retailing channels like street shops, mail and phone orders, catalogues, and direct sales force, and are expending more money on web-based services, and gaining more experience in online services.

Several factors have been pointed out as contributors to increasing online spending. The main factor is related to a "wired lifestyle": a positive technology attitude, technological skills and experience, a lot of time spent online, a higher degree of Internet usage for search to product information, strong readiness, technology optimism and perceived online skill, and an accumulated online experience, but also a career-oriented lifestyle, a convenience orientation, time starvation, and even previous use of catalogue shopping (Wolfinbarger & Gilly, 2002, p. 4). Since the web is the delivery channel of e-learning services, it is important to study the quality of the e-learning website, as it may be as important to the overall perceived quality as the educational component, as well as to the service competitiveness, survival and success.

The instruments of perceived quality of web-based services are either targeting informative or pure promotional sites, or Internet shopping sites, i.e., web retail sites in which customers can browse, evaluate, order, and purchase a product or service (Yoo & Donthu, 2001), and most of the times, the latter are focused on transactions issues such as ordering, pricing, financial security, and payment methods. Most of the literature dedicated to online shops is inspired in the literature about the quality of traditional retail stores (for example, Dodds, Monroe, & Grewal, 1991; Rao & Monroe, 1989; Render & O'Connor, 1976), which, in turn, relates the perceptions of quality of the store as a vital extrinsic cue about the quality of the products of the store. Yet, although traditional dimensions of service quality, such as *competence, courtesy, cleanliness, comfort, and friendliness*, are not relevant to online retailing, other factors, such as *accessibility, communication, credibility, and appearance*, are critical to its success (Cox & Dale, 2001).

4.1. Traditional Approaches to Website Performance *versus* Website Quality

The traditional measures of site quality were based on site efficiency, rather than on quality. Dimensions as *server logs, time per page, time per visit, web traffic, banner impressions*, or *number of unique visits* fail to capture the consumers' cognitive and attitudinal evaluations of the site (Yoo & Donthu, 2001), but were frequently presented as relevant indicators.

Wolfinbarger & Gilly (2002) refer Bizrate.com measurement based on nine dimensions: *ease of ordering, product selection, product information, price, on-time delivery, product representation, customer support, privacy policies, and shipping and handling* and Gomez.com's rating scale, which includes five major dimensions: *ease of use, customer confidence, onsite resources, relationship services, and costs*. Chen and Wells (1999) propose a *attitude toward the site* model that measures *website relationship building*, *intentions to revisit*, *satisfaction with service*, *comfort in surfing*, and the *judgment that surfing* the website is a good way to spend time. Even so, Wolfinbarger & Gilly (2002) also refer that these studies do not provide a valid measure of quality as the researchers did not attempt to define the domain of items or attributes of importance to consumers, as Churchill (1979) suggests.

Perceptions of the performance of Internet shopping sites are positively influenced by the Internet usage experience, but negatively influenced by the user's experiences in online shopping. Yoo and Donthu (2001) defend that as the users become more experienced online buyers, they tend to more critically judge online shopping sites, and use Parasuraman *et al.*'s (1988) gap model to explain it: because customers with more experiences expect more improved performance over time, which is particularly true in the technology market, they tend to perceive the same level of performance as inferior. Moreover, the more money the users spend in online shopping, the less favourable are their perceptions of performance of the Internet shopping site (Yoo & Donthu, 2001). Table 149 synthesizes the quality dimensions of websites according to the most used models.

Model	Dimensions of quality
WebQual (Loiacono *et al.*, 2000)	*Ease of understanding, intuitive operations, informational fit-to-task, tailored communications, trust, response time, visual appeal, innovativeness, emotional appeal, on-line completeness, relative advantage, and consistent image.*
eQual (Barnes & Vidgen, 2000, 2001, 2002)	*Usability, site design, information, trust, and empathy.*
SITEQUAL (Yoo & Donthu, 2001)	*Ease of use, aesthetic design, processing speed, and security.*
.comQ (Wolfinbarger & Gilly, 2002)	*Website design, customer service, reliability, and security/privacy.*
eTailQ (Wolfinbarger & Gilly, 2003)	*Fulfilment/reliability, website design, customer service, and security/privacy.*
E-S-Qual (Zeithaml, Parasuraman, & Malhotra, 2000, 2005)	*Reliability, responsiveness, access, flexibility, ease of navigation, efficiency, assurance/trust, security/privacy, price knowledge, site aesthetics, and customization/personalization*

Table 149: Literature review on quality of websites

4.2. WebQual

Loiacono *et al.* (2000) suggest that the WebQual scale should be used to serve as a guide for companies to develop more high quality web sites that meet customer needs and to test competitor's web sites. The proposed scale of quality includes twelve dimensions (Table 150).

Dimension	Description
Ease of understanding	Design the pages that are easy to read and understand.
Intuitive operations	Develop an intuitive navigation system that is easy to learn and master.
Informational fit-to-task	Undertake market research to determine what information consumers want on the web site.
Tailored Communications	Support consumer interaction via the web site and the capability to receive tailored information.
Trust	Adopt and promote security and privacy policies and procedures that make customers feel secure in dealing with the company.
Response time	Have sufficient hardware and communications capacity to meet peak demand and avoid large graphics.
Visual appeal	Use colours, graphics, and text that are pleasing to the consumer's eye and avoid cluttered pages.
Innovativeness	Use a creative and differentiating approach to the web site.
Emotional appeal	Design the web site to provoke a positive customer experience.
On-line completeness	Allow customers to conduct important business functions over the web.
Relative Advantage	Make the web site just as easy, if not easier, for customers to use than other forms of interacting with the company.
Consistent image	Design the web site to reflect the company's image.

Table 150: WebQual's dimensions of quality
Source: Loiacono, Watson, & Goodhue, 2000

4.3. SITEQUAL

SITEQUAL (Yoo & Donthu, 2001) is a 9-item, four dimensions instrument created to measure perceived quality of Internet shopping sites and to be used on any type of web retail site. Yoo and Donthu (2001) made an initial qualitative approach with two open-ended questions in order to generate quality items that helped to construct a 54-items questionnaire, which, in turn, was, later subject of factor analysis. No single factor was considered dominant and nine factors were revealed: *competitive value*, *clarity of ordering*, *corporate and brand equity*, *product uniqueness*, *product quality assurance*, *aesthetic design*, *ease of use*, *processing speed*, and *security* (Table 151). The first five factors were considered to be vendor-related, and, therefore, rejected in SITEQUAL model, which includes only the latter four.

	Dimension	Description
Vendor-related factors	*Competitive value*	The competitive pricing in comparison to conventional retail stores or competing Internet shopping sites.
	Clarity of ordering	The clarity of the ordering process supported by unambiguous pricing and fast delivery.
	Corporate and brand equity	The name value of the site owner and the products or services on the site.
	Product uniqueness	The uniqueness of the products or services on the site, such that visitors have difficulty finding the products elsewhere.
	Product quality assurance	The consumer's self-assurance of product quality obtained during the interaction with the site and not necessarily associated with direct product purchase or consumption experience.
Quality-related factors (SITEQUAL)	*Ease of use*	The ease of use and ability to search for information.
	Aesthetic design	The creativity of a site with excellent multimedia and graphics.
	Processing speed	The promptness of online processing and interactive responsiveness to a consumer's requests.
	Security	The security of personal and financial information.

Table 151: Yoo and Donthu's factors of perceived quality
Source: Yoo & Donthu, 2001

4.4. .comQ

.comQ (Wolfinbarger & Gilly, 2002) is also an instrument to measure e-commerce quality, but it has some limitations, due to the fact that the study in which it is based was restricted to respondents who purchased products, rather than services. Wolfinbarger and Gilly (2002, p. 16) suggest that the most basic building blocks of a 'compelling online experience' are "*reliability* and providing outstanding *website functionality* in terms of time-savings, easy transactions, good selection, in-depth information, and the 'right-level' of personalization". These authors started with a literature review to select a diversified list of expected dimensions of e-commerce quality to initialise their investigation. A group of seven dimensions was used as the starting point: *usability*, *information content*, *reliability*, *customer service*, *selection*, *privacy/security*, *and experiential qualities*. The authors used factor analysis and their final scale includes four factors: *website design, customer service, reliability*, *and security/privacy*.

4.5. eTailQ

Wolfinbarger and Gilly later (2003) proposed a new a scale with fourteen items divided into a four dimension model to evaluate the quality of Internet retailing experiences (Table 152). eTailQ has, however, validity problems: although *security/privacy* and *reliability/fulfilment* showed strong face validity and are highly descriptive of the items they represent, *website design* and *customer service* dimensions lack internal consistency. Although this is a relevant problem, Wolfinbarger and Gilly study is important as they were able to prove that these four factors are strong predictors of customer judgments of satisfaction, customer loyalty, and attitudes toward the website.

Dimension	Description
Fulfilment/reliability	Is a) the accurate display and description of a product so that what customers receive is what they thought they ordered, and b) delivery of the right product within the time frame promised.
Website design	Includes all elements of the consumer's experience at the website (except for customer service), including navigation, information search, order processing, appropriate personalization and product selection.
Customer service	Responsive, helpful, willing service that responds to customer inquiries quickly.
Security/privacy	Is the security of credit card payments and privacy of shared information.

Table 152: eTailQ's dimensions of quality
Source: Wolfinbarger & Gilly, 2003

4.6. WebQual/eQual

Barnes and Vidgen (2000) developed a scale to measure the quality of websites, which initially was called WebQual and later renamed to eQual. Their initial list of qualities was built upon a quality workshop where there was a single issue for discuss: "what are the qualities of an excellent website?" The answers were then combined into affinity groups and after that, a pilot questionnaire with thirty five questions (later revised) was developed, and applied to four websites of UK business schools. Respondents were also asked to rate the importance of each quality, which allowed the authors to calculate the weighted scores (which are the average for weighted score by the ordinal importance for each respondent, and, in the end, calculated the average). The statistical reliability analysis that was conducted led to an iterative removal and replacement of questions in different groupings solutions. The dimensions of quality determined in WebQual were:

- *Ease of use*: being able to get around a site and find things. Important aspects include simple, intuitive, and consistent navigation;
- *Experience*: the visual and personal experience of visiting the site. Issues include design, use of colours, and style, as well as building interest, and a sense of community;
- *Information*: access to good quality information content. Such information is appropriate for consumption by the user. Typically, the information should be easy to read and understand, relevant, current, reliable, and provided via an appropriate level of detail and format;
- *Communication and integration*: the way the site is integrated with the external environment and communication with the user. This includes being able to find and return to a site, integration or links with other sites, the speed and security of communication, and provision for feedback and other contact.

This project not only provided an overall quality rating for each website, but it also suggested several specific priorities in the qualities demanded for business schools websites. Yet, it has two major pitfalls: one is that it used Levene's test (that assumes the normality of the population) to compare the equality of variances of the weighted scores. The second is the dimension of the sample, which was smaller than fifty respondents. Later, these authors applied the eQual instrument (Barnes & Vidgen, 2002), among others, to bookshops online (2001) and e-government websites (2005), and refined the list of dimensions of perceived quality, which now includes five categories of perceived e-quality: u*sability, site design, information, trust,* and *empathy.*

4.7. E-S-QUAL

The antecedents of E-S-Qual (Zeithaml *et al*., 2005) are specific concrete cues, such as one-click ordering, trust symbols, and search engines – that trigger perceptual attributes, which influence the process of service quality evaluation, where higher-order abstractions are consequences of the process. The evaluation of quality of e-services in this model is made along the perceptual attributes and coalesces into evaluations along more abstract dimensions. The evaluations at the attribute and dimension levels lead to more global assessments at higher levels of abstraction (e.g. overall assessment of e-service quality, which the authors abbreviate as e-SQ, and perceived value), which in turn influence behavioural intentions and actual behaviour (Figure 74).

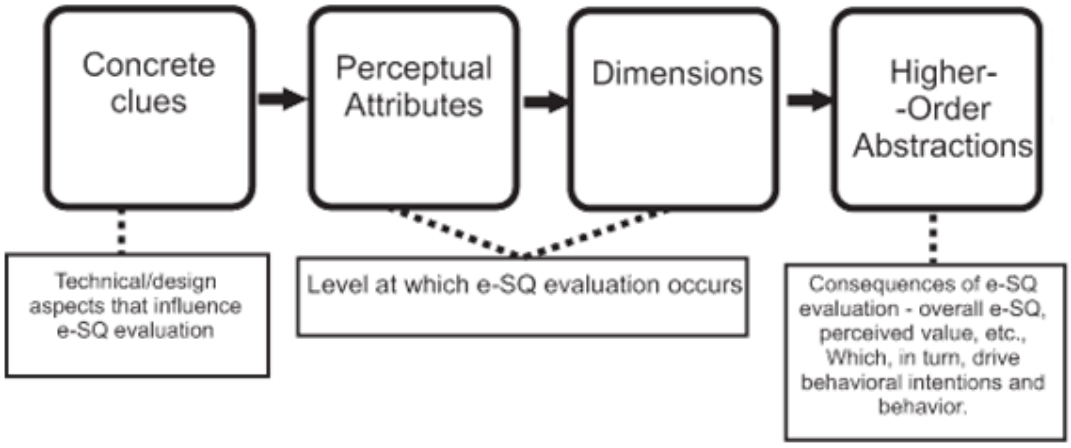

Figure 74: A means-end framework for understanding the domain and consequences of e-SQ
Source: Zeithaml, Parasuraman, and Malhotra, 2005

Several reasons were pointed out by Zeithaml *et al.* (2005) for choosing the level of *perceptual attributes* as the correct domain at which e-service quality evaluations should occur:

- First, because *perceptual attributes* are more enduring evaluative aspects than are concrete cues. Although *concrete cues* will change as technology changes, the more abstract *perceptual attributes* triggered by those cues do not change so easily. For example, for the *perceptual attribute* "easy to manoeuvre through the site", the corresponding *concrete cues* may include tab structuring, site map, search engine, layering of information, and number of clicks to get to the correct location;
- Second, because *concrete cues* are generally of a technical nature, and not all customers might be aware of them, or be able to assess how good they are. *Perceptual attributes* are more readily assessable by all customers. Moreover, *perceptual attributes* are more scalable as they can be rated along a continuum, whereas many *concrete cues* are either present or absent;
- Third, *perceptual attribute* ratings are more specific and can offer finer-grained insights about e-SQ shortfalls. At the same time, when dimension-level e-SQ assessments are needed, they can be easily obtained by aggregating the appropriate perceptual-attribute ratings;
- Fourth, the linkages implied in the theoretical framework between the e-SQ

evaluative process (i.e., perceptual/dimension-level assessments) and its consequences (i.e., higher-order abstractions) constitute a natural *nomological net* (Cronbach & Meehl, 1955) for verifying the construct validity of an e-SQ scale, consisting of perceptual-attribute level items.

The study of Zeithaml, Parasuraman and Mahotra (2000) identifies several web site features at the *perceptual attribute* level and categorizes them into eleven dimensions of e-service quality (Table 153).

Dimension	Description
Reliability	Correct technical functioning of the site and the accuracy of service promises (having items in stock, delivering what is ordered, delivering when promised), billing, and product information.
Responsiveness	Quick response and the ability to get help if there is a problem or question.
Access	Ability to get on the site quickly, and to reach the company when needed.
Flexibility	Choices of ways to pay, ship, buy, search for, and return items.
Ease of navigation	The web site contains functions that help customers find what they need without difficulty, has good search functionality, and allows the customer to manoeuvre easily and quickly back and forth through the pages.
Efficiency	The web site is simple to use, structured properly, and requires a minimum of information to be input by the customer.
Assurance/trust	Confidence the customer feels in dealing with the site and is due to the reputation of the site and the products or services it sells, as well as clear and truthful information presented.
Security/privacy	Degree to which the customer believes the site is safe from intrusion, and personal information is protected.
Price knowledge	Extent to which the customer can determine shipping price, total price, and comparative prices during the shopping process.
Site aesthetics	Appearance of the site.
Customization/ personalization	How much and how easily the site can be tailored to individual customers' preferences, histories, and ways of shopping.

Table 153: Conceptual framework of e-service quality
Source: Zeithaml, Parasuraman, and Malhotra, 2000

These dimensions were later used (2005) by the same authors to conduct a study from which a final E-S-QUAL scale was obtained. E-S-QUAL scale consists of 22 items on four dimensions labelled as:

- *Efficiency*: the ease and speed of accessing and using the site;
- *Fulfilment*: the extent to which the site's promises about order delivery and item availability are fulfilled;
- *System availability*: the correct technical functioning of the site;
- *Privacy*: the degree to which the site is sage and protects customers' information.

The positive impact that E-S-QUAL dimensions have on higher-order evaluations was also proved to exist in this study and Zeithaml *et al.* (2005) also found that the factors representing *efficiency* and *fulfilment* have the strongest effects on *overall quality*, *perceived value,* and *loyalty-intentions*, followed by the factors representing *system availability* and then *privacy*.

Using the same methodology, Zeithaml *et al.* (2005) developed an e-recovery service quality scale (E-RecSQUAL), which consists of eleven items on three dimensions:

- *Responsiveness*: effective handling of problems and returns through the site;
- *Compensation*: the degree to which the site compensates customers for problems;
- *Contact*: the availability of assistance through telephone or online representatives.

Appendix 5: Accreditation and Standards

1. Accreditation

Accreditation is a process that provides public recognition to institutions or study programs that meet certain standards. It ensures that the institution has qualified staff, adequate facilities, and equipment, operates on a sound financial basis, and offers an approved study program. Accreditation is given to institutions, rather than to educational products or approaches. A successful accreditation may as well be interpreted as a promise to provide the quality of education being claimed by the institution (Flasdick & Michel, 2006, p. 52). Accreditation is considered to be the basis of quality assurance in higher education (ENQA, 2005) and it provides confidence to potential and current students, as well as to potential employers (Flasdick & Michel, 2006, p. 52). Although internal quality evaluations are gaining more importance (Lagrosen *et al*., 2004), external quality evaluations and accreditations, made by an external and independent evaluation body, get a broader acceptance (for instance, Dickeson, n.d.; Van Damme, 2000).

2. Quality Marks

Quality marks are instruments that intend to assure quality by a certification given by a well-accepted certification body. In general, *quality marks* cover a variety of approaches: some quality marks certify the quality of organizations and some are limited to the certification of products, such as courses (Lodzinski & Pawlowski, 2006, p. 110).

There are several quality marks, each one with a different focus (quoted in Lodzinski & Pawlowski, 2006, pp. 111-112):

- The EFMD certification for e-learning (2004), which is a quality mark focused in higher education;
- The *Gütesiegel* (seal of quality) e-learning (Bruder, Offenbartl, Osswald, & Sauer, 2004), which is focused on products, such as courses and models, and provides a list of criteria for assessing quality;
- *Qualitätssiegel e-learning* (QSEL), which intends to provide a holistic quality mark and was based on a survey of the European Quality Observatory (Ehlers *et al*., 2005) to determine which quality approaches were the most used in Europe;
- The quality mark of ArtSet LQW (Zech, 2003, 2007), which provides a framework based on self-assessment and external audits of e-learning institutions;
- The criteria of WebKolleg NRW (2006), which are applicable to e-learning and b-learning courses' materials.

3. Standards

Standardization is the process of establishing a technical standard with the inclusion of related national and international bodies, who are willing and assigned to attend this process (Heddergott, 2006, p. 187). Pawlowski (2006, p. 67) defines standards as a

"quality standard that supports quality development in organizations according to their specific needs and requirements". Standards are used by institutions and governments to ensure that learning is predicable, fair, consistent, and economic, and achieves at least a minimum level of quality acceptable to society (Holmes, 2006, p. 24). Holmes (2006, p. 24) suggests a separation between *education standards* and *technical standards*: education standards are being discussed for decades and every effort made towards standardization have been hard to get; technical standards have a different situation, as there is more consensus regarding the need of having them, and it has been easier to make them global standards, rather than making them only European.

3.1. Purposes and Limitations

Standards intend to provide the e-learning market with interoperable products that can be used in different companies with different technological solution i.e., they intend to allow the transfer of learning content from one learning environment to another, and to provide customers with instruments for a better transparency in the evaluation of e--learning products.

Heddergott (2006, p. 188) identifies several purposes of standards, as the unification of relevant terms, the application of defined procedures, the management of quality assurance in the production, and the use of e-learning. Heddergott (2006, pp. 190-191) identifies advantages for both vendors of e-learning (namely economies of scale, internationalization potential, and the use of e-learning standards as a marketing flag), and customers (the reusability of e-learning content, increase of efficiency, cost reduction, and a greater flexibility when it comes to choose products or suppliers without having the necessity to change previously used e-learning components). Yet, standards usually are not recognized at first sight from learners and customers, and most of the times customers do not perceive their value. Generally, "most standards are for developers only" (Heddergott, 2006, p. 186). Heddergott (2006) recognizes that standards do not have the capability to evaluate the quality of e-learning content itself (p.188), and that they are instruments to specify e-learning products, rather than evaluating learning quality (p.191). Heddergott (2006, p.197) recognizes that there are two perspectives on the meaning and use of e-learning standards: the view of the producers, and the view of the users and customers of e-learning products and concepts.

3.2. Standards *versus* Criteria

Flasdick and Michel (2006, p. 58) believe that *criteria* and *standards* should be the core of any kind of quality assessment. Because the distinction between the term *criteria* and *standard* is blurred, ENQA (2003, p. 34; 2008, p. 8) provided a distinction between two:

- *Standards* are the expected outcomes of the educational training and are used more in connection with accreditation. Standards are used as thresholds values, often formulated by government or other educational authorities;
- *Criteria* are checkpoints and benchmarks for assessing the quality of the input and the process, and are used more often linked to evaluation. They are not fixed, but serve as suggestions or recommended points of reference for good quality, against which the subject, the programme, and the institution are evaluated.

Flasdick and Michel (2006, p. 59) synthesize several opinions when they propose the following definitions:

- *Standards* are normative, qualitative, and/or quantitative specification with regard to the fulfilment of fixed quality demands. They describe specific aspects of a program or an institution. For example, "the programme is relevant for the professional needs";
- *Criteria* are characteristic distinct feature, and are used to define and operationalize the standards. For example, for the above-mentioned example, "a learning need analysis has been performed".

Even so, not always are standards seen as too rigid, and sometimes they only provide a common framework to make quality approaches transparent and comparable and *harmonized* (Pawlowski, 2006, p. 66). ENQA (2003, p. 34) distinguishes *explicitly formulated criteria*, which are written down and made available, and *implicit criteria* of good practice, which are often formulated through the guidelines for self-evaluation by the agency, or by the expert panel while writing of the report, but are not explicitly set out in writing. Flasdick and Michel (2006, p. 61) also make a distinction between *rejection* (or essential) criteria and standards, which are fundamental for the success and immediately lead to the rejection of any accreditation proposal if they are not meet, and *complementary* criteria and standards, which go beyond the minimum ones.

3.3. Standards: Types, Levels, and States

Pawlowski (2006, p. 66) differentiates *standards*, *quasi-standards,* and *related standards* and classifies them into three types:

- *Generic quality standards*, which provide concepts for quality management of quality assurance, independent of the domain of usage, such as ISO 9000 family that is used in different sectors. EFQM (2003c), for instance, is a generic quasi-standard also widely used, although not agreed on by a formal standardization agency;
- *Specific quality standards*, which provide quality management or quality assurance concepts for the field of learning, education, and training, and are focused on specific requirements concerning educational processes or products;
- *Related standards*, which are used to manage or assure specific aspects of quality. Learning technology standards, which assure interoperability, are an example of these.

Linder (2006, p. 196) differentiates *interoperability standards* (that he defines as a revisable way of implementing or combining systems or products, in order to assure technical or semantic interoperability), *conceptual standards* (that specify a revisable way of conceiving services or practices in order to assure conceptual comparability among the services or practices) and *level standards* (that specify a revisable level of 'quality' for systems, products, services, or practices). There are also different levels of standards: *pre-standards*, which represent an agreement of a selected community; *national standards*, as PAS (Publicly Available Specification); *European standards* and *international standards* as ISO (Heddergott, 2006, p. 187).

Linder (2006, p. 196) distinguishes *formal standards* (that are created by standards bodies as ANSI, DIN, ISO), *community standards* (that are adopted by certain

representative communities that conduct bodies which do standardizing work that result in "standards", "specifications", "recommendations", and "guidelines") and *de-facto* standards (also called "industrial standards" that start with proprietary regulations that are accepted by large user communities and, later, by further supporting industries and communities). Regarding the state of standards, Linder (2006, p. 196) distinguishes *final standards*, which are stable and undergo well-defined processes, from *proposed standards*, which may be in different stages of development and consensus achievement. Heddergott (2006, pp. 188-189) defends that there are several types of standards:

- *Management standards*, which handle the process of transferring e-learning content into other environments, like learning management platforms or toolsets for the production of e-learning. These standards are focused on interoperability;
- *Standards for contents*, which are focused on content metadata;
- *Didactical standards*, which are focused on the didactical concept and structure of the learning solution;
- *Learner model standards,* which are focused on the indication of learner-related previous knowledge, as well as the definition, mapping, and tracking of individual competencies. These standards are focused on the learning progress and on the learning path;
- *Interface standards*, which ensure that e-learning applications fit in existing standards concerning the design and the use of business information systems and their corresponding standards like XML and EDI.

Linder (2006, p. 193) suggests another type of standards, called 'architectures and frameworks', which are focused on the context of the conception and on the design of systems. Table 154 summarizes several types of standards at each level. These six types of standards and the ISO standards that are applicable to e-learning are detailed next.

Level	Relevant standards or proposed standards
Architectures and frameworks	- IEEE LTSA - IMS Abstract Framework - JISC service oriented e-learning Framework - ERILE
Management standards	- LOM - SCORM - AICC
Standards for contents	- W3C Web Content Accessibility Guidelines (W3C, 1999) - CEN accessibility properties for learning resources (CEN/ISSS, 2004a) - Dublin core metadata initiative accessibility working group (DCMI2001) - IMS AccessForAll metadata and IMS for LIP Information model specification (IMS, 2003b`, 2003b)
Didactical standards	- IMS LD - DIN-DOM

Learner model standards	- The Bologna process and the Copenhagen process - European Qualification Framework (EQF) - European Credit Transfer System (ECTS) - Europass (European Parlament, 2004) - IMS LIP (IMS, 2003d) - IEEE PAPI (Farance, 2000; IEEE, 2002) - CEN CWA 15455 (CEN/ISSS, 2005) - IMS Digital repositories interoperability (DRI) portfolios (IMS, 2005b) - IMS Reusable Definition of Competency or Educational Objective (RDCEO) (IMS, 2005c)
Interface standards	- XML - EDI

Table 154: Types of standards

3.4. ISO Standards

The ISO standards that are closer to e-learning are dealt by the Joint Technical Commission 1, and its subcommittee 36, which is dedicated to information technology for learning, education, and training. Table 155 resumes the standards or projects of standards that are already published or being on process of approval (ISO, 2009a, 2009b). Among all the ISO standards that influence e-learning, we emphasize ISO/IEC 19796-1:2005, which is a framework to describe, compare, analyze, and implement quality management and quality assurance approaches, and is used to compare different existing approaches and to harmonize these towards a common quality model.

ISO/IEC 19796-1:2005 consists of three parts:

- A *description scheme* for quality management, which is a scheme to describe the quality approaches. Its main value relies on the fact that it provides a harmonized scheme to describe quality approaches;
- A *process model* defining the basic processes to be considered when managing quality in the field of ICT-supported learning, education, and training, and which includes the relevant processes within the life-cycle of learning. The process model has seven parts (needs analysis, framework analysis, conception/design, development/production, implementation, learning process, and evaluation/optimization);
- Conformance statements for the description format i.e., reference criteria for evaluation. The catalogue of reference criteria provides 480 criteria related to functional, media, data security, and learning psychology criteria. Of these, only the criteria that are suitable for each context are suggested to be used.

Pawlowski (2006) suggests a procedure of implementation of quality standards in e-learning based on ISO/IEC 19796-1:2005, to which he called the *Quality Adaptation Model* (QAM). The Quality Adaptation Model follows a four-step process:

- *Context setting*, which covers all preparatory activities for the adaptation process, namely the *vision development*, the *policy and strategy development*, and the *awareness raising*;
- *Model adaptation*, which contains activities to implement the reference model based on the needs and requirements of an organization, namely the *objectives*

setting, the *actors identification*, the *choice of methods and instruments,* and the *choice of measures and indicators*;
- *Model implementation and adoption*, which includes the realization and the broad use of the quality system;
- *Quality development*, which means that the quality systems should be continuously improved and further developed, and includes the *model evaluation*, the *model improvement*, and *a broad quality discourse*.

Another relevant ISO standard is the 14915-1:2002, which establishes design principles for multimedia user interfaces and for the organization of content, and belongs to the ergonomics of human-system interaction Technical Commission. ISO 14915-1:2002 establishes design principles for multimedia user interfaces, and provides a framework for handling the different considerations involved in their design. It addresses user interfaces for applications that incorporate, integrate, and synchronize different media. This includes static media such as text, graphics, or images, and dynamic media such as audio, animation, video, or media related to other sensory modalities. Table 155 summarizes all the information technology standards that are applicable to e-learning.

Standard and/or project	Description	Stage and stage code
ISO/IEC 2382-36:2008	Information technology -- Vocabulary -- Part 36: Learning, education and training	International Standard published (60.60)
ISO/IEC NP 2382-36	Information technology -- Vocabulary -- Part 36: Learning, education, and training	New Project Approved (10.99)
ISO/IEC FCD 12785-1	Information technology -- Learning, education, and training -- Content packaging -- Part 1: Information model	Full report circulated: DIS approved for registration as FDIS (40.99)
ISO/IEC NP 12785-2	Information Technology for Learning, Education, and Training -- Content Packaging -- Part 2: Content Packaging XML Binding	New Project Approved (10.99)
ISO/IEC NP 12785-3	Information Technology for Learning, Education, and Training -- Content Packaging -- Part 3: Content Packaging Best Practice and Implementation Guide	New Project Approved (10.99)
ISO/IEC 19778-1:2008	Information technology -- Learning, education and training -- Collaborative technology -- Collaborative workplace -- Part 1: Collaborative workplace data model	International Standard published (60.60)
ISO/IEC 19778-2:2008	Information technology -- Learning, education and training -- Collaborative technology -- Collaborative workplace -- Part 2: Collaborative environment data model	International Standard published (60.60)
ISO/IEC 19778-3:2008	Information technology -- Learning, education and training -- Collaborative technology -- Collaborative workplace -- Part 3: Collaborative group data model	International Standard published (60.60)
ISO/IEC 19780-1:2008	Information technology -- Learning, education and training -- Collaborative technology -- Collaborative learning communication -- Part 1: Text-based communication	International Standard published (60.60)
ISO/IEC CD 19788-1	Information technology -- Learning, education and training -- Metadata for learning resources -- Part 1: Framework and MLR	Close of voting/comment period (30.60)
ISO/IEC CD 19788-2	Information technology -- Learning, education and training -- Metadata for learning resources -- Part 2: Core elements	CD study/ballot initiated (30.2)
ISO/IEC NP 19788-3	Information technology -- Learning, education and training -- Metadata for learning resources -- Part 3: MLR Core Application Profile	New Project Approved (10.99)
ISO/IEC NP 19788-4	Information technology -- Learning, education and training -- Metadata for learning resources -- Part 4: Technical Elements	New Project Approved (10.99)

ISO/IEC NP 19788-5	Information technology -- Learning, education and training -- Metadata for learning resources -- Part 5: Educational Elements	New Project Approved (10.99)
ISO/IEC NP 19788-6	Information technology -- Learning, education and training -- Metadata for learning resources -- Part 6: Availability and Rights Management	New Project Approved (10.99)
ISO/IEC 19796-1:2005	Information technology -- Learning, education and training -- Quality management, assurance and metrics -- Part 1: General approach	International Standard published (60.60)
ISO/IEC CD 19796-2	Information technology -- Learning, education and training -- Quality management, assurance and metrics -- Part 2: Harmonized quality model	Close of voting/comment period (30.60)
ISO/IEC 19796-3:2009	Information technology -- Learning, education and training -- Quality management, assurance and metrics -- Part 3: Reference methods and metrics	International Standard published (60.60)
ISO/IEC NP TR 19796-4	Information technology -- Learning, education and training -- Quality management, assurance and metrics -- Part 4: Best practice and implementation guide	New Project Approved (10.99)
ISO/IEC CD TR 19796-5	Information technology -- Learning, education and training -- Quality management, assurance and metrics -- Part 5: How to use ISO/IEC 19796-1	CD study/ballot initiated (30.2)
ISO/IEC 23988:2007	Information technology -- A code of practice for the use of information technology (IT) in the delivery of assessments	International Standard published (60.60)
ISO/IEC 24703:2004	Information technology -- Participant Identifiers	International Standard under periodical review (90.2)
ISO/IEC CD 24725-1	Information technology -- Learning, education and training -- Profiles of standards and specifications -- Part 1: Framework and taxonomy	Close of voting/comment period (30.60)
ISO/IEC FPDISP 24725-2.2	Information technology -- Learning, education and training -- Profiles of standards and specifications -- Part 2: Profile of Rights Expression Language (REL)	Full report circulated: DIS approved for registration as FDIS (40.99)
ISO/IEC DTR 24725-3	Information technology -- Learning, education and training -- Profiles of standards and specifications -- Part 3: Profile on platform and media profiles (PMP)	DIS ballot initiated: 5 months (40.2)
ISO/IEC 24751-1:2008	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 1: Framework and reference model	International Standard published (60.60)
ISO/IEC 24751-2:2008	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 2: "Access for all" personal needs and preferences for digital delivery	International Standard published (60.60)
ISO/IEC 24751-3:2008	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 3: "Access for all" digital resource description	International Standard published (60.60)
ISO/IEC NP 24751-4	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 4: "Access for all" non-digital resource description	New Project Approved (10.99)
ISO/IEC NP 24751-5	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 5: "Access for all" personal needs and preferences for non-digital resources	New Project Approved (10.99)
ISO/IEC NP 24751-6	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 6: "Access for all" personal needs and preferences for description of events and places	New Project Approved (10.99)
ISO/IEC NP 24751-7	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 7: "Access for all" description of events and places	New Project Approved (10.99)
ISO/IEC CD 24751-8	Information technology -- Individualized adaptability and accessibility in e-learning, education and training -- Part 8: "Access for all" language accessibility and human interface equivalencies (HIEs) in e-learning applications	Close of voting/comment period (30.60)
ISO/IEC CD TR 24763	ITLET -- Conceptual reference model for competencies and related objects	Close of voting/comment period (30.60)

ISO/IEC NP 29126	Concept definitions for user actions for use in LET Environments	New Project Approved (10.99)
ISO/IEC CD TR 29127	Intelligent System Process for Multilingual Semantic Reverse Query Expansion	Close of voting/comment period (30.60)
ISO/IEC DTR 29139	30 Day Review for Fast Track Ballot ISO/IEC Type 3 Technical Report - ADL SCORM (Sharable Content Object Reference Model), 2004, 3rd Edition: Runtime Environment (RTE)	Close of voting (40.6)
ISO/IEC NP TR 29140-1	ITLET - Nomadicity and mobile technologies -- Part 1: Learner reference model for nomadicity	New Project Approved (10.99)
ISO/IEC CD TR 29140-2	ITLET - Nomadicity and mobile technologies -- Part 2: Learner information for mobile learning	Close of voting/comment period (30.60)
ISO/IEC DTR 29163-1	SCORM 2004 3rd Edition - Sharable Content Object Reference Model -- Part 1: Overview	Full report circulated: DIS approved for registration as FDIS (40.99)
ISO/IEC DTR 29163-2	SCORM 2004 3rd Edition - Sharable Content Object Reference Model -- Part 2: Content Aggregation Model	Full report circulated: DIS approved for registration as FDIS (40.99)
ISO/IEC DTR 29163-3	SCORM 2004 3rd Edition - Sharable Content Object Reference Model -- Part 3: Run-Time Environment	Full report circulated: DIS approved for registration as FDIS (40.99)
ISO/IEC DTR 29163-4	SCORM 2004 3rd Edition - Sharable Content Object Reference Model -- Part 4: Sequencing and Navigation	Full report circulated: DIS approved for registration as FDIS (40.99)
ISO/IEC NP 29187	Information Technology - Identification of Privacy Protection Requirements pertaining to Learning, Education and Training (LET)	New Project Approved (10.99)

Table 155: Information technology for e-learning, education and training ISO standards
Source: ISO, 2009

3.5. Architectures and Frameworks

Architectures are focused on the particularity of aggregating components, while *frameworks* are concerned with the typology of the components (Lindner, 2006, p. 195). Four approaches are worth mentioning regarding architectures: IEEE LTSA (IEEE, 2003), IMS Abstract Framework (IMS, 2003a), JISC service oriented e-learning framework (2004, 2007), and the ERILE proposal (Lindner, 2006). These approaches are not alternative or exchangeable, but rather complementary views and orientations.

a) IEEE LTSA

The five different levels of the architecture IEEE LTSA represent the different points of view of a learning process (from the most abstract to the least) (Corbière & Choquet, 2004):

- *Level 1* - Learner-environment interactions: this level is the most abstract and defines the tasks of acquisition, transfer, exchange, and discovery for the learner, as a result of the interactions with her environment. These environment and learner entities are seen as two systems exchanging information;
- *Level 2* - Learner-related design features: this layer defines the learner's reaction to the environment;
- *Level 3* - System components: a component system, normalized by IEEE, defines an organization of a learning process, seen from the data and control flow points of view;
- *Level 4* - Stakeholder perspectives and priorities: this level exploits the component system directly, in order to formalize the technological design constraints. It allows the identification of the system's activities during the learning process;
- *Level 5* - Codings, APIs, and protocols: this level defines the abstract phases of

the software development based on the component approach.

The role and the behaviour of these different components are described using a learner scenario, which is divided into eight steps (Corbière & Choquet, 2004)(Figure 10):

1. The teaching style, the pedagogical choices, and the acquisition methods are negotiated with the learner;
2. The learning process is observed and evaluated in a context of action and interaction with the system;
3. The evaluating process gives observations and indications about the learner style, and/or information about the functioning or the state of the system;
4. This data is stored in a data bank dedicated to the learner;
5. The tutoring process analyses the learner's performance from her assessments, preferences, past history, and future perspectives;
6. This same process searches for suitable learning object using resource bank requests;
7. The tutoring process extracts the pedagogical content from the proposed resources. It transmits the resource references to the diffusion process, organizing them, for example, into a pedagogical sequence;
8. The diffusion process extracts the pedagogical contents from the learning object to adapt it to the surrounding interface used by the learner.

One of the weaknesses of the LTSA approach is its restriction to a subsection of e-learning only: the delivery scenarios (in contrast to the phenomena resulting from cross-role knowledge building scenarios). The major strengths of the LTSA approach are its neutrality regarding technology or educational orientation, and its high level of abstraction (Lindner, 2006, pp. 200-201).

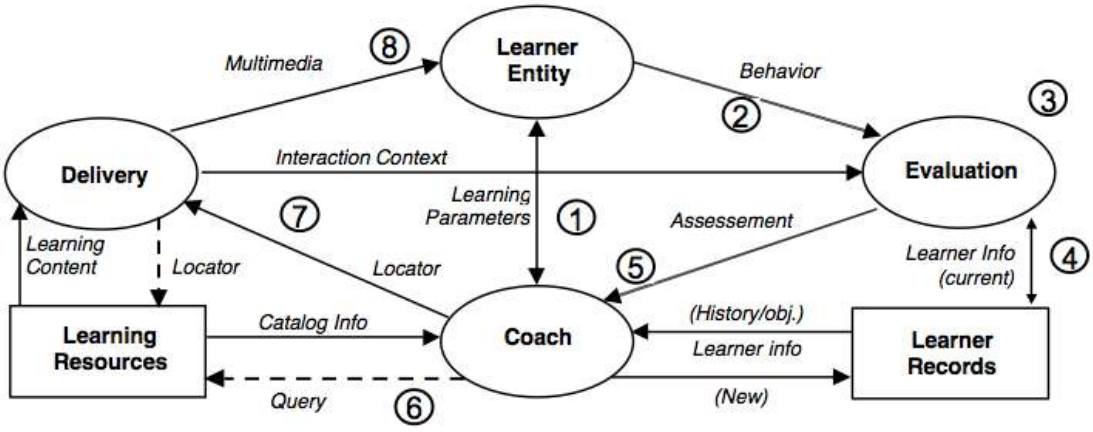

Figure 75: The LTSA component model for a learning system
Source: Corbière & Choquet, 2004

b) IMS Abstract Framework

The IMS Global Learning Consortium proposed an Abstract Framework (IMS, 2003a) integrating in a single abstract framework several reference models and architectures, mainly selected from the US-dominated initiatives (Lindner, 2006, p. 205). This framework, illustrated in Figure 76, is focused on dedicated technical categories of tools and is clearly technology-oriented. One of its weaknesses is the insufficient association

of educational phenomena with different kinds of "objects", "offerings", "plans", "events", and "infos". Its major strength, and, at the same time, a major weakness, is its orientation towards existing technical modules, by this easing its adoption by, at least, the technical community (Lindner, 2006, p. 206).

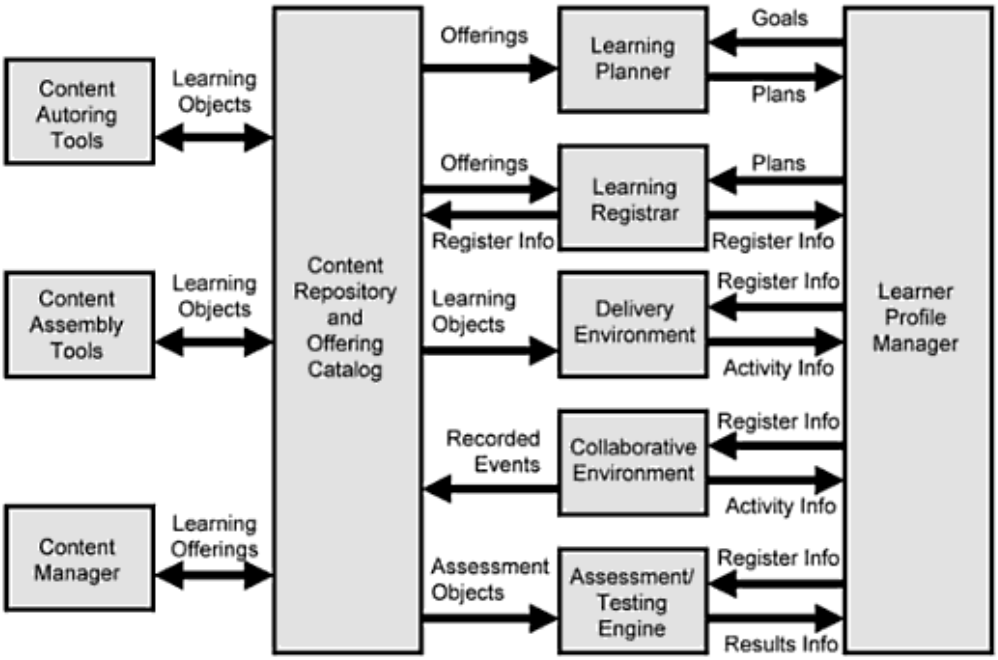

Figure 76: IMS abstract framework
Source: IMS, 2003

c) JISC Framework

The JISC e-learning framework (2004, 2007) (Figure 77) is a service-oriented factoring of the core services required to support e-learning applications, portals, and other user agents. Each service defined by the JISC framework is envisaged as being provided as a networked service within an organization, typically using either web services or a REST-style HTTP protocol. The ultimate aim of the JISC framework is, for each identified service, to be able to reference an open specification or standard that can be used to implement the service, and also to be able to provide open-source implementation toolkits such as Java and C# code libraries to assist developers.

Figure 77: JISC e-learning framework
Source: JISC, 2004

d) ERILE Proposal

The ERILE approach is focused on the representation and exchange of expertise in e-learning. Expertise is used in this model as a generalization for phenomena like knowledge, skills, aptitude, qualification, and competency. This model aims at a strict symmetry of human and computer-based activities and its main purpose is characterizing instances of learning environments, by declaring to which percentages activities were performed by humans, by computer machinery, or by a flexible allocation (Lindner, 2006, p. 201). The graphical representation of this model is in Figure 78.

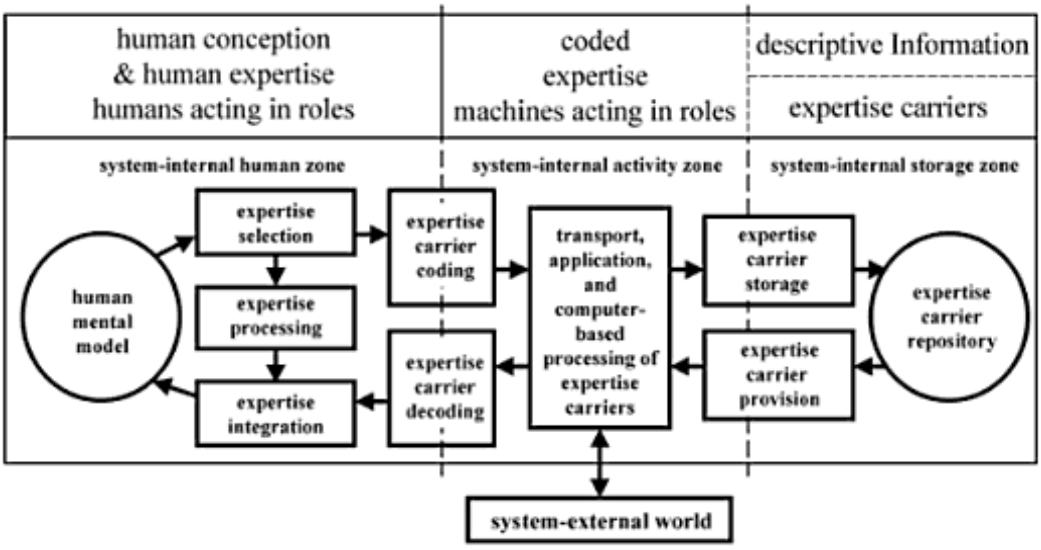

Figure 78: The ERILE model
Source: Lindner, 2001

3.6. Management Standards

Management standards (Heddergott, 2006, pp. 188-189) handle the process of transferring e-learning content into other environments, like learning management platforms or toolsets for the production of e-learning. They are focused on the interoperability of learning scenarios. The term *management standards* is misleading as these standards are focused, not on management issues, but in the technical interoperability of such *packages*, namely to enable learners to retrieve content packages and reuse them in different tools. Those e-learning content packages include all files for a specific e-learning offer bundled in one compressed file, which includes all HTML documents, media files, style sheets, and scripting components used within the content (Prpitsch & Veith, 2006, p. 209).

Among management standards, SCORM, LOM, IMS Content Packaging, and AICC are worth of detailed attention:

- IEEE LOM (Learning Object Metadata) (2002a) specifies a conceptual data scheme and the corresponding XML-binding. It consists of nine categories: general, lifecycle, meta-metadata, technical, educational, rights, relation, annotation, and classification;
- IMS CP (Content Packaging) (IMS, 2004a, 2004b) sets a standardized set of structures that can be used to exchange content and consists of two components: the *information model* (IMS, 2004a) and its corresponding binding (IMS, 2004b). IMC CP includes four categories: metadata, organization, resources, and sub-manifest;
- SCORM (Sharable Content Object Reference Model) (ADL2004) provides a technical standard for interoperability of e-learning content packages between LMS and e-learning content authoring tools. SCORM packages are created according to IMS CP;
- The AICC guidelines and recommendations (2008), also known as AGR's, are focused on the interoperability between web-based courseware and LMS's. There are nine different AGR's but the AICC offers certification testing for only two AGR's (AGR 006 - *computer managed instruction* and AGR 010 - *web-based computer managed instruction*). The other seven AICC guidelines that are not formally tested by AICC are: AGR 002 (*courseware delivery stations*), AGR 003 (*digital audition*), AGR 004 (*operating/windowing system*), AGR 005 (*CBT peripheral devices*), AGR 007 (*courseware interchange*), AGR 008 (*digital video*), and AGR 009 (*icon standards: user interface*).

3.7. Content Standards

Content standards are focused on the idea of building generic e-learning systems that would allow the reuse of existing learning resources in different accessibility settings. They represent a set of commonly agreed accessibility metadata to facilitate the description of learning resources using the same metadata sets, and, therefore, support sharing of accessible resources (Karampiperis & Sampson, 2006). Among these standards, we emphasize:

- W3C Web Content Accessibility Guidelines (1999);
- CEN accessibility properties for learning resources (CEN/ISSS, 2004a);

- Dublin core metadata initiative accessibility working group (DCMI2001);
- IMS AccessForAll metadata (IMS, 2003b);
- And IMS for LIP Information model specification (IMS, 2003c).

IMS for LIP information model specification (IMS, 2003c), for instance, includes metadata requirements concerning the colour avoidance, colour difference, and colour brightness, and metadata requirements for learner scaffold tools. Content standards are also included in other standards. IEEE LOM (2002b), for instance, includes accessibility concerns within it: its technical category describes the technology (hardware, network, and software) that is required for using a learning object and provides characteristics such as the size or the location of a learning object; and in its educational category it describes the educational or pedagogical characteristics of a learning object, which include the interactivity type, the semantic density, the level of difficulty of a learning object, the time that a typical user takes to work with it, among others.

3.8. Didactical Standards

Educational interoperability standards, also known as Educational Modelling Language (EML) (Klebl, 2006, p. 227), propose specific frameworks for a comprehensive description of the teaching-learning process (Klebl, 2006, p. 225). These standards provide elements to describe both content and outline for a unit of learning.

There are two alternative educational interoperability standards*:* the IMS Learning Design (LD) (2003e) and DIN Didactical Object Model (DIN-DOM) (2004). These educational interoperability standards represent a paradigmatic shift away from a content-based knowledge delivery (which is the base of metadata standards, such as IEEE LOM, IMS CP, and SCORM, and of content packaging principles) to a social and learner-centred paradigm. IMS LD specifies, as SCORM does, a package and a runtime environment and uses IMS CP to structure its content. It provides all functionalities of SCOM and, additionally, provides a representation of the used didactic conception. Klebl (2006, pp. 229, 237-242) summarizes the basic concepts of IMS LD (Koper, Olivier, & Anderson, 2003a, 2003b, 2003c) and DIN-DOM (2004):

- Both describe the process of teaching and learning rather than the learning content;
- They are a form of standardized notation for units of learning used by instructional designers to lay down their comprehensive plan for a learning scenario;
- Both use ‘unit of learning’ as a starting concept that refers the course, module, lesson, unit of study, or learning experience, and both base their information model on *activities* (described as something to be done by someone in order to achieve a purpose, and directed towards learning objectives). They both include basic principles of aggregation of activities (rather than aggregation of contents).

Klebl (2006, p. 235) recalls that *educational interoperability* standards must not be mistaken with *educational* standards themselves, as the latter are a normative construct, while *educational interoperability* standards are a technical construct that can enhance quality in teaching-learning process, but never guarantees it. Even so, Klebl identifies several elements in these standards that provide an indirect relationship with quality,

namely the fact that they include integrated learning scenarios: 1) they provide a broader range of methods for teaching and learning, 2) promote the learner's self awareness of her own learning process, and 3) promote the transparency of the educational service and products market.

3.9. Learner Model Standards

Some standards have been developed focused on the learner profiles. These standards assume that the competitiveness of learners depends on the ability to deal with the diversity of natural and technological resources currently available (Sgouropoulou, 2006, p. 251). In this perspective, standards are seen as the key to the formation of a common marketplace and the broadening of borderless learning pathways. For that purposes, learner profiles are seen as 1) a tool to personalization of learning resources acquisition, 2) a facilitator of lifelong learner mobility within and between higher education, vocational education, and training sectors, and 3) a support for the communication of competencies and qualifications for employment purposes or for admission to learning schemes (Sgouropoulou, 2006, p. 252).

Within Europe, and in the context of the Lisbon meeting, it is claimed that the boost of competitiveness will require a transformation of education and training, which will involve the development of the higher education area (the Bologna process), the enhancement of the European co-operation in vocational education and training (the Copenhagen process), the design of national frameworks of qualifications, and an European Qualification Framework (EQF) for lifelong learning. The qualification framework is supported by two instruments: the European Credit Transfer System (ECTS) and the Single Community Framework for the Transparency of Qualifications and Competences (European Parlament, 2004), also known as Europass. Europass involves the creation of a personal portfolio of documents that aim a better communication and presentation of qualifications and competences, and involves *Europass-CV* (a *curriculum vitae* structure for the presentation of individual qualifications and competences), *Europass-Mobility* (a record of periods of learning attended in other countries), *Europass-Diploma Supplement* (a record of educational achievements at higher education level), *Europass-Language Portfolio* (a record of language skills) and *Europass-Certificate Supplement* (a record of competences and qualifications corresponding to a vocational training certificate).

The most dominant specifications related to the learner profile domain are the IMS Leaner Information Package (LIP) (IMS, 2003d), the IEEE Public and Private Information (PAPI) (Farance, 2000; IEEE, 2002) and CEN agreements 15455 and 14927 for learner competencies (CEN/ISSS, 2004b, 2005). The IMS LIP (IMS, 2003d) is a structured information model that includes educational records, training logs, professional development history, C.V. with relevant work experience, and lifelong learning record. IEE PAPI (Farance, 2000; IEEE, 2002) divides user records into personal information and performance information and separates security information from other type of learner information. It splits the learner information into several areas: personal information, information about relations, security, performance, and portfolio. There is also a common need to have a reference for e-portfolio formats, and some technical specifications have been made for software developers to design e-portfolio tools (Arnaud, 2006, pp. 263, 270):

- IMS LIP (IMS, 2003d) provides a flexible way of representing information about the activities and achievements of the learner;
- IMS Digital repositories interoperability (DRI) portfolios (IMS, 2005b);
- IMS Reusable Definition of Competency or Educational Objective (RDCEO)(IMS, 2005c), which provides a practical definition of what it means to be able to do something.

3.10. Interface Standards

There are several relevant standards in the area of business information system *integration* that influence the standardization of e-learning services, namely ISO 7498 (standard for Open System Integration- OSI), XML (Extensible Markup Language), and *infrastructure standards* like OMA (Open Management Architecture). Bick & Pawlowski (2006, p. 277) make a distinction between *integration* and *interoperability*: *integration* mainly focuses applications and processes, while *interoperability* describes the ability of a system to use functionalities of another (remote) system. Regarding data exchange standards, these authors emphasize CVS, EDI, XML, ISO 10303, ISO TC 184/SC4, and the IMS enterprise service specification (IMS, 2005a), which focuses on integration between business information systems and learning management systems. In what infrastructure standards are concerned, they emphasize ISO 7498 (information processing systems), ISO/OSI - Open System Integration, ISO 15414 (open distributed processing reference model), and middleware standards like RPC, CORBA, SOAP, WSDL, and UDDI.

3.11. Consumer Standards

The Open eQuality Learning Standards (also known as Open eQLs) intend to help those who want to design, delivery, evaluate and purchase quality e-learning products and services for students and their sponsors. The Open eQuality Learning Standards is a European/Pan-American agreement on quality standards for e-learning delivery, evaluation, and purchase of e-learning products and services for students and their sponsors (Table 156). Open EQLs are based on the Canadian Recommended E-learning Guidelines, also known as CanREGs, (FuturEd & CACE2002a), which are consumer-based quality *standards* (as EIfEL calls it) for e-learning products and services. eQLs reflect best practices in e-learning and its purpose is to provide consumer confidence in the e-learning enterprise and consumer protection for the investment made (Barker, 2007).

We consider that consumer standards are different from learner standards (page 334) because they are the only that do not intent to provide a framework on the offer side, but on the demand side. This brings them closer to e-learning quality models and frameworks (described below), i.e., eQLs are closer to criteria lists, checklists, and evaluation models than to standards, even though they are called standards.

e-Learning elements	Quality criteria	Sample quality requirements
Outcomes and outputs	1. Skills and knowledge acquired 2. Learning skills acquired 3. Credits and credentials awarded 4. Return on investment	3. Credits and credentials are: 3.1. Recognized by relevant professional bodies 3.2. Recognized by other education institutions 3.3. Of the same value as on-site delivery 3.4. Transferable within and between programs, institutions, and countries
Processes and practices	1. Management of students 2. Delivery and management of learning 3. Appropriately used technologies 4. Communications	2. Delivery and management of learning 2.2.1. Approaches to learning - Foster active learning - Build on learner's strengths - Support interaction - Increase learner control - Include assistive devices for persons with disabilities
Inputs and resources	1. Intended learning outcomes 2. Curriculum content 3. Teaching/learning materials 4. Product/service information 5. Appropriate learning technologies 6. Sound technical design 7. Personnel 8. Learning resources 9. Complete learning package 10. Comprehensive course package 11. Routine review and evaluation 12. Program plans and budget 13. Advertising and admissions information	2.1. Intended outcomes are: 3.1.1. Clearly stated 3.1.2. Relevant 3.1.3. Observable/demonstrable 3.1.4. Measurable 3.1.5. Achievable and realistic 3.1.6. Appropriate to the degree 3.1.7. Consistent with provider mandate

Table 156: Outlines of the main categories and elements of Open eQLs
Source: Barker, 2007

Appendix 6: European Initiatives Regarding Quality in e-Learning

Under the e-learning initiative, launched by the European Commission, four proposals emerged: EQO (European Quality Observatory), QUAL-E-LEARNING (Quality in E-Learning), SEEL (Supporting Excellence in E-Learning), and SEEQUEL (Sustainable Environment for the Evaluation of Quality in E-Learning). Later, in 2005, these projects joint their efforts under a new project called TRIANGLE, which established the EFQUEL (European Foundation for Quality in E-Learning).

1. EQO (European Quality Observatory)

The European Quality Observatory (EQO) (2004b; Pawlowski, 2003) developed a *reference model* (EQO2004a), i.e., a framework that defines concrete steps and criteria as an *exemplary template* (Hildebrandt & Teschler, 2006, p. 172) for analyzing and describing quality approaches for the field of European e-learning. It is a metadata scheme for the analysis, description, and, therefore, comparison of quality approaches applicable for European e-learning. It provides a *classification scheme* for the discussion about quality in e-learning and a decision-support cycle (Figure 79) to guide users through the process of how to find and to adapt the right quality approach to her context of use. The EQO model (2004a) is divided into two parts: In the first, quality approaches are analyzed on a theoretical basis by quality experts using the official documentation and publications about the different approaches. This theoretical analysis of approaches covers three categories: general information, context of usage, and method of quality approach. In the second part, implementation or actual use experiences in implementing quality approaches are categorized and analyzed. The EQO decision cycle is based on the EQO metadata model. It involves four steps: 1) analysis of quality needs, 2) analysis and comparison of quality approaches, 3) decision support, and 4) adaptation and implementation of recommendations.

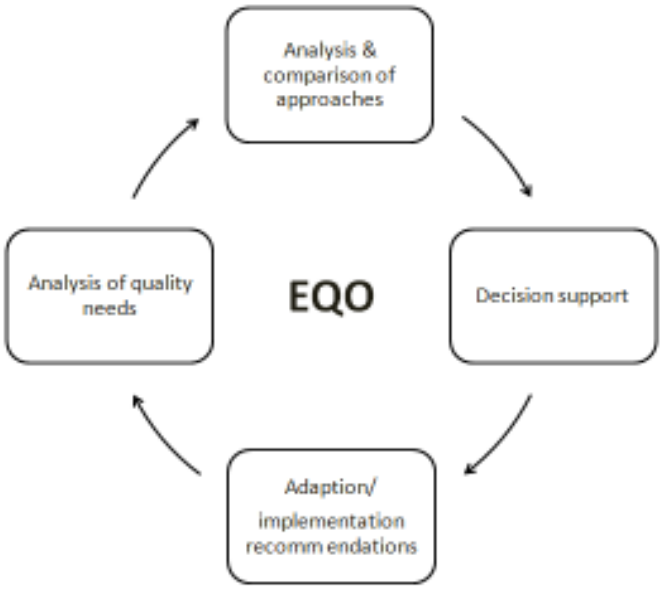

Figure 79: The EQO Decision Cycle
Source: Adapted from Hildebrandt & Teschler, 2006, p. 178

2. QUAL-E-LEARNING (Quality in e-Learning)

The project QUAL-E-LEARNING (ITV Denkendorf, 2004; Qual E-learning project consortium, 2004) was created with the intention of producing a handbook of best practices in the area of e-learning, and was based on the collection of the points of view of e-learning experts. Francés (2004) synthesized the main suggestions of this project, which included diversified items such as the *training strategy*, the *communication campaigns*, the *protection of copyrights*, the *assistance provided by the training staff*, the *control over user access*, the *inexistence of a need to install specific software*, the *preference of the division of the course into modules*, and *continuous assessment*, among others.

3. SEEL (Supporting Excellence in e-Learning)

The SEEL (2004) project produced a guide to quality in e-learning that provided the key actions that should be undertaken by stakeholders within a region (Figure 80). The e-learning region quality guide is divided into seven areas: *strategic issues*, *technical infrastructure*, *building a successful learning community*, *regional initiatives*, *integrating and demonstrating innovation*, *dissemination of key information*, *key outputs*, and *outcomes*.

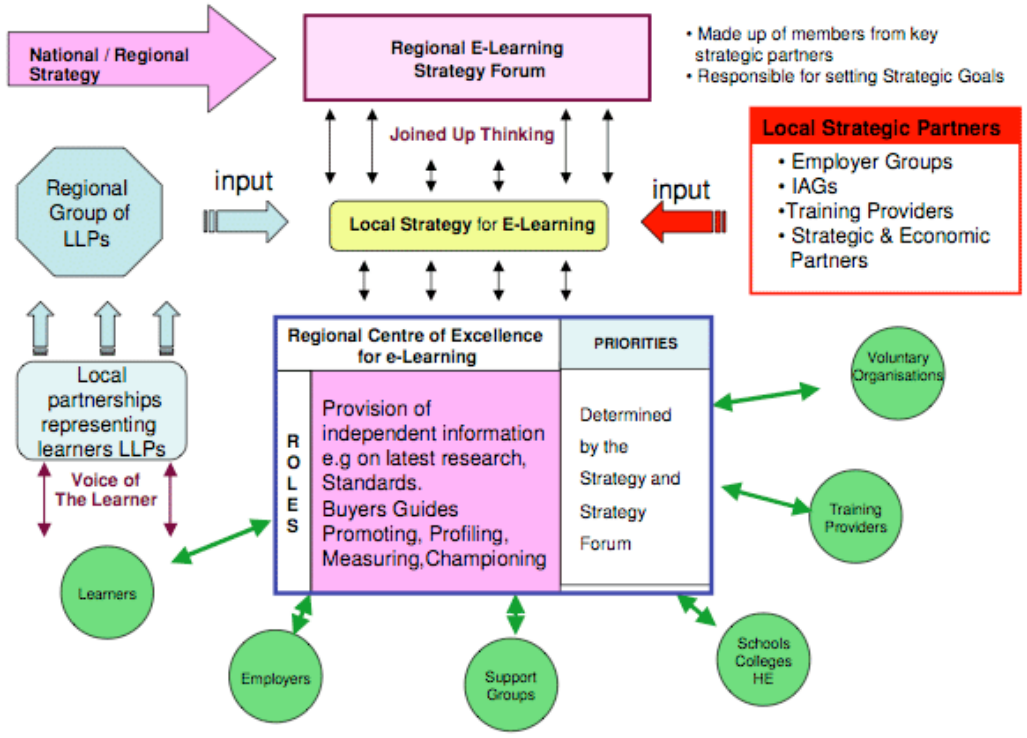

Figure 80: Strategic Framework for Regional Centers of Excellence for E-Learning
Source: SEEL, 2004

4. SEVAQ (Self Evaluation for Quality in e-Learning)

The goals of the SEVAQ project *(*Schreurs *et al.2008)* were to improve the quality of the vocational and educational courses that are offered through open and distance education, e-learning, and b-learning, and to provide a number of good practices concerning quality and a multi-functional self-evaluation questionnaire in order to obtain valuable client feedback.

5. QUIS (Quality, Interoperability, and Standards in e-Learning)

The QUIS (Komáromi *et al*., 2004) directed its activities towards quality in e-learning, interoperability, and reusability of e-learning materials and development of standards. It looked at *cost effectiveness* in e-learning, and developed a specific quality assurance system.

6. QSEL

The QSEL (Lodzinski & Pawlowski, 2006, p. 113) proposal combines both process and product orientation and takes existing quality marks into account. It has two components: the quality of educational organizations and quality of components. Regarding the quality of educational organizations, QSEL (Lodzinski & Pawlowski, 2006, pp. 113-119) includes, for each of the proposed categories (*policy and strategy*, *management*, *resources*, *processes*, *learner-orientation*, *staff management and contentment*, *outward appearance/innovation*, and *results*), several components and instruments. In what quality of components are concerned, QSEL uses ten criteria that cover products and services of e-learning, and that include *learning objectives*, *textual design*, *didactical design*, *roles and activities*, *organizational design*, *technical design*, *use of media*, *communication alternatives and modes*, *testing and examination*, *maintenance,* and *care*. The component criteria were regrouped into three categories: common criteria, learning management systems, and courses/modules. QSEL also designed sample instruments for each category and component, for a better understanding of the project (Lodzinski & Pawlowski, 2006, pp. 119-123).

7. Exemplo - Elex

The Exemplo – Elex project (EVTA, 2005) was focused on the potential of communities of practice within the European Vocational Training Association (EVTA) and produced a report on quality of e-learning which presented examples of good practices.

8. EQUEL (e-Quality in e-Learning)

The EQUEL (2004) project included higher education institutions, and aimed to understand of the effects of e-learning practice, theory, and philosophy, though building a research and practitioner network of experts working in the field. The work carried on

was organized in seven special interest groups: implementing e-learning at the institutional level, communication and control in e-learning environments, theory-led designs for e-learning communities and collaborative learning, tutor and trainer's role in new forms of e-learning environments, supporting knowledge sharing across cultures via virtual interactive activity, the theory and practice of computer supported collaborative learning, and the ASPI (Analysing, Sustaining, and Piloting Innovation) model for pedagogy.

9. SEEQUEL (Sustainable Environment for the Evaluation of Quality in e-Learning)

The SEEQUEL project (Dondi, 2004a, 2004b, 2006) proposed a framework that compiles the different views of quality that are representative of the interests and long-standing priorities of the various user groups, such as industry, professional, and students. The result is a *core quality framework* that attends to the sector to which the user belongs (school, education, university, vocational educational and training, etc.), her role in that sector (e.g. teacher, pupil, parent, school administrator), and her view of the world. Six views of the world were defined and for each, reference values, which illustrated on which the concept of quality was based, and a description of the typical perception quality were also provided. The SEEQUEL project claims that the key focus of quality in e-learning is the learning experience, considered in its three components: *sources*, *processes*, and *internal/external context* (Figure 81). The author of SEEQUEL believes that there are objective criteria for defining quality in e-learning. The *core quality framework* that he proposes is a matrix where the various users can weight a list of quality criteria applicable to the whole e-learning experience. The author presumes that the weight, or relative importance, given to each criterion is based on a user's particular sector, together with her individual role and personal vision of the world.

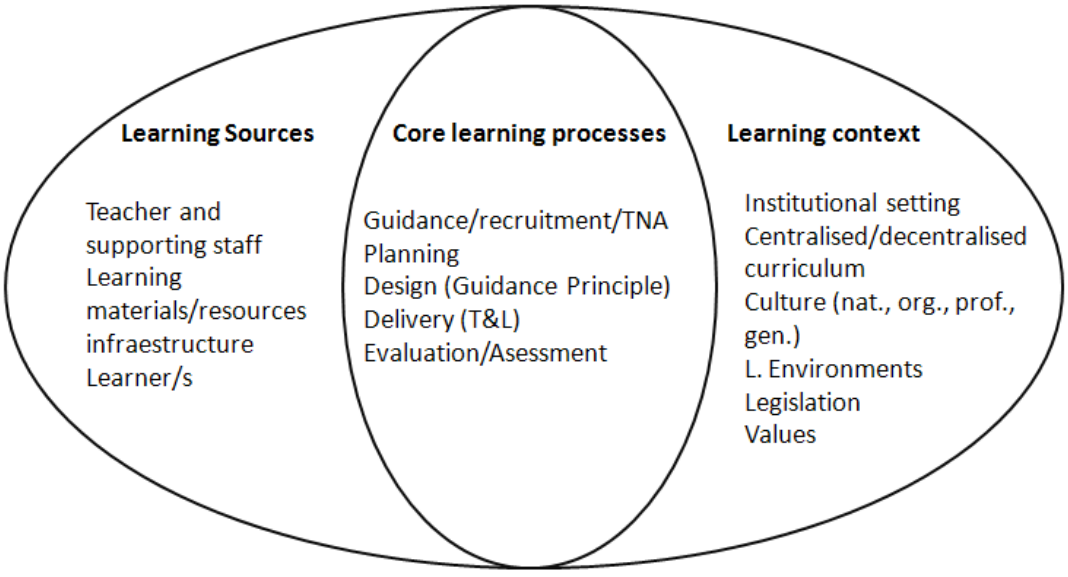

Figure 81: SEEQUEL E-learning Experiences
Source: Dondi, 2006, p. 39

10. Quality Mark for e-Learning and Other Projects on Quality in e-Learning From EFQUEL

The European Institute for E-Learning (EifEL) created the Quality Mark for e-Learning (EFQUEL2009d) initiative within the European Foundation for Quality in e-Learning (EFQUEL), of which it is a founding member. Quality mark for e-learning is more an interest group, rather than a closed framework, and has been discussing quality in e-learning and stimulating innovative practices in e-learning. It includes a set of components considered as a valuable starting point for a federative approach to quality in e-learning, which included a set of design principles, an agreement to take the quality of the learning experience as a whole (and not only resources or processes), a common focus of innovation, a principle of negotiation, and an agreement on the five steps necessary to come to an accreditation. These steps include the definition of criteria and indicators, positioning, self diagnosis and internal preparation, peer review, improvement plan implemented and documented, and accreditation (for a limited time) (EFQUEL2009d). EifEL has been working on other projects related to quality in e-learning, such CelP, a program of professional certification of e-learning, and EPICC (EIFEL, 2008), a European project dedicated to the interoperability of e-portfolios and their contribution to the quality of learning systems.

Besides Quality Mark for e-Learning, EFQUEL (2009a) has also developed several projects regarding the quality of e-learning:

- The eQuality maturity model (2009b, 2009c), which establishes several levels of e-quality maturity;
- The UNIQUe project, that aims to enhance the reform process of European higher education institutions by creating, testing, and launching an e-learning quality label for ICT use in higher education and facilitate the improvement of higher education e-learning-related processes and management;
- The European Quality Observatory, which is a database of quality strategies and quality services;
- The eQuality awards, which provide a framework for the use of digital technologies in the management of quality assurance processes, making the quality process an organic part of organisational learning activities. It provides recognition to the providers of eQuality solutions and systems, as well as to organisations implementing eQuality systems;
- QMPP (Quality Management of Peer Production in e-Learning) project, which is focused on the quality management of peer production of e-learning content. The basic understanding is that peer production can be assisted (and also managed) by using the various options of peer production potential, as well as by providing efficient enabling structures and services;
- QUALC (Quality Assurance Networks for Adult Learning Centres) project, which rather than a non-contextualized model, is designed to be adapted to the specific needs of adult learning certres. It provides a quality-oriented approach to informal and non-formal learning supply provided by adult learning centres.
- The ECBCheck project, which is a quality guideline and certification scheme for the use of e-learning in international capacity building activities.

11. EFQM (European Foundation for Quality Management) Framework

The EFQM Excellence Model (2003b, 2003b) is a non-prescriptive framework based on nine criteria. Five of these are *enablers* and the other four are *results*. The *enabler* criteria cover what an organization does, while the *results* criteria cover what an organization achieves. *Enablers* cause r*esults*, and *enablers* are improved using feedback from *results*. The EFQM Model is presented in Figure 82. The arrows emphasise the dynamic nature of the model and show that innovation and learning help to improve enablers, which, in turn, lead to improved results. The basis of the EFQM Excellence Model are the eight *fundamental concepts of excellence* of the EFQM (2003c), which are:

- Results orientation: excellence is achieving results that delight all the organisation's stakeholders;
- Customer focus: excellence is creating sustainable customer value;
- Leadership and constancy of purpose: excellence is visionary and inspirational leadership, coupled with constancy of purpose;
- Management by processes and facts: excellence is managing the organization through a set of interdependent and interrelated systems, processes, and facts;
- People development and involvement: excellence is maximizing the contribution of employees through their development and involvement;
- Continuous learning, innovation, and improvement: excellence is challenging the *status quo* and promoting change by utilizing learning to create innovation and improvement opportunities;
- Partnership development: excellence is developing and maintaining value-adding partnerships;
- Corporate social responsibility: excellence is exceeding the minimum regulatory framework and to strive to understand and respond to the expectations of their stakeholders in society.

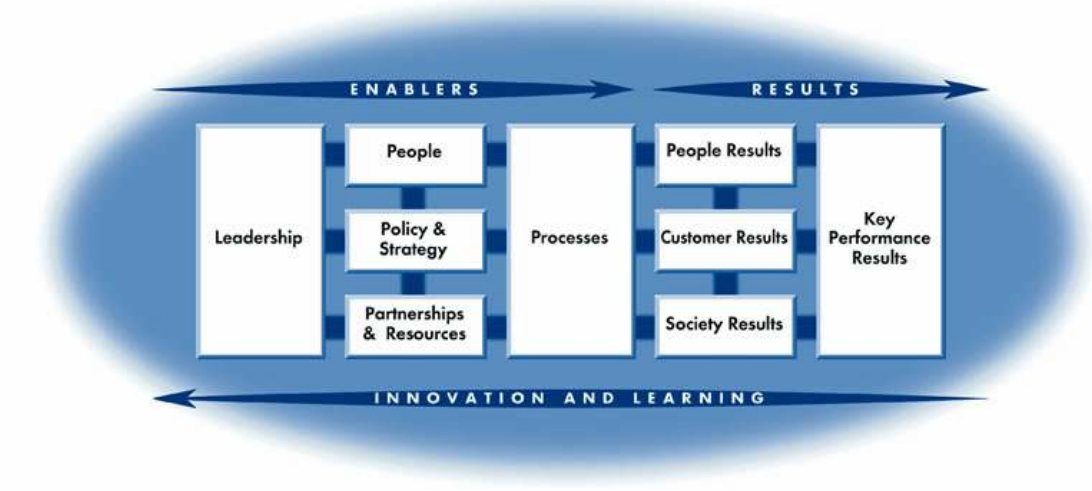

Figure 82: EFQM excellence model
Source: European Foundation for Quality Management (EFQM), 2003

12. QCC-eL - Quality Criteria for E-learning Products

Berger (2006) proposed a catalogue of quality criteria for e-learning products called QCC-eL, also known as the *product criteria catalogue* and it is part of the German Public Available Specification (PAS) 1032-1 and part of ISO 19796-1. The catalogue of QCC-eL has 682 criteria and is divided into categories (Table 157). QCC-eL is used to describe or verify the pedagogical and didactic product characteristics, the features having an effect on learning and motivation, as well as the functional product characteristics. The criteria are based on:

- Relevant ISO-standards for usability of software and multimedia interfaces (ISO/EN/DIN 9241, 14915). QCC-eL took into consideration ISO 9241, which describes the ergonomic criteria/principles for software products and ISO 14915, which establishes the design principles for multimedia user interfaces. These two ISO standards are not regulated standards, and QCC-eL specifies the methods that can be used to determine whether standards are being met, i.e., it operationalizes the standards. For instance, ISO 14915-3 (5.6.) refers "supporting user preferences" and QCC-eL operationalizes as "as long as it is appropriate for the task, alternative forms of media should be available to users, from which they can select a preferred medium or deactivate specific media" (Berger, 2006, p. 145);
- Relevant EU and German laws and regulations, namely data protection laws and consumer protection laws;
- Consolidated empirical findings taken from the relevant scientific areas. This includes findings from the areas of learning and motivational psychology, media psychology, pedagogic, and didactic findings from the scientific sector.

Categories	Subcategory
Software ergonomics (ISO 9241)	Symbol design
	Colour design
	Dialog design
	Ergonomic requirements
	User guidance/error management/help functions
	Dialog navigation: direct manipulation
	Dialogue navigation: screen forms
Organizational aspects	Organizational aspects
	Target
	Target group
	Quality assurance
	Conditions for participation
Technical aspects	User
	Operating company
	Product
Data storage and analysis	Specification of data saved
	Data display tools
	Data analysis
Programme features	Control system
	Control support
	Support features
	Communications
Theoretical aspects	General psychological aspects
	Aspects related to the psychology of learning
	Didactical aspects
	User concept

Information encoding	Content-equivalent information transport Picture Moving pictures Text
Format and design	Animation Simulation Questions and exercises Speech recognition Overall design

Table 157: Categories of QCC-eL
Source: Rockmann & Olivier, 2005, quoted in Berger, 2006, p. 148

Appendix 7: Theories of Motivation

1. Murray's Psychogenic Needs

Murray (1938) developed a theory of personality based upon needs and motives suggesting that a person's personality is a reflection of behaviours controlled by needs. He created a list of potentially motivating psychogenic (caused by psychological factors, rather than physical dysfunction) needs (Table 158). According to him, these psychogenic needs function mostly on the unconscious level, but play a major role in one's personality. According to Murray, everyone has these needs, but each individual tends to have a certain level of each need. For instance, people with a high need for achievement tend to select more challenging tasks. People who rate high on affiliation needs tend to have larger social groups, spend more time in social interaction, and are more likely to suffer loneliness when faced with little social contact. Although each need is important by itself, the needs can be interrelated: they can support other needs or conflict with other needs. For example, the need for dominance may conflict with the need for affiliation.

Need	Description
1. Abasement	To surrender, apologize, or accept punishment.
2. Achievement	To strive, overcome obstacles, or succeed.
3. Acquisition	To gain possessions.
4. Affiliation	To associate, socialize, or make friendships.
5. Aggression	To assault, belittle, or injure others.
6. Autonomy	To be independent, defy, or stand strong.
7. Blame avoidance	To deflect criticism, avoid blame, or obey the rules.
8. Cognizance	To seek knowledge or injure.
9. Conservance	To collect or protect.
10. Construction	To build or create.
11. Contrarience	To be unique or oppose.
12. Counteraction	To overcome or retaliate.
13. Defendance	To justify or resist.
14. Deference	To serve, follow a superior, or cooperate.
15. Dominance (power)	To influence, control, or lead others.
16. Exhibition	To attract attention or excite.
17. Exposition	To provide information, educate, explain, or demonstrate.
18. Failure avoidance	To avoid personal failings or conceal.
19. Harm avoidance	To avoid injury or pain or escape.
20. Infavoidance	To avoid failure or shame or conceal a weakness.
21. Inviolacy	To preserve self-respect or maintain pride.
22. Nurturance	To nourish, aid or protect the helpless.
23. Order	To arrange, organize, or be precise.
24. Play	To amuse oneself, be merry, relieve tension, give fun, or relax.
25. Recognition	To seek distinction, boast, gain approval, or social status.
26. Rejection	To snub, ignore, or exclude another.
27. Retention	To hoard or be frugal.
28. Sentience	To seek and enjoy sensations and impressions.
29. Sex	To form and enjoy an erotic, sexual relationship.
30. Similance	To agree or identify with others or empathize.
31. Succorance	To be dependent, seek aid, or seek protection or sympathy.
32. Superiority	To power over or gain status.
33. Understanding*	To analyze and experience or create knowledge.

Table 158: Murray's list of motivating psychogenic needs
Source: Allpsych, 2008; Oliver, 1997, p. 140

2. Horney's Neurotic Needs

Karen Horney (1942) developed a theory of neurosis, which she believed that resulted from basic anxiety caused by interpersonal relationships. According to Horney, the strategies used to cope with anxiety can be overused, causing them to take on the appearance of needs. Basic anxiety (and, therefore, neurosis) could result from a variety of things including, "…direct or indirect domination, indifference, erratic behaviour, lack of respect for the child's individual needs, lack of real guidance, disparaging attitudes, too much admiration or the absence of it, lack of reliable warmth, having to take sides in parental disagreements, too much or too little responsibility, over-protection, isolation from other children, injustice, discrimination, unkept promises, hostile atmosphere, and so on and so on" (K. V. Wagner, 2008, quoting Horney, 1945).

Horney's ten neurotic needs (Table 159) can be classified into three broad categories:

- *Needs that move towards others*: These neurotic needs cause individuals to seek affirmation and acceptance from others and are often described as needy or clingy as they seek out approval and love;
- *Needs that move away from others*: These neurotic needs create hostility and antisocial behaviour. These individuals are often described as cold, indifferent, and aloof;
- *Needs that move against others*: These neurotic needs result in hostility and a need to control other people. These individuals are often described as difficult, domineering, and unkind.

Need	Description
1. The neurotic need for affection and approval	This need includes the desires to be liked, to please other people, and meet the expectations of others. People with this type of need are extremely sensitive to rejection and criticism, and fear the anger or hostility of others.
2. The neurotic need for a partner who will take over one's life	This involves the need to be centred on a partner. People with this need suffer extreme fear of being abandoned by their partner. Oftentimes, these individuals place an exaggerated importance on love, and believe that having a partner will resolve all of the problems in their lives.
3. The neurotic need to restrict one's life within narrow borders	Individuals with this need prefer to remain inconspicuous and unnoticed. They are undemanding and content with little. They avoid wishing for material things, often making their own needs secondary and undervaluing their own talents and abilities.
4. The neurotic need for power	Individuals with this need seek power for its own sake. They usually praise strength, despise weakness, and will exploit or dominate other people. These people fear personal limitations, helplessness, and uncontrollable situations.
5. The neurotic need to exploit others	Individuals with this need view others in terms of what can be gained through association with them. They generally pride themselves in their ability to exploit other people, and are often focused on manipulating others to obtain desired objectives, including such things as ideas, power, money, or sex.
6. The neurotic need for prestige	Individuals with a need for prestige value themselves in terms of public recognition and acclaim. Material possessions, personality characteristics, professional accomplishments, and loved ones are evaluated based upon prestige value. These individuals often fear public embarrassment and loss of social status.
7. The neurotic need for personal admiration	Individuals with a neurotic need for personal admiration are narcissistic and have an exaggerated self-perception. They want to be admired based on this imagined self-view, not upon how they really are.

8. The neurotic need for personal achievement	People push themselves to achieve greater and greater things as a result of basic insecurity. These individuals fear failure and feel a constant need to accomplish more than other people and to top even their own earlier successes.
9. The neurotic need for self-sufficiency and independence	Individuals exhibit a "loner" mentality, distancing themselves from others in order to avoid being tied down or dependent upon other people.
10. The neurotic need for perfection and unassailability	These individuals constantly strive for complete infallibility. A common feature of this neurotic need is searching for personal flaws in order to quickly change or cover up these perceived imperfections.

Table 159: Horney's ten neurotic needs
Source: Horney, 1942, pp. 51-56

3. Maslow's Hierarchical Needs Theory

Maslow's theory (1943, 1954, 1968) is based on the assumption that motivation is driven by the existence of unsatisfied needs. He developed a model in which basic, low-level needs, such as physiological requirements and safety, must be satisfied before higher-level needs, such as self-fulfilment, are pursued. Maslow's pyramid of hierarchical needs includes the six levels detailed in Table 160. In this *hierarchical model*:

- If one level of needs is not satisfied, then one's motivation will arise from the quest to satisfy them;
- Higher order needs will not arise and will not be felt until one has met the lower level needs;
- When a need is mostly satisfied, it no longer motivates and the next higher need takes its place.

If Maslow's theory holds, there are some important implications for training providers. As not all individuals are driven by the same needs, it is important to understand the needs being pursued by each trainee. Furthermore, training providers have the opportunity to motivate trainees in each level of need:

- Physiological needs: providing coffee breaks, rest breaks, financial incentives for training extra-hours and materials;
- Safety needs: providing a safe training environment and a good customer service (namely technical) help;
- Social needs: creating a sense of community through team-based projects, social events (as class dinner or a hanging-out program), or social forums;
- Esteem needs: organizing training events in small learning objects, creating learning milestones, or recognizing achievements;
- Self-actualization: working with current or potential employers to provide trainees a challenge and the opportunity to reach their full career potential.

Need	Description
1. Physiological needs	Sustenance requirements of the human body such as hunger, thirst, and reproductive instincts. These needs are satisfied by air, water, food, nourishment, sleep, etc.
2. Safety needs	Freedom from physical or psychological threat, order, structure, predictability, and freedom from fear, anxiety, or apprehension. Living in a safe area, medical support, insurance, job security, and financial savings satisfies these needs.
3. Social needs	Sense of companionship, belonging, and affection, and its expression through sexuality. These needs for interaction with others are satisfied by friendship, sense of belonging, giving and receiving love, and affection.
4. Esteem needs	Esteem needs include two needs: a sense of personal esteem that includes confidence, strength, and achievement (internal esteem) and esteem from others, which includes prestige, recognition, attention, and appreciation (external esteem). These needs are satisfied by self-respect, achievement, attention, recognition, and reputation. Maslow would later (1971) include a level between esteem and self-actualization called the 'need for knowledge and aesthetics'. Based on Maslow's work, Lyman Porter (1961) later suggested another perspective of esteem needs, which he labelled *autonomy*.
5. Need for self-actualization	Need for self-fulfilment, to become everything one is capable of becoming. It is the quest of reaching one's full potential as a person. Unlike lower level needs, this need is never fully satisfied; as one grows psychologically there are always new opportunities to continue to grow. Self-actualized needs include needs such as truth, justice, wisdom, and meaning. Only a small percentage of the population reaches this level.
6. Need for self-transcendence *	Need to integrate with the human community, instead of remaining individualist and pursing self-goals.

* added later in Maslow, 1971

Table 160: Maslow's Hierarchical Needs
Source: Maslow, 1943, 1971

4. Erikson's Psychosocial Stages' Needs

Enik Erikson (1950) believed that the personality is developed in a series of stages and described the impact of social experience across the whole lifespan. In each stage, each person experiences a conflict that serves as a turning point in its own development. Erikson's psychosocial stages include a basic conflict and its correspondent needs (Table 161).

Stage	**Basic Conflict**	**Important Events**	**Outcome**
Infancy (birth to 18 months)	Trust *vs.* Mistrust	Feeding	Children develop a sense of trust when caregivers provide reliability, care, and affection. A lack of this will lead to mistrust.
Early Childhood (2 to 3 years)	Autonomy *vs.* Shame and doubt	Toilet Training	Children need to develop a sense of personal control over physical skills and a sense of independence. Success leads to feelings of autonomy, failure results in feelings of shame and doubt.
Preschool (3 to 5 years)	Initiative *vs.* Guilt	Exploration	Children need to begin asserting control and power over the environment. Success in this stage leads to a sense of purpose. Children who try to exert too much power experience disapproval, resulting in a sense of guilt.

School Age (6 to 11 years)	Industry *vs.* Inferiority	School	Children need to cope with new social and academic demands. Success leads to a sense of competence, while failure results in feelings of inferiority.
Adolescence (12 to 18 years)	Identity *vs.* Role confusion	Social relationships	Teens need to develop a sense of self and personal identity. Success leads to an ability to stay true to oneself, while failure leads to role confusion and a weak sense of self.
Young Adulthood (19 to 40 years)	Intimacy *vs.* Isolation	Relationships	Young adults need to form intimate, loving relationships with other people. Success leads to strong relationships, while failure results in loneliness and isolation.
Middle Adulthood (40 to 65 years)	"Generativity" *vs.* Stagnation	Work and parenthood	Adults need to create or nurture things that will outlast them, often by having children or creating a positive change that benefits other people. Success leads to feelings of usefulness and accomplishment, while failure results in shallow involvement in the world.
Maturity (65 to death)	Ego integrity *vs.* Despair	Reflection on life	Older adults need to look back on life and feel a sense of fulfilment. Success at this stage leads to feelings of wisdom, while failure results in regret, bitterness, and despair.

Table 161: Erikson's psychosocial stages and conflicts
Source: Erikson, 1950

5. Edwards Personal Preference Schedule

Based on Murray's list, Alan L. Edwards (1959) created a personality inventory called the Edwards Personal Preference Schedule (EPPS), which rates individuals in fifteen needs or motives. It comprises 225 pairs of statements in which items from each of the 15 needs are paired with items from the other 14 plus and with itself, for consistency sake (Table 162). Respondents are required to choose the preferred alternative in each pair - for example "I like to do things by myself" or "I like to help others do things". Due to this forced choice, the EPPS is said to be an *ipsative test*[32], and is not absolute: the statements are made in relation to the strength of the other needs of the individual.

Need	Description
1. Achievement	A need to accomplish tasks well.
2. Deference	A need to conform to customs and defer to others.
3. Order	A need to plan well and be organized.
4. Exhibition	A need to be the centre of attention in a group.
5. Autonomy	A need to be free of responsibilities and obligations.
6. Affiliation	A need to form strong friendships and attachments.
7. Intraception	A need to analyze behaviours and feelings of others.
8. Succourance	A need to receive support and attention from others.
9. Dominance	A need to be a leader and influence others.
10. Abasement	A need to accept blame for problems and confess errors to others.
11. Nurturance	A need to be of assistance to others.
12. Change	A need to modify things

[32] Multi-score measuring instrument in which responses that increase one of the scores necessarily reduce one or more of the others, so that the various scores must be interpreted relative to one another rather than in absolute terms. The Edwards Personal Preference Schedule (EPPS) measures 15 needs, but by endorsing items pertaining to certain needs, a respondent necessarily rejects items pertaining to others, and it is impossible to score high (or low) on all the needs.

13. Endurance	A need to follow through on tasks and complete assignments.
14. Heterosexuality	A need to be associated with and attractive to members of the opposite sex.
15. Aggression	A need to express one's opinion and be critical of others.

Table 162: 15 Manifest Needs of Edwards Personal Preference Schedule
Source: Adapted from A. L. Edwards, 1959

6. Herzberg's Two Factors Theory

Unlike Maslow, who intended to create a general theory of human (need) motivation, Herzberg's theory (1966, 1968; Herzberg *et al*., 1959) is very work-oriented and related to job satisfaction and is close to the positive/negative reinforcement conceptual model. Using the critical-incident technique, where employees were asked what pleased and displeased them about their work, Herzberg *et al.* (1959) found two sets of factors in job satisfaction: one predominant in the incidents of satisfaction and the other predominant in the incidents of dissatisfaction. They argue that there are two distinct human needs portrayed in this framework: first, there are *physiological needs* that can be fulfilled by money, for example, to purchase food and shelter; and second, there is the *psychological need* to achieve and grow, and this need is fulfilled by activities that cause one to grow. Herzberg and his colleagues (1959) found that the factors causing job satisfaction (and, presumably, motivation) were different from those that cause job dissatisfaction. For that reason, the two feelings cannot simply be treated as opposites of one another: the opposite of satisfaction is not dissatisfaction, but rather, no satisfaction; similarly, the opposite of dissatisfaction is no dissatisfaction. This means that there is not a single continuum that ranges from job dissatisfaction at one end of the continuum, to job satisfaction at the other end, but rather there are two separate continuums: one ranging from job satisfaction to no job satisfaction (motivation) and the other ranging from job dissatisfaction to no job dissatisfaction (hygiene).

Moreover, the factors that determine whether there is dissatisfaction or no dissatisfaction are not part of the work itself, but rather external factors (Table 163). The dissatisfiers consisted primary of *job context* factors such as working conditions, company policy, and hierarchical relationships. The satisfiers consisted primary of *job content* factors such as the work itself, achievement, power, and responsibility. Herzberg called *motivators* to the satisfiers and *hygiene factors* to the dissatisfying.

Leading to dissatisfaction (Hygiene components)	Leading to Satisfaction (Motivation components)
Company policy	Achievement
Supervision	Recognition
Relationship with boss	The work itself
Work conditions	Responsibility
Salary	Advancement
Relationship with peers	Growth
Security	

Table 163: Factors that affect job attitudes
Source: Herzberg, Mausner, & Snyderman, 1959

The term *hygiene* was used in the sense that they are considered maintenance factors that are necessary to avoid dissatisfaction but, that, by themselves, do not provide

satisfaction. Herzberg often referred to dissatisfiers as hygiene factors or KITA factors (the acronym for "kick in the ass"): the process of providing incentives or a threat of punishment to cause someone to do something. *Hygiene factors* can only cause dissatisfaction in case of absence or dysfunction. They are expected to be present, and have no satisfying consequences when fulfilled. For that, they are also referred as *extrinsic* needs. These factors only provide short-run results, because the real motivator factors are *intrinsic to the job* itself and do not result from the 'carrot and stick' incentive strategies. Unlike them, *satisfiers* serve to satisfy and motivate. The absence of these motivators does not cause dissatisfaction rather a neutral state, and they are referred as *intrinsic* sources of fulfilment.

Critics of Herzberg's theory argue that the two-factor result is observed because it is natural for people to take credit for satisfaction and to blame dissatisfaction on external factors (see *attribution theory* on page 356). Furthermore, job satisfaction does not necessarily imply a high level of motivation or productivity. Although for a long time Herzberg argued that satisfaction and dissatisfaction could not be considered two opposite sides of the same continuum (dissatisfaction/satisfaction), rather as unipolar and independent elements (no satisfaction/satisfaction and dissatisfaction/no dissatisfaction), after some criticism, he (1968) recognized that motivators and hygiene factors are not mutually exclusive and can overlap (for instance, the improvement of working conditions can enhance satisfaction) and redefined his theory stating that motivators are more likely than hygienes to enhance satisfaction and that hygienes are more likely than motivators to cause dissatisfaction. Yet, if the motivation-hygiene theory holds, management must not only provide hygiene factors to avoid employee dissatisfaction, but it must also provide factors intrinsic to the work itself, in order to employees be satisfied with their jobs.

7. Need Gratification Theory

Wolf's (1970, quoted in Oliver, 1997, p. 150) theoretical framework sums up the contradictory evidence from an individual (not environmental) perspective. His conclusions include:

- When an individual's lower-order needs are unfulfilled, both satisfaction and dissatisfaction result from fluctuations in the degree of fulfilment of these needs;
- When lower-order needs are partially satisfied, higher-order needs will provide sources of satisfaction and dissatisfaction, except that threats to the fulfilment of lower-order needs will induce dissatisfaction;
- When lower-order needs are unconditionally satisfied, satisfaction and dissatisfaction will derive from higher-order needs;
- *Ceteris paribus*, satisfaction results from the gratification of a need;
- *Ceteris paribus*, dissatisfaction results from the frustrated gratification of an active need or the threatened frustration of a previously fulfilled need;
- In contrast to satisfaction, motivation results from the perceived opportunity to gratify a need through (consumption) behaviour.

8. Alderfer's ERG Theory

Alderfer (1969, 1972a, 1972b) addressed some of the limitations of Maslow's theory and condensed Maslow's categories into three categories of needs – existence (E), relatedness (R) and growth (G), which become known as the ERG theory (Table 164).

Need	Description
Existence needs	Needs stemming from material and physiological desires, including feeding and shelter.
Relatedness needs	Needs that involve relationships, sharing, or mutuality as marriage, and membership.
Growth needs	Needs that involve creative or productive effects on the person and the environment, including needs to realize one's potential or develop new potentials.

Table 164: Alderfer's ERG needs

Besides the reduction in the number of levels, the Alderfer's ERG theory differs from Maslow's in three ways:

- It allows for different levels of needs to be pursued simultaneously;
- It allows the order of the needs to be different for different people;
- It acknowledges that if a higher level need remains unfulfilled, the person may regress to lower level needs that appear easier to satisfy. This is known as the frustration-regression principle.

Although the ERG theory presents a model of progressive needs, the hierarchical aspect is not rigid. This flexibility allows the ERG theory to account for a wider range of observed behaviours. For example, it can explain the "starving artist" who may place growth needs above existence ones. If Alderfer's theory holds and can be applied to training events, training companies must recognize that trainees have multiple needs to satisfy simultaneously. Furthermore, if training events do not provide opportunities to grow, the trainee may regress to relatedness needs. In this situation, the training provider must concentrate on those relatedness needs until the trainee is able to pursue growth needs again.

9. McClelland's Acquired Needs Theory

McClelland (1961) categorizes human motivation as deriving from three dominant needs:

- Need for achievement (n-ach), or personal accomplishment;
- Need for affiliation (n-aff), or desire of attention from others;
- And need for power (n-pow), to dominate things, decisions, or people.

These needs are acquired over time and shaped by one's life experience (which makes his theory also called the *learned needs theory*, the *three-need theory,* or *acquired-needs theory*).

Each person tends to have one of these needs that affects her more powerfully than others and thus affects her behaviours (Changing Minds, 2008):

- *Achievers* seek to excel and appreciate frequent *recognition* of how well they are doing. They avoid low risk activities that have no chance of gain, and high-risk situations where there is a significant chance of failure; they avoid low-risk situations because the easily attained success is not a genuine achievement. In high-risk projects, achievers see the outcome as one of chance, rather than one's own effort. They need regular feedback in order to monitor the progress of their achievements. They prefer either to work alone or with other high achievers.
- *Affiliation* seekers look for harmonious relationships with other people and need to feel accepted by others. They tend to conform to the norms of their work group and shy away from standing out. They prefer tasks that provide significant personal interaction and seek *approval* rather than *recognition*;
- *Power* seekers want one of two types of power - personal and institutional. Those who need personal power want to direct others, and this need often is perceived as undesirable. Individuals that need institutional power (also known as social power) want to organize the efforts of others to further the goals of the organization. They seek neither recognition nor approval from others, only *agreement and compliance*.

McClelland used the Thematic Apperception Test (TAT) as a tool to measure the individual needs of different people. The test determines the individual's score for each of the needs of achievement, affiliation, and power. It is a test of imagination that presents the person with a series of ambiguous pictures, and the person is asked to develop a spontaneous story for each picture. The assumption is that the person will project her own needs into the story. The TAT score can be used to suggest the types of training courses for which the person is suited or that are needed to change a person's need profile.

McClelland needs provide some hypothesis in terms of training needs:

- Trainees with high needs for *achievement* should attend challenging training programs with reachable goals, and need frequent feedback. Although money is not an important motivator, is an effective form of training consequence or side effect. Money for value, final grades, and job impact of the training program are important;
- Trainees with high *affiliation* needs seek, and perform best in, cooperative training environments; they tend to value the training experience and the training group.
- Trainees with high needs for *power* must be given the opportunity to show their knowledge and experience prior to training, need to feel that they influence others, including the trainer, and need to be the leader of their working group.

10. Soliman's Unipolar Theory on Herzberg's Two-Factor Theory

Based on Herzberg's two-factor theory, Soliman (1979, quoted on Oliver, 1997, p. 149-150) concludes that the operation of motivators and hygienes is moderated by the benevolence of the *environment*. Soliman offers an additional element to Herzberg's

theory showing that the satisfaction/dissatisfaction concept is unipolar, rather than bipolar, as Herzberg proposed. He also provides elements to support the idea that in environments where lower-order needs are only partially, but still adequately, satisfied so that individuals can begin to process higher-order needs, both motivators and hygienes can be sources of satisfaction and dissatisfaction (Table 165):

- In work environments where most lower-order needs are satisfied, higher-order needs are powerful satisfiers, and the satisfaction of lower-order needs contributes little to satisfaction. Once higher-order needs are met, the threat or realization of a loss in higher-order need fulfilment is dissatisfying;
- In environments where lower-order needs are not satisfied, lower-order need deprivation becomes an important source of job dissatisfaction. Later provision of these needs is a source of satisfaction. Lack of fulfilment of higher-order need will be an unlikely source of dissatisfaction because the attention is focused on lower-order strivings.

	Environmental fulfilment		
Need Level	Deficit	Midrange	Fulfilled
Lower order	Satisfaction/ dissatisfaction	Satisfaction/ dissatisfaction	Not processed
Higher order	Not processed	Satisfaction/ dissatisfaction	Satisfaction/ dissatisfaction

Table 165: Effect of need level and fulfilment on satisfaction/dissatisfaction

11. Deci's Intrinsic Motivation Theory

Intrinsic motivation (Deci & Ryan, 1985, 1991) occurs when a person is motivated by internal factors, as opposed to external rewards, as in external motivation. Intrinsic motivation drives people to do things just for pleasure, for the fun of doing it, or because they believe it is a good or right thing to do. Miniature model building is an example of intrinsic motivation. In training contexts, intrinsic motivation is presumably higher when it is the trainee that has to pay for the course (rather than the company she works for or within a co-financed training program), or when she attends social training courses (as how to reuse garbage to create decorative pieces).

12. Petri's Extrinsic Motivation Theory

Extrinsic motivation (Petri, 1991) exists when a person is motivated by external factors, as opposed to the internal drivers of intrinsic motivation. Extrinsic motivation drives people to do things for tangible rewards or pressures, rather than for the fun of it. Supermarkets' loyalty and discounts cards, air miles, corporate bonuses, and sales commissions are examples of extrinsic motivators. Price discounts in training events are also extrinsic motivators. Traditional (face to face) training companies, for instance, usually offer off-peak period discount prices or early-enrolment discounts. Extrinsic motivation can be measured by price sensitivity and is closely related to the *over justification effect* (Deci, Koestner, & Ryan, 2001; Lepper, Greene, & Nisbett, 1973), which occurs when an external incentive, such as money or a prize, decreases a person's intrinsic motivation to perform a task.

13. Other Inspiring Theories

13.1. Cognitive Dissonance

Festinger (1957; Festinger & Carlsmith, 1959) created the expression *cognitive dissonance* to define the feeling of uncomfortable tension that one person has, which comes from holding two conflicting thoughts in the mind at the same time.

Dissonance increases with:

- The importance of the subject to the person;
- How strongly the dissonant thoughts conflict;
- The person's inability to rationalize and explain away the conflict;
- Behaviours that the person makes that are against to what she believes in;
- The importance and impact of the decision, along with the difficulty of reversing it. For instance, discomfort about making the wrong choice of car is bigger than when choosing a meal or a lamp.

Cognitive dissonance is a tension between the two opposing thoughts. To release the tension, one of three actions can be taken:

- Change behaviour;
- Justify behaviour by changing the conflicting cognition;
- Justify behaviour by adding new cognitions.

Cognitive dissonance is a very powerful motivator that will often lead the person to change one or other of the conflicting belief or behaviour. As smokers find all kinds of reasons to explain away their unhealthy habit, highly self-confident persons with training needs will argue they are attending a training course not because they need and lack some competences, but rather because they want to know a little bit of everything and they enjoy being updated. Likewise, a person that believes in lifelong continual training has a cognitive dissonance if she does not attend any training course for several years and will enrol in training courses to deal with it, even if she does not have any specific training need at the moment.

13.2. Consistency Theory

Individuals are at a comfortable state if their inner systems (beliefs, attitudes, values, etc.) all support one another and are also supported by external evidence (behaviour and with social norms). This includes the need to believe they are being consistent with social norms ("I keep my promises", "I don't cheat others", etc.). When there is no consistency between behaviour and those inner systems, discomfort of cognitive dissonance occurs, as well as when there is no consistency between behaviour and social norms. When there is conflict between behaviours that are consistent with inner systems and behaviours that are consistent with social norms, the potential threat of social exclusion often sways the individual towards the latter, even though it may cause significant inner dissonance. For instance, individuals that have dropped out from school will feel inconsistency if their group of friends or co-workers is high educated or usually attends training courses.

Individuals use several strategies to achieve consistency between conflicting items as denial or ignoring ("I didn't see it happen"), rationalization and excuses ("It was going to fall anyway"), separation of items ("I don't use my car enough to make a difference"), transcendence ("nobody is perfect, I can't do everything at a time"), changing item ("I'll be more careful next time", "I will make an effort to study while working"), persuasion ("I'm good, really, don't I?, I don't need training").

13.3. Attribution Theory

Attribution theory (Heider, 1958; E. E. Jones & Davis, 1965; Kammer, 1982; Kelley, 1967; Roesch & Amirkham, 1997) argues that individuals have a need to explain the world, attributing causes and explaining behaviour. When a person makes a mistake, she tends to use external attribution, imputing the error to situational factors, rather than blaming herself. Regarding the errors of another person, she will use internal attribution, defending that it was due to internal personality factors. In success situations, she attributes her own success to internal factors and the others' success to external factors, such as pure luck. This explains, for instance, why, in the end of a football game, supporters tend to say "we won', if their team has won, but say 'they lost" if their team did not won the game. So, people tend to blame others and avoid self-recrimination, and these attributions are the result of personal emotional and motivational drivers. Attribution is a two-step process that starts with an automatic internal attribution, followed by a slower consideration of whether an external attribution is more appropriate, although this last step is not always present.

In the training context, this could mean that if the learning process is effective, the trainee will attribute that to her previous knowledge and experience and to her ability to adapt to different training environments and intellectual skills. If some problems occur during the training event, such as her inadaptation to the e-learning way of learning, she will tend to blame the platform, the tutor, or the supporting staff.

13.4. McGregor's X and Y Theories

McGregor (1960) proposed two theories to approach employee's motivation, to which he called *theory X* and *theory Y*. Theory X assumes that the average person dislikes work and attempts to avoid it, has no ambition, wants no responsibility, would rather follow than lead, is self-centred and, therefore, does not care about organizational goals, resists change, and is gullible and not particularly intelligent, and will work only for money and security. Management approaches under theory X are based on coercion, implicit threats, close supervision, and tight controls, or, in a softer style, on being permissive and seek harmony with the hope that, in return, employees will cooperate when asked to do so. The harder approach results in hostility, purposely low-output, and hard-line union demands. The soft approach results in ever-increasing requests for more rewards in exchange for ever-decreasing work output. McGregor asserts that the assumptions of *theory X* are not correct and proposed an alternative, which he called Theory Y, which has the following assumptions:

- Work can be as natural as play and rest;
- People will be self-directed to meet their work objectives if they are committed to them;
- People will be committed to their objectives if rewards address higher needs, such

as self-fulfilment;
- Under these conditions, people will seek responsibility;
- Most people can handle responsibility because creativity and ingenuity are common in the population.

Under these assumptions, there is an opportunity to align personal goals with organizational goals by using the employee's own quest for fulfilment as the motivator. Decentralization and delegation, job enlargement, participative management, and performance appraisals will result in a higher level of motivation of employees. McGregor recognized that some people may not have reached the level of maturity assumed by theory Y and, therefore, may need tighter controls that can be relaxed as the employee develops. If theory Y holds, one can expect trainees to be motivated with the training event in itself, not because they receive incentives to attend it. Moreover, teamwork can be suggested, active instructional methods can be used, and informal learning practices can be helpful.

13.5. Side Bet Theory

Side bet theory (H. Becker, 1960) is often used to test models of organizational commitment, which usually include side-bet indexes such as age, tenure, education, marriage, gender, salary, and position. Side bets refers to the accumulation of investments valued by the individual that would be lost or deemed worthless if she were to leave the organization. The individual is bound to the organization by extraneous factors, such as income and hierarchical position, and *intraneous* factors, such as the fact that he used to the company and the way things are done in their, and interpersonal relationships. The loss of friendships and seniority rights can also be a factor when changing employers (Gattiker, 1992). Individuals make choices that include side bets that are based on a main bet or activity succeeding. If the main bet fails, then she will also loose the side bet. This means that the side bets increase the commitment to the main bet. As Becker (1960) puts it, "commitments come into being when a person, by making a side-bet, links extraneous interests with a consistent line of activity". Side bet theory helps to explain why a person may refuse a higher paid job: she can perceive it as riskier in terms of potential failure while she has a side bet, which is the acquisition of a new house, which will require a stable income. The reverse situation can also occur: if a person makes a side bet on which she win if the main bet fails, then her commitment to the main bet fails.

In a training context, this may suggest that a person may be attending a course (the side bet) just in case her current job fails (main bet) and she needs to reinvent her career. In the perspective of companies, side bet theory suggests that increased commitment to the company can be achieved if employees are led to make training side-bets that will help them to achieve their working objectives and help them to get promoted.

13.6. Expectancy Theory

Unlike Maslow and Herzberg, Vroom’s theory (1964) is not focused on needs, but rather on outcomes. Moreover, whereas Maslow and Herzberg look at the relationship between internal needs and the effort expended to fulfil them, Vroom separates effort (which arises from motivation), performance, and outcomes. In order for a person to be

motivated, that effort, performance, and motivation must be linked and Vroom proposes three variables to account for this (Table 166):

- *Expectancy* is the belief that increased effort will lead to increased performance;
- *Instrumentality* is the belief that if the person performs well, a valued outcome will be received;
- *Valence* is the importance that the individual places upon the expected outcome. For instance, if she is mainly motivated by power, she might not value additional money.

Vroom suggests that an employee's beliefs about expectancy, instrumentality, and valence interact to create a motivation force that can be calculated as this: motivation = valence x expectancy x instrumentality. In a training context, this means that the individual changes her level of effort according to the value that she places on the outcome of the training process and on the perception of the strength of the relation between effort and outcome i.e., she will not be motivated if she believes that she will not perform better after the learning effort, or if she believes that the increased performance will not increase her rewards, or even if she does not value the rewards that she will get.

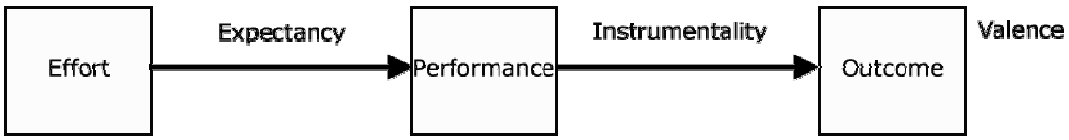

Table 166: Expectancy theory
Source: Vroom, 1964

13.7. Self-Perception Theory

Self-perception theory (Bem, 1972; Festinger & Carlsmith, 1959; Zanna & Cooper, 1974) provides an alternative explanation for cognitive dissonance effects: people decide on their own attitudes and feelings from watching themselves behave in various situations i.e., they develop their attitudes by observing their behaviour and concluding what attitudes must have caused them. Festinger and Carlsmith's (1959) and later Bem (1972) made an experience where people were paid $1 or $20 to lie. Cognitive dissonance says that people felt bad about lying for $1 because they could not justify the act. Self-perception takes an 'observer's view, concluding that those who were paid $1 must have really enjoyed it (because $1 does not justify the act), whilst those who were paid $20 were just doing it for the money.

This theory suggests that if a person is 'invited' by the company she works for to attend several online training courses, and does not particularly dislike them, she will probably conclude that she likes those online training and that, in the future, she will be willing to enrol voluntarily in more online training courses.

13.8. Opponent-Process Theory

Opponent-process theory was proposed by Solomon (R. L. Solomon, 1980; R. L. Solomon & Corbit, 1974) and was inspired in the opponent-process theory of colour vision (Hurvich & Jameson, 1957). This theory claims that emotions are paired, and that when one emotion in a pair is experienced, the other is suppressed. Solomon and Corbit (1974) analyzed the opponent-process of emotions of skydivers. They found that beginners have greater levels of *fear* than more experienced skydivers, but less *pleasure*, and that this is the result of a shift over time from fear to pleasure in the fear-pleasure emotion pair.

In a training context, opponent-process theory might suggest that the purposeful-procrastinating emotion pair as a key learning driver.

13.9. Belief Perseverance and Affect Perseverance Theories

Affect perseverance (also known as *affective perseverance*) (Sherman & Kim, 2002) occurs where an emotional preference continues even after the thoughts that gave rise to the original emotion are invalidated. Feelings are often independent of facts and evidence, and, once initiated, they tend to take on a life of their own. For example, a woman falls in love with a man because he is kind to her, but when he becomes abusive, her affection remains.

In terms of training, this means that to emotionally engage someone with a training course, it should start with some rational purpose that makes sense to her. Then, when the emotions are established, rationale can be removed or reduced. *Affect perseverance* is similar to *belief perseverance* (Ross *et al*., 1975) that stats that once a person has decided to believe in something, she will tend to keep on believing it, even in the face of disconfirming evidence. For training purposes, this idea is very close to customer loyalty after an episode of insatisfaction: if the trainer likes one training supplier, as a consequence of past experiences, she will continue to enrol in its training courses, even after one bad experience in particular.

13.10. Cognitive Evaluation Theory

Created by Deci and Ryan (Deci, 1975; Deci & Ryan, 1985, 1991), the theory of *cognitive evaluation* stats that when looking at a task, people tend to evaluate it in terms of how well it meets their needs to feel competent and in control. If the individual thinks that she will be able to complete the task, she will be intrinsically motivated to complete it, requiring no further external motivation. This means that if a training course is presented to a person that evaluates it as something with a comfortable level of challenge but doable and that she will succeed, she will be motivated to attend that course.

13.11. Disconfirmation Bias

Disconfirmation bias (K. Edwards & Smith, 1996; Lord et al., 1979) is close to cognitive dissonance. It states that when an individual is faced with evidence for and against her beliefs, she will be more likely to accept the evidence that supports her

beliefs with little scrutiny, yet criticize and reject that which disconfirms her beliefs. In other words, she will avoid evidence that might show that she is wrong. The other way around also holds, i.e., there is a confirmation bias: individuals reinforce their existing attitudes by selectively collecting new evidence, by interpreting evidence in a biased way, or by selectively recalling information from memory.

This suggests that if an individual is a supporter of e-learning, she will avoid or pay little attention to evidences of problems, disadvantages, or limitations of e-learning. It also suggests that if a trainee is against e-learning as a training mode, in order to change her belief, an e-learning company needs to give her significant evidence to overcome the disconfirmation bias.

13.12. Reactance Theory

Reactance is the emotional reaction of contradiction to rules, regulations, or orders that threaten or eliminate specific behavioural freedom. Reactance leads the person to adopt an attitude that is contrary to what she intended and increases her resistance to persuasion. Reaction theory (Brehm, 1966; Pennebaker & Sanders, 1976) states that when individuals feel that their freedom to choose an action is threatened, reactance occurs, which motivates them to perform the behaviour that has been forbidden, thus proving that their freedom was not jeopardize.

In a training context, this suggests that reactance can occur if a company *orders* its employees to attend a course, rather than *suggesting* them to attend the course, and that the training attitudes can be significant different in the two situations.

13.13. Investment Model

The *investment model* (Rusbult, 1980, 1983; Rusbult *et al*., 1998) defends that the commitment depends on how satisfied individuals are about a) rewards and costs, and what they perceive as a fair balance, b) the comparison with potential alternative relationships, and c) how much they have already invested in the relationship, and that investment includes time spent, emotional investment, or financial commitment. This theory claims that a person will stay in a relationship if she has already invested heavily in it.

In a training context, this suggests that an individual will be more likely to drop out in the beginning of the course, rather than in the end, that she will be more committed if she is unable to disclose alternative training courses that could help her to achieve her objectives, and that she will be more committed if she had paid for the course.

13.14. Glasser's Control and Choice Theories

Glasser (1984) proposes a *control theory* according to which people have a deep need for control that itself, paradoxically, controls much of their lives. According to him, this endless effort to control everything and everyone is impossible and ungrateful, and leads to frustration. The alternative to control is to see life and the world as a series of choices, and this leads Glasser to the *choice theory* (Glasser, 1999b) where he recommends that individuals should not try to control everything, but rather see the world as a series of choices.

Both control and choice theories are used in educational contexts (Glasser, 1999a) and can be used in motivational studies on e-learning courses. People that are obsessed with control tend to need to know about everything – their training motivation comes from the need to control. Others, that are closer to choice theory, can attend a training course in a quite different area from that where they work on for the purpose of creating choices, either lifestyle or professional choices. Choice theory (Glasser, 2008) states that all that individuals do is behave, that almost all behaviour is chosen, and that individuals are driven by their genes to satisfy five *basic needs*: 1) survival, 2) love and belonging, 3) power, 4) freedom, and 5) fun. Glasser defends that the most important need is love and belonging, as closeness and connectedness with those that one cares about is a requisite for satisfying all of the needs. Choice theory includes recommendations for the *seven caring habits*, which replace the external control and the *seven deadly habits* (Table 167).

Seven Caring Habits	**Seven Deadly Habits**
Supporting	Criticizing
Encouraging	Blaming
Listening	Complaining
Accepting	Nagging
Trusting	Threatening
Respecting	Punishing
Negotiating differences	Bribing, rewarding to control

Table 167: Glasser's caring and deadly habits
Souce: Glasser, 2008

13.15. Attitude-Behaviour Consistency

Kallgren and Wood (1986) defend that if the purpose is to have people behaving in a certain way, one can never assume that their attitude will actually lead to the desired behaviour, if certain factors are not present. They argue that peoples' attitudes (predispositions to behaviour) and actual behaviours are more likely to align if the following factors are true:

- Attitude and behaviour are both constrained to very specific circumstances;
- There have been many opportunities to express attitude through behaviour;
- The person has a history of attitude-behaviour consistency;
- The attitudes are based on personal experience, rather than being copied from others;
- The attitudes are proven by past experience;
- There is no social desirability bias, where the presence of others will lead the person into uncharacteristic behaviour;
- The person is low in self-monitoring, so she does not distract;
- The attitude is strongly held and is around core beliefs.

Attitude-behaviour consistency (Kallgren & Wood, 1986) provides a contribution to our focus of study: Even in the presence of a need for training and a positive attitude regarding a specific training provider, commitment to learn or to transfer (actual behaviour) may not be certain if the above conditions are not met. In fact, not only several barriers can block the decision of enrolling in a training program, but also

current literature has small evidence regarding the relationship between attitudes and behaviour. For instance, it has been argued (Abelson, 1972; Payne, Bettman, & Johnson, 1992; Pinder, 1998) that people's statements of their attitudes justify their past behaviour, rather than indicate future behaviour.

13.16. Self-Discrepancy Theory

Self-discrepancy was developed by Higgins (1987) and is the gap between internalized standards called *self-guides*. This theory is different from other incompatibility theories (for instance, dissonance or self-inconsistency), since these only recognize positive or negative emotions, while self-discrepancy explains the distinct types of emotional discomfort associated with different disparities. Higgins (1987) asserts two types of cognitive dimensions or standpoints on the individual self: (1) one's own personal standpoint – the *domain of the self* and (2) the standpoint of a significant other (e. g., mother, father, or close friend), i.e., the *standpoints of the self.*

Higgins (1987) outlined three types of self-domains:

- The *actual self*, which is one's representation of the attributes that are believed (by oneself or another) to be possessed by an individual, i.e., who she really is;
- The *ideal self*, which is one's representation of the attributes that someone (either oneself or another) would like one to possess, i.e., who she would like to be;
- And *the ought self*, which refers to the attributes that someone (oneself or another) believes one should possess, i.e., the who she feels it is her duty to be.

According to Higgins (1987), when discrepancies involve the *domains of the self* and *standpoints on the self*, emotional vulnerabilities, such as anxiety or anger, can occur. Self-discrepancies vary between individuals. Those individuals that have a small discrepancy between their actual self conception and their ideal self are presumed to be more motivated and to have greater self esteem. Individuals are motivated to reduce this discrepancy and maintain a consistency between beliefs and self-perceptions.

In a training context, this suggests that a person will tend to believe that, by attending the course, she will be leading towards her aspirations, which means that she may become too optimistic regarding the real and effective utility of the course.

13.17. Goal-Setting Theory

The theory of goal-setting (Locke, 1968, 1996; Locke & Latham, 1990; Tetlock & Kim, 1987) states that motivation will be higher if the goals are *clear and understandable* (so that individuals know what to do), *challenging* (so that they will be stimulated and not be bored), and a*chievable* (so that they feel that they are unlikely to fail).

Goal-setting theory has two corollaries:

- If other people set the goals without the involvement of the individual, then the person is less likely to be motivated to work, than if she feels that she participated or set herself the goals;
- Individuals need feedback when they are working in a task in order to determine

whether or not they are succeeding. Positive feedback will provide extra motivation.

In a training context, this suggests that learning objectives should be negotiated in the beginning of the course (and not imposed) and periodic feedback regarding learning achievements should be given to learners during the course.

13.18. Escape Theory

Escape theory (Baumeister, 1990; Heatherton & Baumeister, 1991) provides a different way of looking to motivation. It asserts that people engage in some activities because they believe that those activities will help them to get away from their lives and forget their unhappiness. Escaping activities include sports, hobbies, and even training courses. Other less harmless activities include suicide attempts.

In a training context, this might suggest that a person may be attending an evening course just to forget how miserable she feels with her marriage, and do avoid being at home at dinner time.

13.19. Theory of Attribute Need Fulfilment

According to Oliver (1995), performance, and previous need fulfilment, are significant predictors of product need fulfilment. First-level need fulfilment is positively related to attribute performance, negatively related to the degree to which the need was previously fulfilled, and unrelated to the level of overall need. Product-level need fulfilment is a function of attribute-level fulfilment and satisfaction is related to product-level fulfilment and to the performance of the attribute.

Appendix 8: Backgrounds of the Theory of Value: Axiology

1. A Theory of Value

Frondizi (1971, p. 3) claims that the value theory did not exist until the end of the 19th century. Yet, modern axiology, related to the desired, the preferred, and the good, was raised in Plato's *theory of forms or ideas*, in his idea of the Good, and developed by Aristotle's relation of higher value with final cause in God, and in Kant's relationship of knowledge with moral, aesthetic, and religious values. The meaning of value, as it is seen today, was studied during that period by several philosophers, under the influence of neo-Kantians as Lotze, Ritschl, Meinong, and von Ehrenfels. These first essays in axiology were directed to separate value from *facts* (Frondizi, 1971, p. 3). Yet, the most important contributions were given years later, in the beginning of the 20th century, through the work of Urban (1909), von Hartmann's o*utline of axiology* (1908), Münsterberg's (1909) *eternal values*, Nietzsche's (1910, 1914) *theory of transvaluation of all values*, later through Perry's (1926) *general theory of value*, Dewey's *theory of valuation* (1939), and, more recently, through Frondizi's (1971) question: *what is value?*

2. Value and Values

A pertinent question may arise regarding whether or not there is a difference between *value* (singular) and *values* (plural). It is generally accepted that value (singular) is used to designate *the outcome of an evaluative judgment* (that is the *summary valuation*), whereas values (plural) refers to standards, rules, criteria, norms, goals, or ideals on the basis of which evaluative judgments get made (that is, the underlying *evaluative criteria*) (Holbrook, 1999c, p. 8). *Values* stand for enduring beliefs or for what is ultimately good and desirable in life (Rokeach, 1973, quoted in Boztepe, 2007) while *value* are temporary judgments. As a temporary judgment, value can easily change over time, and changes in value perceptions are easier to make and accept than changes in values.

3. Value and Valuation

3.1. Is Value Ejaculatory or the Result of a Valuation Process?

Valuations are constant phenomena of human behaviour. Emotions and desires frame means and ends, and having ends-in-view, hence formulating a valuation, is what distinct human from nonhuman behaviour. Human beings are continuously engaged in valuations (Dewey, 1939, pp. 57-58, 66), but this does not mean that human beings are permanently able to formulate valuation-propositions.

John Dewey (1939, p. 1) alerts that values can be viewed, at one extreme, as the principles upon which art, science, and morals depend for their validity. At the other extreme, values can be but emotional epithets or mere *ejaculatory expressions* and between these two conceptions lay several intermediate views. Natural sciences, such as astronomy, physics, biology, and chemistry, generally do not contain expressions that can be regarded as standing for value-facts or conceptions, while human-related sciences generally create, explicitly, value propositions. Yet, as Dewey (1939, p. 2)

alerts, the elimination of value-conceptions for nonhuman sciences is recent, as, for centuries, nature was supposed to be what it is because of the presence of *ends* within it: All natural changes were believed to be striving to actualize these ends as the goals toward which they moved by their own nature.

In what human sciences are concerned, value propositions seem to be the driving force of human behaviour: "all planned human conduct, personal and collective, seems to be influenced, if not controlled, by estimates of value or worth of ends to be attained" (Dewey, 1939, p. 2). Human considerations, such as the expressions good or bad, and right or wrong, influence and control the human behaviour. This suggests that all conduct or behaviour that is not simply impulsive or mechanically routine involves *valuations*. It also means that the problem of valuation is associated with human activities and human relations (Dewey, 1939, p. 3). What Dewey did not say is that, although routines do not involve valuations (at least every time they occur), from time to time, they can be questioned and valuations be re-created. Besides routines, there is also what Dewey called *ejaculatory value-expressions*. In these cases, these value expressions do not involve the expression of feelings. The first cries of a baby, and her first smiles, cooings, gurglings, and squeals can be involuntarily uttered, but they can be taken, by other persons, as *symptoms or signs* of an organic state (the baby is hungry or has a wet dipper). When the baby matures, he becomes aware of the connection between a cry (the activity evoked) and the consequences produced in response to it. The cry is now made to experience the expected consequences. While the first cries are organic and purely ejaculatory, these last ones are made on purpose, that is, with the intent to evoke a response that will have certain consequences. In this situation, her cry contains value-expressions (Dewey, 1939, pp. 6-13).

Dewey's dual perspectives on value is applicable in concrete situations, namely in e-learning. Whenever an individual decides, by herself, to attend a training course, she is communicating and revealing the existence of certain feelings, which are the result of a valuation process, and that express the desire to obtain other feelings or facts in consequence of the activity evoked (the training). Yet, one must not discard the scenario where an individual attends a training course because she is routinely used to it (for example, it is the annual week of corporate training on safety) or because she is invited or forced by the company to attend the course ("my company sent me to here"). In this situations, value expressions may be fuzzy ("I don't know why they sent me to here") but that does not mean that there is no original value proposition, which may have been made some time ago and/or by someone else.

3.2. Valuation and Value Propositions

Value cannot be separate from valuation, which is the process that leads to the creation of value, and confusion between both must be avoided. As Frondizi (1971, p. 20) puts it, "to confuse valuation with value is like confusing perception with the object perceived. Perception does not create the object; it grasps it". A value is *final,* in the sense that it represents the conclusion of a process of analytic appraisals of conditions operating in a concrete case, the conditions including impulses and desires on one side, and external conditions on the other. The conditions under which desires take shape, and foreseen consequences are projected as ends to be reached, and these conditions are those of need, deficit, and conflict (Dewey, 1939, p. 45).

The creation and meaning of value propositions are explained by Dewey (1939, pp. 51-52):

> "Value-propositions of the distinctive sort exist whenever things are appraised as to their suitability and serviceability as means, for such propositions are not about things or events that have occurred or that already exist (…), but are about things to be brought into existence. Moreover, while they are logically conditioned upon matter-of-fact predictions, they are more than simple predictions, for the things in question are such as will not take place, under the given circumstances, except through the intervention of some personal act".

Value is different from valuation, but value cannot be divorced from valuation and value cannot exist without valuation. As Frondizi (1971, p. 153) puts it, there is no value without valuation, but it is also true that there is no valuation without value. Whenever there is a valuation, there is an intellectual factor – a factor of inquiry, for the end-in-view is formed and projected as that, which, if acted upon, will supply the existing need or lack, and resolve the existing conflict (Dewey, 1939, p. 34). As we will discuss later, axiologists do not agree whether value is objective or subjective, but they certainly agree that valuation is subjective. Yet, even though there is no doubt that valuation is subjective, axiologists do not agree what is prior to what. The objectivists claim that value is prior to valuation and if there were no value, there would not be anything to evaluate. Moreover, things do not have value because they are desired, but they are desired because they are valuable. According to this objectivist approach, one does not desire objects without a reason, but because something is within them which makes them desirable and worthy of being desired. Yet, while the objectivists defend that value exists prior to valuation, subjectivists claim that it is the valuation that constitutes value and that valuation is the act of a subject recognizing value in an object (Frondizi, 1971, p. 20). Finally, value cannot be reduced to valuation for two main reasons. On one hand, if the person is unable to find validation criteria, due, for instance, to a methodological difficulty, that does not mean that there are not certain qualities within the object that can be valuable. On the other hand, even though value is given in an actual or possible valuation, it has to be clear the distinction between valuation, as a psychological fact, and the *validity* of this valuation.

3.3. Value, Valuing, Valuation, Prizing and Appraising: Valuation as Appraisal or as Evaluation

When the expression 'value' designates not the verb (to value) but the noun, it "designates what common speech calls a *valuable* – something that is the object of a certain kind of activity" (Dewey, 1939, pp. 5-6). Valuation is a relation between a personal attitude and extra-personal things – a relation which, moreover, includes a motor (and hence physical) element, and involves a separation of means and end, of appraisal and prizing (Dewey, 1939, pp. 36-37). Dewey (1939, pp. 5-6) distinguishes two approaches to valuation: prizing and appraising. V*aluing* and *valuation* are both verbally employed to designate both *prizing* (in the sense of holding precious, dear) and *appraising* (in the sense of putting a value upon, assigning value to), but there are some differences:

- In *prizing*, the emphasis falls upon something having definite personal reference, and has a quality called emotional;

- Valuation as *appraisal*, however, is primarily concerned with a relational property of objects so that an intellectual aspect is uppermost of the same general sort that is found in *estimate* as distinguished from the personal-emotional word *esteem.*

Dewey (1939, pp. 5-6) recalls that *praise*, *prize*, and *price* are all derived from the same Latin word, that *appreciate* and *appraise* were once used interchangeably, and that *dear* is still used as equivalent both to *precious* and to *costly* in monetary price. He (1939, pp. 20-21) also gives an important contribution to differentiate two recognized meanings of valuation, namely *appraisal* and *evaluation*:

- *Appraisal* states a rule for determination of an act to be performed, its reference being to the future, and not something already accomplished or done. The future act or state is not set forth as a prediction of what will happen, but as something which *shall* or *should* happen;
- The *evaluation* proposition states a matter of accomplished fact.

Valuation has, therefore, two additional recognized meanings: one of as *appraisal* and the other as *evaluation*. If one says, when expressing an appraisal proposition, that 'this online course is worth € 3000' it is different from the evaluation proposition 'this course is a 120 hours certification course'. The first proposition may be stated by the trainee as a prediction of the marginal month revenue that is expected. The future act or state is not set forth as a prediction of what will happen, but as something which *shall or should* happen. This proposition lays a norm that must be understood as a condition to be conformed to in definite forms of future action. This norm will also be used as the rule or criteria for judging the value of proposed modes of behaviour. For instance, a € 3.000/month increase in revenue will be the minimum value accepted for a valuable course. Yet, if the same proposition is stated by the training company, it can have two different meanings. On one hand, it can express the value by which the company is interested on selling each registration, and would be an evaluation proposition. On the other hand, it can also state a future marginal revenue that can be expected by the trainee, and, in that case, it would be an appraisal proposition proposal. We believe that both, appraisal and evaluation propositions, do occur in e-learning while in some other services that may not happen. For example, medical treatments are appraised with reference to the end of effecting recovery of health: When a patient goes to the doctor, she is only expecting to restore her health. She is not interested in medicine just because it is good, but because it should relieve her from pain or cure her.

3.4. Value, Desires, Wishings, Interests, and Enjoyment

Valuation involves *desiring*, because valuations in the sense of prizing and caring for, occur only when it is necessary to bring something into existence which is lacking, or to conserve in existence something which is menaced by outside conditions (Dewey, 1939, p. 15). According to Dewey (1939, p. 15), *desire* is different from mere *wishing* because wishes occur in the absence of effort. *Effort* is the essence of the tension involved in desire, and is expressed in behaviour. Yet, desire is conceived as merely personal and, hence, as not capable of being stated in terms of events. Wishes and desires are both weaker concepts than valuation.

Dewey (1939, p. 37) also makes a clear distinction between *desire* and *enjoyment*: valuation as *desire* or *interest* is different from *enjoyment*, because enjoyment can occur with or without the existence of desire and effort. Whenever there is desire and effort, enjoyment will occur because the activity put forth to obtain the conditions required to satisfy the desire was successful. In this situation, there is enjoyment but also desire and valuation. In the opposite case, for instance, if one has been left a fortune by an unknown relative, there is enjoyment but no valuation, and therefore, according to Dewey, no value. These two types of enjoyment are different, since one is connected with direct possession, and the other is conditioned upon prior lack of possession, the case where desire and valuation do occur. The moment one begins to prize, desire and end-in-view emerge, and valuation does occur.

Dewey (1939, p. 54) relates valuation to *desire* and discards *interest* as the source of value. An *interest***,** he says, "represents not just a desire, but a set of interrelated desires which have been found in experience to produce, because of their connection with one another, a definite order in the processes of continuing behaviour". While Dewey defines desire as the basis of valuation, Perry (1926) has a different opinion: For him, *interest* is the origin and basis of value. *Interest* is the "original source and constant feature of all value. That which is an object of interest is *eo ipso* invested with value" (Perry, 1926, p. 115). He proceeds claiming that "an object is valuable when qualified by an act of interest. An object acquires value when any interest, whatever it be, is taken in it. Perry (1926, p. 116) expressed his view in an equation formulated as "x is valuable = interest is taken in x". Although Perry is known for his subjectivist theory of value based on interest, and for being the main promoter of this approach, some years before, Prall (1921, quoted in Perry, 1926, p. 117) expressed similar ideas: "anything is properly said to have value in case, and only in case, it is the object of the affective motor response which we call being interested in, positively or negatively…". Later, Perry (1954, pp. 2-3) would recall his own view and would claim that a thing - anything - has value, or is valuable, in the original and generic sense, when it is the object of an interest - any interest. Or whatever is object of interest, is *ipso facto* valuable. He would also provide for a definition of *interest* as "a train of events determined by expectation of its outcome". Or, "a thing is an object of interest when its being expected to induce actions looking to its realization or non-realization" (Perry, 1954, p. 3). *Interest*, he claims (1926, p. 27), "has to do with the whole affective-motor life, and should not be limited to its ordinary meaning: in some cases, interest can be replaced by desire, will, or purpose, but it never has the meaning of 'curiosity' or of an 'object capable of provoking curiosity' (interesting)".

3.5. Context of Valuation

Desires and interests cannot be set apart from the context in which they arise and in which they function. The social and cultural context shapes desires and ends and, thereby, valuations. For instance, desires and interests will have different profiles in a training event in a situation of unexpected and sudden unemployment or difficult financial situation, than in regular situations.

The adequacy of valuation depends upon its adaptation to the needs and demands imposed by each specific situation. Since the consequences of the effort-behaviour can be observable somewhere in time, the adequacy of the effort – the behaviour – can also be tested. It is this foreseen of consequences that differentiate vital impulses from

valuations. Although these *ejaculatory*, as Dewey (1939, pp. 6-13) calls them, vital impulses are the condition for the existence of desires and interests, the inexistence of foreseen consequences excludes them from being valuations. In other situations than those, value does not spring from immediate and inexplicable reactions of vital impulses or irrational parts of human nature, but rather from foreseen consequences. The anticipation of consequences also means that the effects will be observable and contextualized, even though deadlines for that to occur may not be explicit or predictable. The foreseen of consequences, and the ability to observe effects somewhere in a future time, allows *propositions about valuations* easier to identify and understand. The context is, therefore, a relevant variable in the process of valuation.

3.6. Valuation and Past Experiences

Past experiences have a major role in valuations, since they provide a unique guide for use in future experiences. What is called "learning from experience" influences the relationship between desired and proposed ends (ends-in-view) and attained ends. The relationship between what is wanted and anticipated, and what is actually obtained, is filtered by prior experiences on *obtaining*, on dealing with discrepancies between the desired and the achievable. *Prior experience* also facilitates the anticipation of ends, the instrumentality of means and, consequently, facilitates the valuation process. This means, for example, that prior e-learning experiences may help dealing with a new e-learning experience with another provider or learning approach and may conditionate the new valuation process. As Dewey (1939, pp. 58-59) alerts, an individual within the limits of her personal experience revises her desires and purposes as she becomes aware of the consequences they have produced in the past. This knowledge is what enables her to foresee probable consequences of her prospective activities and to direct her to conduct accordingly. The ability to form valid propositions about the relation of present desires and purposes to future consequences depends, in turn, upon the ability to analyze these present desires and purposes into their constituent elements. This means that present valuations cannot be validly stated until they are placed in the perspective of the past valuation-events with which they are continuous. This brings out to the light the question of what are the conditions that have to be met so that the knowledge created in past valuations becomes an instrumentality of valuation in the formation of new desires and interests.

Frondizi (1971, p. 29) positions value upon the interpretation of past experiences, and considers them as "the supreme judge in matters of fact" and what determine what people really prefer, what they really value, and what they dislike. The continuity of experienced activities, which enables general ideas of value to function as rules for evaluation of particular desires and ends, should have become the source of a belief that desires, by the bare fact of their occurrence, confer value upon objects as ends (Dewey, 1939, p. 45). But the repetition of an experience does not mean that no valuation will exist. As discussed above, vital impulses and acquired and unreflected habits often operate without the intervention of an end-in-view or a purpose. In these situations, behaviour is so mechanical that no desires and ends intervene and no valuations take place. But vital impulses and acquired habits do not mean immediately that no valuation exists. It can have existed some time before, prior to the first experience. Moreover, the repetition of an experience does not mean automatically that there is not another valuation process. If a desire and an end-in-view intervene between the occurrence of a vital impulse or a habitual tendency, and the execution of an activity, then a valuation

has occurred.

Past experiences seem to be more important in this valuation process than, for instance, *intelligence*. Scheler (quoted in Frondizi, 1971, p. 32) argues that intelligence is blind to values, which he considers that are revealed through *emotional intuition*. Meinong (quoted in Frondizi, 1971, pp. 43-44) also considers emotional life as the roots of value for. Even so, we have to acknowledge that not all empirical judgments express emotions, and even value judgments may not express them. For instance, if one says "this is the right thing to do", she is not expressing any emotion, but rather the result of a decision process that involved contradictory forces (for instance, if the person has to help a man whom she hates). The ethical value will produce a rational, rather emotional, decision. This would lead us to discuss whether people discuss values, or only facts, as sometimes they can agree on the axiological level, but disagree on facts and their interpretation. Yet, past experiences and emotional intuition do not guarantee that value is perceived at first sight and do not guarantee that this perception will be kept, as the grasp of value is never definitive.

4. Main Discussions in Axiology

According to Runes (1942), the problems of axiology fall into four main groups, namely (1) the nature of value, (2) the types of value, (3) the criterion of value, and (4) the metaphysical status of value.

4.1. The Nature of Value

The discussion around the *nature of value* tries to determine whether valuation is fulfilment of desire, pleasure, interest, preference, pure rational will, apprehension of tertiary qualities, synoptic experience of the unity of personality, any experience that contributes to enhanced life, or the relationship of things as means to the end or consequence actually reached. As Frondizi (1971, pp. 130, 132) alerts, value is rooted in the adjective – and not in the noun. A "small" desire is as much a desire as a "large" one. It is not the desire, therefore, which confers value, but the *kind* of desire. Conversely, if value is defined in terms of desire, all desire would be valuable. In this situation, it would be incorrect to speak of "improper", "indecent", or "small" desires. Desire is a neutral psychological state brought face-to-face with value. What gives rise to some confusion is that desires, pleasures, and interests can be "good" or "bad", since they have a relationship with values, while other psychological phenomena do not.

4.2. The Types of Value: Means and Ends

Two main *types of value* are identified within axiology: intrinsic and instrumental values. *Intrinsic* or *consummatory* values are ends, prized for their own sake, while *instrumental or contributory* values, are means, which are causes of extrinsic value.

As intrinsic values are commonly recognized the (morally) good, the true, the beautiful, and the holy, as well as values of play, of work, of association, and of bodily wellbeing. Yet, there are other opinions regarding what is the meaning of intrinsic value. Hedonists say it is pleasure, pragmatists say it is satisfaction, growth, or adjustment, Kantians

defend that it is a good will, while Humanists say it is harmonious self-realization, and Christians say that is the love of God. Pluralists, on the other hand, argue that there are many intrinsically good things (Runes, 1942). Besides Dewey, other philosophers, such as Lewis, Henrik von Wright, and Frankena, have multiplied the distinctions—differentiating, for example, between *instrumental value* (being good for some purpose) and *technical value* (being good at doing something) or between *contributory value* (being good as part of a whole) and *final value* (being good as a whole). We will devote our attention to Dewey's point of view.

4.2.1. Dewey's Approach on Means and Ends

Dewey (1939) presented a pragmatic interpretation and tried to break down this distinction between means and ends, although the latter effort was more likely a way of emphasizing the point that many actual things in human life - such as health, knowledge, and virtue - are good in both senses. Appraisals, and the foreseen of consequences, disclose the relation of means to ends. According to Dewey (1939, p. 23), whenever there is an appraisal involving a rule, there is an end to be reached: the appraisal is a valuation of things with respect to their serviceability or needfulness, and the propositions of valuation will be empirically tested by observation of results actually attained as compared with those intended.

John Dewey (1939, p. 23) illustrates this with a clear example:

> "If a bird builds its nest by what is called pure 'instinct', it does not have to appraise materials and processes with respect to their fitness for an end. But if the result – the nest – is contemplated as an object of desire, then, either there is the most arbitrary kind of trial-and-error operations, or there is consideration of the fitness and usefulness of materials and processes to bring the desired object into existence. And this process of weighing obviously involves comparison of different materials and operations as alternative possible means. In every case, except those of sheer "instinct" and complete trial-and-error, there is potential force in production of a particular result. There is always some observation of the outcome attained in comparison and contrast with the intended, such that the comparison throws light upon the actual fitness of the things employed as means. It thus makes possible a better judgment in the future as to their fitness and usefulness."

Yet, Dewey claims that this view of valuation focused on means is not a genuine valuation. As he puts it (1939, p. 36), an end, aim, or purpose as a mental state, is independent of the biological and physical means by which it can be realized. Genuine valuation propositions apply to things as ends, even though ends are appraised in the same evaluations in which things as means are weighted. The reason for only valuations focused on ends are considered genuine is that an end suggests itself, while things weighted as means toward that end are found to take too much time, or too great an expenditure of energy, to achieve it, or that, if they were attained, they would bring with them certain side effect inconveniences or future problems, which will make that end to be appraised as bad. This means *versus* ends view brings out the discussion whether things have value for themselves intrinsically, or are good *for* something else, which is quite similar to the discussion between the objectivist *versus* subjectivist views of value. The value of the things that are simply good for something else is in the *usefulness* that it gives for attaining the ultimate objective. Therefore, its value is not in the object itself, but more in the feelings or attitudes of the subject. This discussion also reveals that there are things – ends – that have value, apart from valuation of the means by which they are reached.

The relationship between ends and means is temporal and relational, and their unilateral relation proceeds exclusively from end to means. This relationship is illustrated by what is commonly expressed as "the end justifies the means". Charles Lamb (2008) in his *Dissertation Upon Roast Pig*, relates the origin of roast pork, that illustrate the absurdity of any end which is set up apart from the means by which it is to be attained, and apart from its own function as means. In his story, Lamb narrates that roast pork was first enjoyed when a house, in which pigs were confined, was accidentally burned down. While trying to cool the pig's fingers bringing them to their mouth, the owners found a new taste, which lead them to build new houses, inclosing pigs in them, and then burning the houses down. The first time roast pork was enjoyed, it was not an end-value, since it was not the result of desire, foresight, effort, and intent. The subsequent occasions were the outcome of prior foresight, desire, and effort, and were an end-in-view. In these occasions the subjects would probably had felt that they had paid a too high price in effort, and sacrificed too much to attain the ends-in-view. Enjoyment was present, but the value perception was stained by the high price they had to pay to enjoy roast pork, which was the destruction of dwelling-houses and the sacrifice of health animals. Lamb's ironic history illustrates that ends-in-view are not something apart from means, and their value is not independent of valuation of means. As Dewey (1939, p. 31) puts it "as far as valuation and the theory of values are concerned, any theory which isolates valuation of ends from appraisal of means equates the spoiled child and the irresponsible adult to the mature and sane person".

The value of an object *as* an attained end is a value of something which is being an end, an outcome, stands in relation to the means of which it is the consequence (Dewey, 1939, p. 41). This suggests that the value of enjoyment of a degree that one got after putting a lot of effort in, may be quite different from the false value of a forged degree or forged certificate, or the output of successive cheating episodes. Dewey (1939, p. 42) acknowledges that most literature, although recognizing that the end is brought into existence by the means used, these means are uniquely prized, and other consequences or side effects are completely ignored and brushed aside, no matter how intrinsically obnoxious they are. The value of *the* end is independent from all the means used to achieve it. This approach defends that ends are valued apart from appraisal of the things used as means in attaining them. It also implicitly authorizes the use of means to obtain them, without the need of foreseeing and weighing other ends as consequences of the means used. Yet, an end can become a mean: as the end is reached, it becomes a mean to future end, as well as a test of valuations previously made. The end attained not only is the starting point for evaluation of previous valuations, but it is also appraised as a potential resource to attain other ends.

There is also what could be called as standard ends: ends that have become standardized by social and cultural norms, and that are taken for granted. Even though nobody wants to get married with the first that passes by, marriage is (still) a standard end in contemporary societies. Likewise, less developed societies tend to look at education as a life saviour, like something that "may provide a decent life" while the more developed ones may see learning as progress, knowledge, career progression, and power. Here, two situations can occur: in one, the sole decision to be taken rests on the appraisal of potential means to be used. In the other, ends simply express habits that have become established without critical examination of the relationship between ends and means. In this situation, no valuation really occurs.

This discussion also exposes the distinction between *prizing* and *appraising*, as *appraising* is only applied to *means* while *prizing* is applied to *ends*. That is to say that a person appraises things as means, and prizes things as ends (Dewey, 1939, p. 25). Most individuals would easier identify an online course as mean of something: a degree, a skill, a sense of self-fulfilment, or even just a great experience or a pleasure moment of time. Expressions as "I'm taking a degree" reveal the means function of a course, that Dewey defined as "relational, mediated, and mediating, since they are intermediate between an existing situation and a situation that is to be brought into existence by their use" (Dewey, 1939, p. 27). If one decides to attend a course in order to obtain a degree, the quality of value belongs to the course, and finishing it is the end-in-view. Yet, the same degree has a property of value as prizing if we take into consideration facts as "graduates earn more money" or "graduates have lower average unemployment periods" and, consequently, the course can be prized and have an immediate quality of value. The discussion around value as means and ends helps to demystify whether or not value can be intrinsic and extrinsic**,** as discussed above (value is considered extrinsic when it depends upon any relation and on its instrumentality). This commonly quoted distinction between intrinsic and extrinsic value is, according to Dewey (1939, p. 28), a contradiction, since objects do not lose their intrinsic quality just because their value is brought into being because of an end-in-view.

4.3. The Criterion of Value

The *criterion of value* is related to the standard for testing values and is influenced by both psychological and logical theory, with roots in the individual or the society. According to Runes (1942), these criteria range from preference, norms or ideals, wholeness and coherence, inclusiveness or adjustment. According to Perry (1926, p. 599) it is the *interest* that confers *value* on the object, and so, it must also be interest which confers the *amount* of value. This philosopher proposed three criteria to define that amount of value and the hierarchy of values, which he calls the *commensurability of values* (Perry, 1926, pp. 600, 626) and suggests that all values can be arranged in a single, all-comprehensive, and systematic hierarchy. Perry (1926, pp. 615-616) proposes three criteria to define the hierarchy of values: *intensity*, *preference*, and *inclusiveness*. An object, as wine, for instance, is better than another object, water: (1) if the interest in the wine is more intense than the interest in the water, (2) if the wine is preferred to the water, and (3) if the interest in the wine is more inclusive than the interest in the water.

Preference is expressed in the form "this is more to my taste than that", rather than in the form, "my taste for this is stronger than my taste for that". The difference between the "intenser than" and "preferred to" is that the interest in tepid water rises in the scale of intensity, it does not rise in the order of preference, and takes the place of cold water or wine. The interest of the very thirsty man in tepid water may reach any degree of intensity, and still remain least in the order of preference. On the other hand, if we suppose that Robinson is a person having two interests, thirst and a fondness for bathing, the decline of the intensity of thirst does not weaken the appeal of water to the bathing. Moreover, he can prefer tepid to cold water and water to wine for purposes of bathing, while preferring the same objects in the inverse order for purposes of drinking. Drinking and bathing are, thus, conceived as independent, and so, conferring value on the object of one of these interests, such water, derives additional value from being also the object of the other. A more inclusive interest may be more or less intense than a less

inclusive interest (Perry, 1926, pp. 617-619).

These three principles are independent in the sense that they cannot be reduced one to another (Perry, 1926, p. 658):

- *Intensity* makes possible the comparison of the several phases of the same interest in the same object;
- *Preference* makes possible the comparison of the several objects of the same interest;
- And *inclusiveness* makes possible the comparison of the objects of one interest with the objects of another without the introduction of a third interest, and it is the only standard by which all interest can be brought into one system having a maximum in all three respects or on the whole.

Perry's (1926, p. 654) theory of value had some drawbacks that he admits: "we seem forced to conclude, therefore, that the problem of the comparative magnitude of two conflicting interests of equal intensity is insoluble, and that it is impossible to judge that one of their objects is better or worse than the other". These drawbacks are also pointed out by Frondizi (1971, p. 57), who claims that the weakness of Perry's doctrine "lies in these three criteria for deciding what is better or worse. The criteria of intensity takes for granted that all interests are of the same nature and, therefore, comparable. But that is not the case. My interest in ethics and golf are two different types of interests; they differ qualitatively and not only in degrees of intensity".

4.4. The Metaphysical Status of Value: Objectivism *vs.* Subjectivism

The *metaphysical status of value* explores the relation of values to the facts investigated by natural science, of human experience of value to reality independent man. This metaphysical issue tries to discover what the source of value is, and its main discussion is between objectivists and subjectivists. Specifically, one of the major disagreements among different theories is whether value is something subjectively assigned by the user and independent of the product's physical qualities, or something that is embedded in the object, and recognized by the user. As Holbrook (1994, pp. 29-31) argues, axiology has been debating different polarities in the meaning of value characterized as cognitivist *versus* noncognitivist, realistic *versus* idealistic, naturalistic *versus* non-naturalistic, monistic *versus* pluralistic, or intensive *versus* extensive, but this objectivist *versus* subjectivist discussion is considered the most important.

The discussion between objectivist and subjectivist is closely related with the distinction made between instrumental and intrinsic value – between what is good as a mean, and what is good as an end. The core problem between objectivists and subjectivists is whether things are valuable because we desire them, or we desire them because they are valuable. As Frondizi (1971, p. 19) puts it, "does desire, pleasure, or interest give value to an object, or are we interested because such objects possess a value which is prior and foreign to our psychological and organic reactions?". According to this distinction, value is *objective* if its existence and nature is independent of a subject, and is *subjective* if it owes its existence, its sense, or its validity, to the feelings, or attitudes of the subject.

O*bjectivists* defend that value is something that the producer puts into the product. This view positions value as inherent to the product and existing before a subject interacts with or evaluates it. *The extreme objectivism* position holds that value is prior to valuation (Frondizi, 1971, p. 20) since "values are objective qualities of things, independent … of value bearers" and are expressed by propositions of the form "X is valuable in its own right and is not mind-dependent" (Osborne, 1933, pp. 27, 78) and "values are logical essences or subsistences, independent of their being known" (Brightman, 1962, p. 33). Objectivist point of view is compatible with Levitt's (1981) definition of product as a promise, a cluster of value expectations and with Porter's (1985) suggestion that value is gradually added through the different stages of product development, manufacturing, and distribution: in both, value exists before a subject interacts with or evaluates it. Among objectivists, there are even two main lines of thought: *logical objectivism*, which claims that "values are logical essences or subsistence, independent of their being know, yet with no existential status or action in reality", and *metaphysical objectivism*, which defends that "values, or norms, or ideals, are integral, objective, and active constituents of the metaphysically real" (Runes, 1942).

Subjectivism, on the contrary, seems to have relevant inputs from the user and her experience. As Holbrook (1994, p. 30) recalls, subjectivists defend that value is something *subjectively* assigned by the user and independent of the product's physical qualities, and, in these situations, value is entirely dependent on and relative to human experience of it. However, as the objectivists would say, the "desirable" is related to the "desired", as nothing could ever be desirable if no one could ever desire it. Therefore, different degrees of subjectivism can be found in the literature: The *extreme subjectivist* position holds that "value is entirely dependent on and relative to human experience of it" (Brightman, 1962, p. 33). This position questions "what values would objects have if we passed them by indifferently, if they did not cause us enjoyment or satisfaction, if we did not desire them, or were unable to desire them?" (Frondizi, 1971, p. 20) and entails that "the believe that the source of value is within… the inner world of the agent" (Bond, 1983, p. 138). According to this view, "value is fundamentally […] descriptive of the personal experience of the analyst himself" (Moore, 1957) and involves an emotion of the "form X is valuable for me" (Osborne, 1933).

An *intermediate position*, called the *interactionist view* (Holbrook, 1994, p. 33) holds that value entails a "dyadic or relational" nexus between subject and object (Osborne, 1933, p. 37) and that "value is a relational notion requiring both the presence of the subject and the object" (Frondizi, 1971, p. 147). Frondizi (1971, p. 19) seems to be a defender of this position as he recognizes both arguments from objectivists and subjectivists: "physical objects have certain qualities, called 'primary', which are inherent in the objects themselves and others, such as sense or 'secondary' qualities, which depend, at least partially, upon a subject who perceives them". Pepper (1958, p. 402) has a similar view as he defends that "this is an existent object that would be valuable on the condition that someone found a value in it. The object is actual but it is the valuating that is potential". This intermediate position suggests that value depends on the quality being valued. For example, the length does not depend on the subject, while smell requires the presence of the subject to be perceived.

4.5. Value as a *Gestalt* Quality

Also with an intermediate, but mainly holistic position, Frondizi (1971, pp. 9, 159-165, 1972, 1979) defends that value is a *Gestalt quality* (*Gestaltqualität*). The German word *Gestalt,* which means shape, form, pattern, or configuration, is the result of a current of thought that intends to explain phenomena by their relationships to total forms rather than their parts. According to Frondizi (1971, pp. 9, 159-165, 1972, 1979) value can be interpreted as a *Gestalt* quality: a synthesis of objective and subjective contribution, and which exists and has meaning only in concrete human situations and is changeable and dependent of each situation.

A *Gestalt* is more than the aggregate of its constituent parts, and is a new quality, which arises from a unique configuration of these parts. But although it is not equivalent to the sum of its parts, a *Gestalt* cannot exist without them. A symphony orchestra is the best example of a *Gestalt*, as it is made up of different musicians who play different instruments and the quality of the orchestra is not equal to the sum of its musicians. A body is a *Gestalt* as it is more than the aggregation of organs and cannot be cut in two and still work. Ikebana flower arrangements are another example given by Frondizi, as the arrangement is more important than the flowers. The beauty of a simple flower is also a *Gestalt* quality as it springs from its shape, colour, size, perfume, and other qualities, and if one of those is changed, the beauty will suffer.

A *Gestalt* quality has the following characteristics (Frondizi, 1971, pp. 163-164):

- It depends on its members but cannot be reduced to them;
- Its qualities are not to be found in any of its members, nor in the mere sum of all of them;
- It is concrete and real and has no connection with any meta-empirical entity. It is both the form and the content;
- It implies totality and interdependence of its members. This interrelation is not a one to one relation, but an active interrelation that is conditioned by the whole;
- Members are not homogenous; each one has a different nature and role.

Wertheimer (1924) laid down the fundamental formula of *Gestalt* theory: "there are wholes, the behaviour of which is not determined by that of their individual elements, but where the part-processes are themselves determined by the intrinsic nature of the whole". Besides Wertheimer, there are important contributions to *Gestalt* theory coming from Köhler (1959a, 1959b) and Koffka (1935), but the most important impulse to *Gestalt* theory came from von Ehrenfels (1890), considered one of the precursors of this theory. Ehrenfels (1890) raised a pertinent problem: we hear a melody and then, upon hearing it again, memory enables us to recognize it. But what is it that enables us to recognize the melody when it is played in a new key? The sum of the elements is different, yet the melody is the same. As Wertheimer (1924) illustrates, "I play a familiar melody of six tones and employ six new tones, yet you recognize the melody despite the change. There must be a something more than the sum of six tones, viz. a seventh something, which is the form-quality, the *Gestaltqualität,* of the original six. It is this seventh factor or element which enabled you to recognize the melody despite its transposition".

Wertheimer (1924), conversely, claims that the reverse of this postulate is also true:

> "What I really have, what I hear of each individual note, what I experience at each place in the melody is apart which is itself determined by the character of the whole. What is given me by the melody does not arise (…) as a secondary process from the sum of the pieces as such. Instead, what takes place in each single part already depends upon what the whole is. The flesh and blood of a tone depends from the start upon its role in the melody (…)".

Gestalt theory has been mostly applied to psychological therapy, but it has also been applied to numerous sciences, namely in learning sciences. Harris (1998), for instance, alerts that there is an important (but often neglected) lesson from a Gestalt-influenced approach to the biology of learning, for it is the key to all effective facilitation of learning.

4.6. Objectivism, Subjectivism and *Gestalt* Approaches in other Literature

As is has already been discussed, objectivists argue that something is desired because it has value, while subjectivists tend defend that something is of value because it is desired. Those who rather prefer a *Gestalt* approach seem to gather both points of view, while adding a group element that makes the whole more than the sum of the parts. One can easily find objectivist and subjectivist, and even *Gestalt* approaches, to quality in different kinds of literature. Marketing literature tends to be subjectivist, focusing value on the customer needs and wants, on her consumption patterns and behaviours. Designers, architects and constructors have a more intermediate position and tend to see value as something which maximizes the functional value of the object or a property against a value system determined by the client (for example, Kelly & Male, 1993, p. 3). In the literature on quality, the extreme subjectivist position corresponds to Garvin's (1983, 1988) user-based definition of quality, while the extreme objectivist is represented by the product-based definition and by zero-defects approaches. Yet, most definitions of quality are closer to a subjectivist vision of value and TQM (Total Quality Management) is nothing more than a *Gestalt* approach to quality. There are also applications of *Gestalt* theory in education and learning: it is believed that learning processes make use of all human faculties and cognition processes as perceiving, thinking, feeling, and acting. In addition, learning is not an emotionally neutral process, free of emotions, and is a contextualized process. Moreover, it is an experimental process, where the subject actively involves herself and makes use of past experiences. Not surprisingly, several efforts have been made to promote a *Gestalt* learning theory (for example, Polito, 1997) and to use it in different educational contexts, as is the case of Günay (2007) who applied *Gestalt* theory to education on city planning.

4.7. Polarity, Hierarchy of Values and Axiological Scales

Polarity and hierarchy are two basic characteristics of value. Polarity exists since values can have a positive and a negative aspect, as good and bad, beautiful and ugly. Disvalue or negative value does not mean lack of positive value: negative values exist by themselves. For instance, an ugly and stinky object does not merely lack beauty and fragrance, they really 'hurt the eyes' of the one who is looking at them and create visual and smell discomfort. Moreover, one can also value what displeases. For instance,

although going to the dentist may be a complete 'torture', the displeasure of the event does not mean ungratefulness to the professional who enabled the individual to choose between a temporary pain and a prolonged toothache, and she values the dentist's work. The same happens with school: kids frequently are not motivated to attend classes due to a dictatorial teacher, who later they recall as the "best", although the "hardiest", teacher. Polarity means that there is no indifference regarding the object. This does not mean that human beings are not indifferent to everything, but rather that, the moment a value attaches itself to an object, indifference extinguishes. Value always means a choice, a preference (like it or dislike it, accept it or reject it, seek it or avoid it) and it is never neutral.

Frondizi (1971, pp. 10-11) not only recognizes this polarity, but he defends the existence of a *hierarchy of values*. According to him, values are not only positive or negative, but they have a ranking: they are not only bad or good, but better or worse. As the valuation process evolves, preferences and rankings emerge and both value and objects of valuation become hierarchical. As Frondizi (1971, pp. 10-11) puts it, "no two poems of symphonies are on the same level; one is better than the other, though it is very difficult sometimes to tell which it is". Therefore, no two products or services are on the same level: although it is not difficult to recognize that the beauty of a Van Gogh painting seems to be superior to an ice cream as Frondizi claims, it is not very easy to position the utility of e-learning courses and the utility of a simple book about the same theme in the value hierarchy.

This hierarchy of values must not be confused with a classification, which, in turn, does not necessarily imply an order of importance. For instance, as women can be single or married, e-learning courses can be asynchronous or synchronous, and this does not necessarily imply that one group/option is better than the other. Values, on the other hand, are given in their order of importance or according to a ranking. When a product or experience is chosen, it is because one is preferred or 'higher'. As Frondizi (1971, p. 11) defends, "hierarchy is revealed in *preference*: upon being confronted with two values, a person will usually prefer the one he thinks is higher, although some times he may 'choose' the inferior one, due to circumstantial reasons like price, distance, or any other advantage". Hierarchy is also present in what Frondizi (1971, pp. 26-27) calls *axiological scales*. Pleasure is positioned as a lower value in comparison to ethics, for instance. Pleasure and ethics are the two extremes of this axiological scale, and pleasure is more objective than ethics. For instance, if a person reacts differently in the presence of two beverages, and has more pleasure with one than with the other, then the subject is the source of value, and pleasure is more close to personal idiosyncrasies or acquired habits than to the object. Surprisingly, ethics is more objective as it is above personal preferences and current feelings, personal desires, and interests, and, therefore, its element of objectivity is greater than in pleasure. Between these two extremes of the axiological scale, there are several values, unspecified, that balance the subjective and objectiveness. This means that values have a hierarchy among themselves, and that intrinsic value is superior to the corresponding instrumental value, since this one derives its value from the fact that it is a mean to achieve the intrinsic value.

These hierarchies, expressed in tables of values, vary not only between different cultural or social communities, but also among the members of the same family. In one axiological table, religious values can be the dominating ones, while in other tables the predominating value can be the economic or the aesthetical one. The predominating value is more influenced by the person's psychological type, than rather upon

educational or circumstantial situations. Frondizi (1971, p. 133) introduced a greater complexity into this discussion by claiming that mere psychological valuation does not confer a specific value upon an object. As he puts it, the preference of modern youth for 'rock music' does not confer upon the latter aesthetic superiority over a sonata by Beethoven. We recognize, he claims, the superior hierarchy of the sonata over and above individual and collective preferences, and we frequently make use of this superior hierarchy to valuate negatively those individuals who are incapable of taking notice of it. He goes further defending that one can tell the difference between a well-educated person from one who lacks education by her interests, desires, and preferences. This position introduces the question whether the problem of axiological hierarchies consists in finding out, not what do people valuate more, but what they *ought to* valuate more.

Scheler (1954, p. 107, quoted in Frondizi, 1971, p. 137) has a similar point of view as he defends that axiological table is *a priori*, as it does not depend at all upon the actual reactions that the subjects may experience. Scheler makes clear that axiological tables do not include only values that are known by the subject. At the same time, as he was not able to define the order of this axiological hierarchy, Scheler finally admitted that "only" in preference is the superiority of a value made evident. Preference seems, therefore, to be the criteria to define the order of the axiological hierarchy, i.e., preference is what defines axiological superiority. Yet, as preference is a psychological act, even in the same person, at different situations, preferences may change and axiological hierarchy may vary. In fact, sometimes people do prefer lower rather higher values, as Scheler admitted. The criteria used to define axiological hierarchy are not generally accepted. Scheler (1954, p. 107, quoted in Frondizi, 1971, p. 138-139) defends that *duration* and *divisibility* are the main criteria to determine value hierarchy: superior values are lasting and eternal, while inferior ones tend to be evanescent; and indivisible values are superior (for instance, a painting can be enjoyed without being destroyed, while a meal is consumed and vanishes) but this is not a consensual position. According to Frondizi (1971, p. 150), as one ascends the hierarchy of values, the objective element, surprisingly, tends to increase. Physiological and psychological conditions, as thirst, fatigue, or anger, have less objective factors than, for instance, ethical values. In addition, every value is related to other values. For instance, the aesthetic quality of an object is not independent of its utility.

4.8. Situational Value

Value is always dependent of facts and concrete situations. For instance, food that is nutritive for a certain person may not be for another. Some aliments, such as milk, are considered nutritive and good for the one's health but they can be very harmful, for example, for lactose intolerants. It is, therefore, meaningless to say that the aliment is nutritive, since this quality changes as the conditions of the subject who eats or drinks it change. Physiological and psychological conditions do influence valuations and value propositions. Drinking a beer to deal with thirsty is different from drinking one more beer, after having drunk a lot of beers. It is also different drinking it when celebrating a special event, from drinking to forget problems. Likewise, it is different attending an e-learning course to achieve the homeostatic status, than to achieve higher levels of performance.

Moreover, *objective* elements can also influence value perceptions: beer density and temperature, the glass from which it is drunk, and the environmental temperature are

just some influences. Social and cultural factors also play a special part as drinking with a friend is different from drinking alone, as drinking in an elegant cocktail is different from drinking directly from the bottle in a railway station while waiting for the next train. As Frondizi (1971, p. 151) argues, "a value has no existence or meaning without a real or possible valuation. The valuation, in turn, changes according to the physiological and psychological conditions of the subject". Moreover, the valuating experience is influenced by all the other previous experiences. Simultaneous experiences have even more influential power: a bad taste, a bad odour with a pain, and anger, will definitely interfere with the valuation of a painting that is being looked at, as chain of association of ideas will occur. Previous experiences will be more influential as close the object of valuation is from the previous one. Again, a *Gestalt* approach seems to fit these interpretations made on value.

Appendix 9: The Economic Approach to Utility

1. Cardinal and Ordinal Utility

Economics distinguishes between cardinal utility and ordinal utility. When representing consumer preferences, economists assume that people are able to rank each bundle in order of preference. This is the *ordinal utility approach* to consumer budgeting problem. In this approach, it is not required that people be able to make quantitative statements about how much they like various bundles. Thus, it assumes that a consumer will always be able to say whether she prefers A to B, but that she may not be able to make much statements as A is 6,43 times as good as B. In the nineteenth century, economists commonly assumed that people could make such statements. That is called the *cardinal utility approach* to the consumer choice problem. With a two-goods case, in this approach, it is assumed that the satisfaction provided by any bundle can be assigned a numerical or cardinal value by a utility function (Frank, 1991, p. 88).
When only ordinal approaches are assumed, some quantitative comparisons in terms of utility between goods are possible, as "the A good is better than B good by the exact amount by which the B good is better than C good". Yet, statements such as "A good is twice as good as B good" are substituted by qualitative statements such as "A good is preferred to the C good".

2. Indifference Curves and Economic Equilibrium

Even when only ordinal preferences are considered, consumer preferences are still represented with a cardinal utility index and plotted in quantitative axes. Utility is built upon *indifference curves*, which plot the combination of goods that the individual requires to maintain a given level of satisfaction. Microeconomic models are built on these indifference curve maps, which are based on the utility that consumers perceive to different sets of packs of goods. And it is from indifference curves that economists derivate an ordinary demand curve (see, for instance, Friedman, 1986, for demonstration). As lines joining combinations that give a person the same amount of utility, indifference curves do not meet or intersect, and are convex to the origin (Douglas, 1992b, p. 40). This means that products or services are not perfectly substitutes nor perfect complements (see, for example, Frank, 1991, p. 270). This also means that there is a diminishing *marginal rate of substitution* (MRS), which is to say that, along any indifference curve, the more a consumer has of one good, the more she must be given of that food before she will be willing to give up a unit of the other good. Stated differently, MRS declines as we move downward to the right along an indifference curve. A preference ordering with diminishing MRS will, thus, generate indifference curves that are convex – or bowed outward, when viewed from the origin (Frank, 1991, p. 73).

Each indifference curve represents all combinations of two products that yield the same level of utility. Several combinations of goods can provide the same level of satisfaction, which makes the individual to go up or down in the same indifference curve (Frank, 1991, pp. 69-70, 90). This allows us, for example, to compare the bundle (Q_{1b},Q_{1a}) to bundle (Q_{2b}, Q_{2a}) in Figure 83, which are equally preferred.

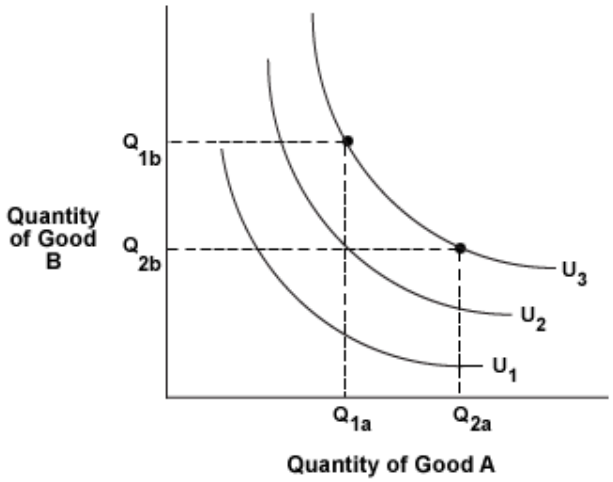

Figure 83: Indifference Curve Map

Indifference curves maps represent several indifferences curves, each for a different level of utility. Indifference curves that are more distance from the origin represent combinations of two products that provide higher levels of utility than those curves closer to the origin. Economists assume that people want to maximize utility, while price and income values are budget constraints given in advance, which means that the maximization problem is a *constrained maximization problem* (Frank, 1991, pp. 91-92). The solution to this problem of utility maximization is solved when *isocosts maps* are taken into consideration. An isocost line represents a combination of inputs that cost the same amount, in terms of capital and labour. The axes are replaced by factors of production, rather than consumer goods or services. For each given cost or budget is drawn one isocost line. Isocost maps plot parallel lines that represent different budgets or costs. The use of the isocost pertains to cost-minimization in production, as opposed to utility-maximization. Equilibrium is a tangential solution where each factor of production is employed in such way that the ratio of marginal product to price of the factor is equalized. That is, it costs the same to produce one extra unit of output by employing one unit of labour or one unit of capital (marginal costs and marginal utility are equal). Just as in indifference curve analysis, any change in prices affects the slope of the isocost, and, hence, the allocation of resources among the two factors and the final equilibrium.

3. Utility and the Demand for Attributes

The demand theory is sometimes analyzed in terms of *demand for attributes*. For instance, beer is demanded because is fresh (being freshness the attribute), sparkling, and a complement of social gathering. As Jones (1998) refers, "developed by Kelvin Lancaster (1971), the product attributes model sets out to explain consumer behaviour as a process of choosing bundles of product characteristics or attributes inherent in goods and services, rather than simply choosing bundles of goods or services themselves. The basic assumption of the model is that the consumer's choice is based on maximizing utility from the product attributes subject to a budget constraint (…). The model is particularly useful in analyzing differentiated product markets, in which specific products that are substitutes for each other are distinguished by their embodiment of a specific set of characteristics". A two-dimensional graph reveals the model's main features and links it to the traditional budget constraint and indifference

curve analysis of consumer behaviour. Figure 84 shows three specific products, each offering a specific amount of attribute X and attribute Y in constant proportions. For example, each unit of product A contains X_a of attribute X and Y_a of attribute Y. Similarly, each unit of products B and C offers the attribute bundles (X_b, Y_b) and (X_c, Y_c), respectively.

While some attributes can be measured objectively (for example, the attributes calories or vitamin content), we can also consider more subjective attributes, such as 'atmosphere' and 'quality of food' in distinguishing restaurants, for example. Subjective attributes do, however, imply that the attribute content of a particular product or service may be determined largely by the perceptions of the individual consumer (K. A. Jones, 1998, pp. 522-523). For a given budget constraint and set of prices for the products, the end points A, B, and C represent the limits of consumption along each attribute ray, and the line segment ABC defines the budget (or efficiency) frontier for the consumer. The consumer's choice is made by maximizing utility, as defined by the consumer's set of indifference curves, subject to the budget constraint. In this model, we interpret the slope of an indifference curve at a particular point (marginal rate of substitution) as the rate at which the consumer is willing to trade off units of attribute Y for the additional unit of attribute X to remain at constant utility. Thus, the consumer's choice is influenced by her preference pattern in attribute space. As shown in Figure 84, this consumer shows a strong preference for attribute Y and, therefore, chooses product A; a strong preference for attribute X would lead her to choose C.

Jones (1998, pp. 522-523) provides a simplified explanation for this dynamic:

> "The proliferation of differentiated products in a particular market can be explained as the result of the dispersion of tastes for various attributes among the population of consumers. (…) the consumer will spend the entire budget on a single product A, B, or C if the highest indifference curve just touches the respective end point. If the highest indifference curve touches a point on the line segment between two attribute ray end points, then the consumer would choose to split consumption between the two adjacent products. If the product's consumption is indivisible (as in the case of an automobile or house), then such consumption splitting would be impossible, and the consumer's choice would be determined by the highest indifference curve that touches an end point. (…) the product attributes model also allows an analysis of strategic behaviour by firms and its effects on consumer choice. A decrease in the price of a product moves the end point further along the ray, for example. Advertising can change the perception of the product in terms of attribute content and proportion (length and slope of the product ray) or the consumer's taste for attributes (shape of individual consumers' indifference curves)."

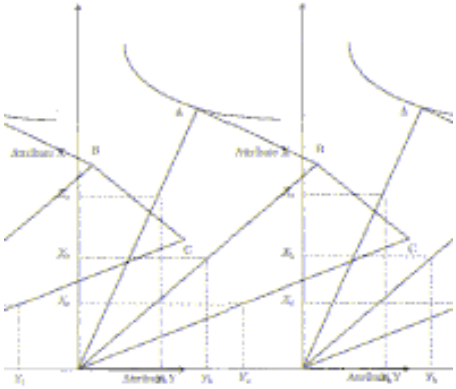

Figure 84: Product Attributes and Consumer Choice
Source: K. A. Jones, 1998

4. Risk Aversion and Utility

Besides the distinction between uncertainty and risk (page 96), risk profiles are also a relevant factor that affects utility. Douglas (1992a, p. 40) depicts a structure of risk averter's preference between risk and return in terms of indifference-curves. He argues that, since a risk averter gains utility from profits and disutility from risk, the indifference curves are positively sloping to reflect the fact that risk is 'bad' and that it generates disutility rather than utility (Figure 85).

Douglas (1992a, p. 41) exemplifies:

> "Suppose a person is considering four alternative solutions to a problem which he calls projects A, B, C and D. Point A in Figure 85 represents decision A which has expected present value EPV_2 and the standard deviation (that represents the risk) σ_2. The decision maker is indifferent between this project and the *status quo* (with the funds invested in the best alternative investment), which is represented by the origin. The decision maker requires EPV_2 dollars of expected return to compensate for bearing σ_2 dollars of standard deviation, or risk. Decision A is preferred to decision B, which has the same expected value but higher risk, σ_3. It follows that the *status quo* is also preferred to decision B, since decision A and the *status quo* are on the same indifference curve. Decision C is preferred to both A and B, since it has the same expected value but lower risk, σ_1. Finally, decision D is regarded as equally desirable to decision B, but it is inferior to both A and C, as well as to the *status quo*. Decision D has the same risk as A but lower expected profits, and it has both more risk and less return than decision C. In this case, the decision maker's only desirable alternative is decision C".

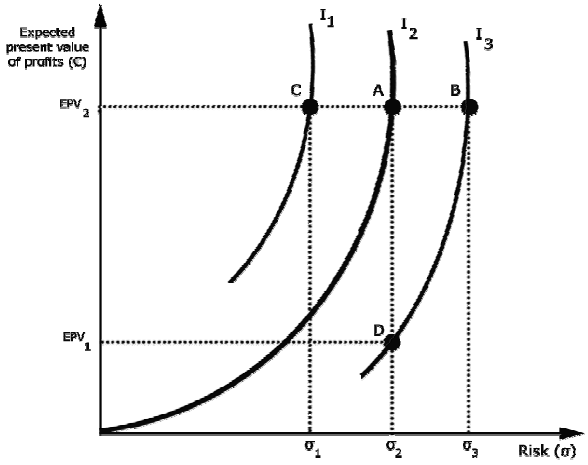

Figure 85: Indifference curves for a risk averter in risk-return space
Source: Douglas, 1992a, p. 41

The slope of these indifference curves indicates the individual's degree of risk aversion. It reflects the marginal rate of substitution (MRS) between risk and expected present value. The decision maker's MRS is the amount of expected return she requires before accepting an extra unit of risk. The individual's MRS between risk and return is positive and increases as the level of risk and return increase, because the slope of each indifference curve becomes progressively steeper as the decision maker moves up to the curve. Thus, a decision maker who is already bearing high levels of risk will require an even greater increment of expected profits before agreeing to accept any more risk. This reflects the implicit assumption of diminishing marginal utility of wealth and increasing marginal disutility of risk, which underlie the analysis and appear reasonable for most decision makers (Douglas, 1992a, p. 41).

There are several methods by which the risk-averse decision marker can compare decision alternatives on a risk-adjusted basis to find the alternative that best serves her. One of these methods is the *maximin* decision criterion. *Maximin* is the term given to the largest (the maximum) of the smallest outcomes (the minimums) associated with each decision alternatives. Yet, this criterion is too pessimistic, since it always expects the worst to happen, but it may be appropriated when the individuals cannot afford to suffer the worst outcomes associated with some of the decision alternatives. This usually happens in situation that involve relatively short time horizons in which the law of averages cannot be relied on and the decision maker cannot afford the outcomes associated with some of the decision alternatives. An alternative method of adjusting the EPV criterion for risk is to use higher discount rates for the more risky alternatives. In this case, the opportunity discount rate (ODR), defined as the best rate of interest that could be earned elsewhere at the same degree of risk, should be substituted by higher rate (Douglas, 1992a, pp. 43-45). Yet, different persons will have different degrees of risk aversion, because they have different marginal rates of substitution between risk and return. Graphically these differences are reflected in steeper or flatter indifference curves in risk-return space (Figure 86).

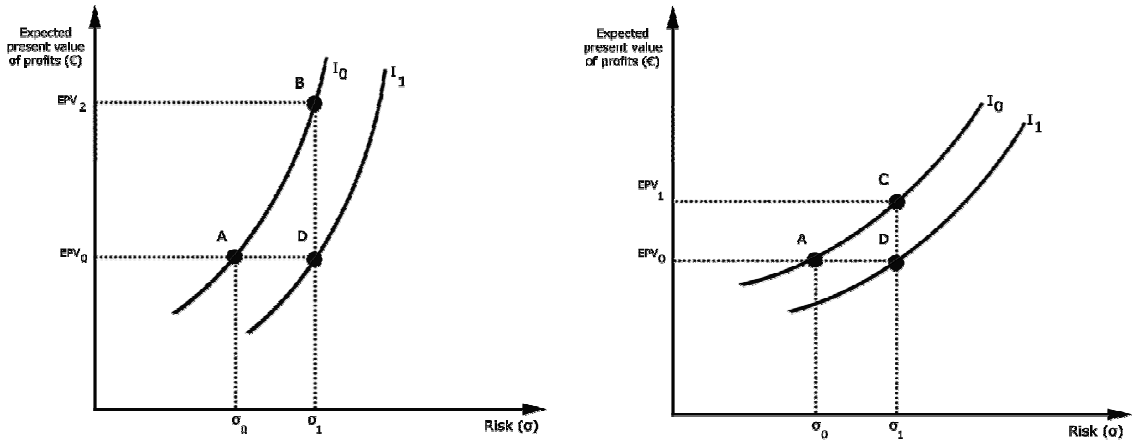

Figure 86: Different degrees of risk aversion
Source: Douglas, 1992a, p. 42

Figure 86 shows in the left panel a person with a relatively high degree of risk aversion contrasted with someone with a relatively low degree of risk aversion depicted in the right panel. Points A and D are on both graphs. Project D is inferior to project A, since for the same expected return, EPV_o, it has a larger risk, σ_1. In both cases, the person would accept the risk level σ_1 only if this is accompanied by an expected profit larger than that of project A. The more risk adverse person (in the left-hand graph) requires additional DB euro to remain at the same level of utility and, thus, has a relatively high MRS or return for risk, measured by the ration BD/AD. The less risk-averse person (on the right-side) requires only a smaller amount of extra expected profit, DC euro, for the extra risk, $\sigma_1 - \sigma_0$, and exhibits a relatively low MRS of return for risk measured by the ration CD/AD (Douglas, 1992a, p. 42). Although not very common, there are individuals that have risk preference or neutrality. Risk preference means that risk is viewed as a utility-producing good, and so, the individual's indifference curves are negatively slopped. These individuals are prepared to give up expected profits for a larger amount of risk (left panel of Figure 87). Risk neutrality, on the other hand, means that the individual is indifferent to risk, receiving neither utility nor disutility from risk

regardless of the amount of risk involved. Such an individual's indifference curves would be horizontal (right panel of Figure 87).

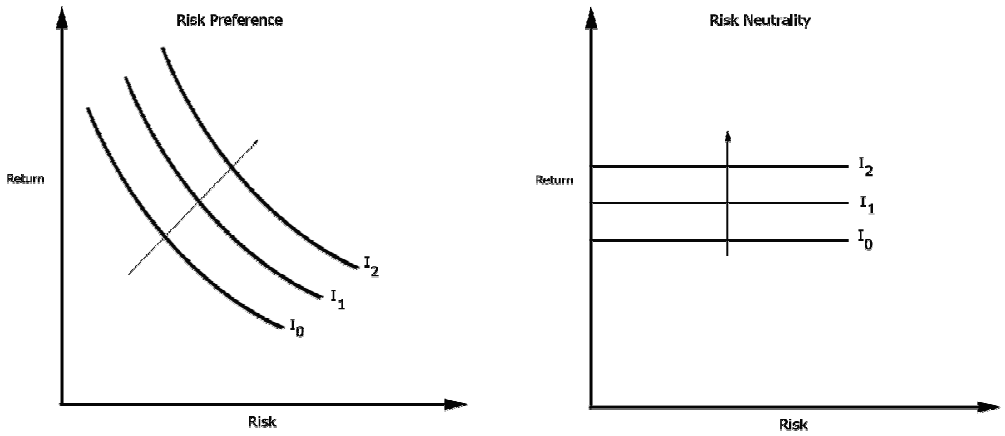

Figure 87: Risk preference and risk neutrality
Source: Douglas, 1992a, p. 43

Appendix 10: Final Tree Node Structure

Type	Name	Name	Sources	References
Tree Node	5. Motivação, valor e percepção de qualidade		0	0

Type	Name	Sources	References
Tree Node	valor interno	2	2
Tree Node	valor externo	2	2
Tree Node	valor (2)	4	6
Tree Node	valor	6	35
Tree Node	percepção vs realidade	3	6
Tree Node	Percepção de qualidade	4	10
Tree Node	Percepção	8	39
Tree Node	Motivação geral	5	24
Tree Node	motivação	4	22
Tree Node	Imagem e credibilidade	2	12
Tree Node	critérios de avaliação	3	6
Tree Node	credibilidade (2)	2	4
Tree Node	Credibilidade	2	8
Tree Node	Confiança	3	8
Tree Node	Balanço	4	8
Tree Node	Acreditação	2	2

Type	Name	Sources	References
Tree Node	4. Motivação	0	0
Tree Node	3. Resultados	2	2

Type	Name	Sources	References
Tree Node	Retorno do investimento	2	6
Tree Node	Resultados nas empresas	5	20
Tree Node	Resultados	5	26
Tree Node	Relações profissionais ou de trabalho	2	2
Tree Node	Reforço de formação	2	4
Tree Node	Experiencia	3	16
Tree Node	Certificação	3	20
Tree Node	atingir os objectivos	5	14
Tree Node	3.4. Impacto na organização	0	0

Type	Name	Sources	References
Tree Node	Profissional	7	23
Tree Node	Empresa	6	34

Tree Node	3.2. Aprendizagens	0	0

Type	Name	Sources	References
Tree Node	Saberes (conhecimentos)	6	48
Tree Node	Saber fazer (competências)	6	26
Tree Node	progressão na aprendizagem	2	2
Tree Node	Novos conhecimentos	4	10
Tree Node	novas competencias	2	2

Tree Node	'garantia' da aprendizagem	2	4
Tree Node	Facilitar a aprendizagem	2	2
Tree Node	desenvolvimento pessoal	3	4
Tree Node	Contexto de aprendizagem	3	12
Tree Node	Capacidade de	7	27
Tree Node	Avaliação (2)	4	14
Tree Node	avaliação	2	10
Tree Node	Auto-Reflexão	2	2
Tree Node	aprendizagem informal (2)	2	4
Tree Node	Aprendizagem informal	2	12
Tree Node	aprendizagem extra-plano	2	2

Tree Node	3.1. Reacções	4	18

Type	Name	Sources	References
Tree Node	pos-venda	2	2

Tree Node	3,3, Transferências	0	0

Type	Name	Sources	References
Tree Node	Utilização profissional	7	18
Tree Node	Utilidade futura	3	4
Tree Node	Utilidade emergente	0	0
Tree Node	Transferencia de aprendizagens	6	22
Tree Node	Reutilização	2	2
Tree Node	Resolução de problemas	2	2
Tree Node	progressão na carreira	2	6
Tree Node	Prazo de aplicação	3	4
Tree Node	partilha de conhecimentos	4	8
Tree Node	Oportunidades de trabalho	2	4
Tree Node	Necessidades Reais	5	22
Tree Node	Necessidades futuras	2	2
Tree Node	Necessidades expressas - solicitações	2	2
Tree Node	Necessidades estratégicas da organização	2	6
Tree Node	necessidades efectivas	2	4
Tree Node	Necessidade para aplicação	2	2
Tree Node	Motivação para futura aprendizagem	2	2
Tree Node	Imediato	2	12
Tree Node	Exemplos práticos	2	6
Tree Node	Desempenho	4	10
Tree Node	Contexto_ambiente de formação	2	2
Tree Node	Contexto de transferência	3	12
Tree Node	aumento de desempenho	4	12
Tree Node	Aplicações práticas	4	14
Tree Node	Aplicabilidade	6	38
Tree Node	alteração de comportamentos	2	4

Tree Node	2. Processo ou execução		2	18

Type	Name	Sources	References
Tree Node	zonas de tolerância	4	16
Tree Node	Serviço	5	34
Tree Node	Rigor da execução	5	60

Type	Name	Sources	References
Tree Node	rigor na execução	2	4
Tree Node	recursos didácticos ou conteúdos de formação	7	123

Type	Name	Sources	References
Tree Node	Livros	2	4
Tree Node	Gralhas	2	8
Tree Node	Processo	5	44
Tree Node	Presencial	5	22
Tree Node	Pessoas	8	48
Tree Node	Obrigação	2	2
Tree Node	Niveis	2	2
Tree Node	Métodos e técnicas pedagógicas	5	28

Type	Name	Sources	References
Tree Node	aceitação	2	2
Tree Node	Interactividade	3	22

Type	Name	Sources	References
Tree Node	Tutoria	4	53
Tree Node	Simultaneadade de formação (tempo)	7	35
Tree Node	Resposta correcta	2	8
Tree Node	prazo de resposta	2	2
Tree Node	Perfil formandos	2	6
Tree Node	Perfil do formando	2	6
Tree Node	mensagens	3	14
Tree Node	grupo	2	22
Tree Node	Forums	2	18
Tree Node	formandos e colegas	11	131
Tree Node	feedback	0	0
Tree Node	Dinamização	3	8
Tree Node	Comunicação	3	10
Tree Node	Atingir	2	6
Tree Node	Acompanhamento	3	10
Tree Node	Inovação	2	2
Tree Node	Independente da modalidade	2	4
Tree Node	Incidentes Críticos	2	10
Tree Node	holístico	2	12
Tree Node	Garantir	2	10

Tree Node	Formato de formação	4	16
Tree Node	Formadores	9	94

Type	Name	Sources	References
Tree Node	esclarecimento de dúvidas	2	2
Tree Node	Empatia	3	10
Tree Node	competências	3	4

Tree Node	formação continua	2	2
Tree Node	fluxo de informação	2	6
Tree Node	Flexibilidade	2	6
Tree Node	Experiência	8	48
Tree Node	exigência	2	4
Tree Node	Exemplos práticos	3	10
Tree Node	Equipa pedagógica	6	24
Tree Node	Equipa de suporte	6	22
Tree Node	Entidade formadora	3	10
Tree Node	duração	2	2
Tree Node	Disponibilidade	2	4
Tree Node	discussao formando formador - interactividade	3	16
Tree Node	Cumprir expectativas	2	10
Tree Node	capacidade de gestão	3	10
Tree Node	Avaliação	5	32
Tree Node	Adequar ou adaptar	4	14

Tree Node	1. Planeamento e concepção		0	0

Type	Name	Sources	References
Tree Node	público-alvo	2	6
Tree Node	Programa	5	50
Tree Node	Portfolio	2	2
Tree Node	Plano de formação	5	24
Tree Node	Plano	3	14
Tree Node	Planeamento	3	42
Tree Node	Objectivos de formação	7	52
Tree Node	Divulgção e informação	4	26

Tree Node	0. Diagnóstico de necessidades		2	6

Type	Name	Sources	References
Tree Node	Necessidades pessoais	6	72
Tree Node	Necessidades das empresas	7	50
Tree Node	Expectativas	8	46
Tree Node	Dar resposta	4	24
Tree Node	Cliente	0	0

Appendix 11: Tests to Final Motivation Between Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	766,28	68198,50
	2	1505	799,35	1203016,50
	Total	1594		

Test Statistics[a]

	Final motivation
Mann-Whitney U	64193,500
Wilcoxon W	68198,500
Z	-,675
Asymp. Sig. (2-tailed)	,500

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	297,96	26518,50
	3	505	297,42	150196,50
	Total	594		

Test Statistics[a]

	Final motivation
Mann-Whitney U	22431,500
Wilcoxon W	150196,500
Z	-,028
Asymp. Sig. (2-tailed)	,978

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	194,84	17341,00
	4	316	205,30	64874,00
	Total	405		

Test Statistics[a]

	Final motivation
Mann-Whitney U	13336,000
Wilcoxon W	17341,000
Z	-,761
Asymp. Sig. (2-tailed)	,446

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	66,25	5896,50
	5	49	75,40	3694,50
	Total	138		

Test Statistics[a]

	Final motivation
Mann-Whitney U	1891,500
Wilcoxon W	5896,500
Z	-1,313
Asymp. Sig. (2-tailed)	,189

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	2	1505	1017,75	1531706,50
	3	505	969,01	489348,50
	Total	2010		

Test Statistics[a]

	Final motivation
Mann-Whitney U	361583,500
Wilcoxon W	489348,500
Z	-1,672
Asymp. Sig. (2-tailed)	,094

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	2	1505	909,54	1368861,50
	4	316	917,94	290069,50
	Total	1821		

Test Statistics[a]

	Final motivation
Mann-Whitney U	235596,500
Wilcoxon W	1368861,500
Z	-,265
Asymp. Sig. (2-tailed)	,791

a. Grouping Variable: Groups

b.

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	2	1505	774,88	1166187,00
	5	49	858,12	42048,00
	Total	1554		

Test Statistics[a]

	Final motivation
Mann-Whitney U	32922,000
Wilcoxon W	1166187,000
Z	-1,310
Asymp. Sig. (2-tailed)	,190

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	3	505	401,88	202951,50
	4	316	425,57	134479,50
	Total	821		

Test Statistics[a]

	Final motivation
Mann-Whitney U	75186,500
Wilcoxon W	202951,500
Z	-1,424
Asymp. Sig. (2-tailed)	,154

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	3	505	274,12	138430,50
	5	49	312,34	15304,50
	Total	554		

Test Statistics[a]

	Final motivation
Mann-Whitney U	10665,500
Wilcoxon W	138430,500
Z	-1,630
Asymp. Sig. (2-tailed)	,103

a. Grouping Variable: Groups

Ranks

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	4	316	180,67	57090,50
	5	49	198,05	9704,50
	Total	365		

Test Statistics[a]

	Final motivation
Mann-Whitney U	7004,500
Wilcoxon W	57090,500
Z	-1,098
Asymp. Sig. (2-tailed)	,272

a. Grouping Variable: Groups

Appendix 12: Tests to Final Motivation Between Groups When The Promoter Was EVOLUI.COM

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	491,40	43735,00
	2	1019	560,01	570651,00
	Total	1108		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	39730,000
Wilcoxon W	43735,000
Z	-2,000
Asymp. Sig. (2-tailed)	,045

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	297,96	26518,50
	3	505	297,42	150196,50
	Total	594		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	22431,500
Wilcoxon W	150196,500
Z	-,028
Asymp. Sig. (2-tailed)	,978

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	194,84	17341,00
	4	316	205,30	64874,00
	Total	405		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	13336,000
Wilcoxon W	17341,000
Z	-,761
Asymp. Sig. (2-tailed)	,446

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	1	89	66,25	5896,50
	5	49	75,40	3694,50
	Total	138		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	1891,500
Wilcoxon W	5896,500
Z	-1,313
Asymp. Sig. (2-tailed)	,189

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	2	1019	797,20	812343,50
	3	505	692,49	349706,50
	Total	1524		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	221941,500
Wilcoxon W	349706,500
Z	-4,493
Asymp. Sig. (2-tailed)	,000

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	2	1019	680,51	693443,00
	4	316	627,65	198337,00
	Total	1335		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	148251,000
Wilcoxon W	198337,000
Z	-2,194
Asymp. Sig. (2-tailed)	,028

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	2	1019	533,47	543606,50
	5	49	555,91	27239,50
	Total	1068		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	23916,500
Wilcoxon W	543606,500
Z	-,513
Asymp. Sig. (2-tailed)	,608

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	3	505	401,88	202951,50
	4	316	425,57	134479,50
	Total	821		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	75186,500
Wilcoxon W	202951,500
Z	-1,424
Asymp. Sig. (2-tailed)	,154

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	3	505	274,12	138430,50
	5	49	312,34	15304,50
	Total	554		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	10665,500
Wilcoxon W	138430,500
Z	-1,630
Asymp. Sig. (2-tailed)	,103

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Final motivation	4	316	180,67	57090,50
	5	49	198,05	9704,50
	Total	365		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Final motivation
Mann-Whitney U	7004,500
Wilcoxon W	57090,500
Z	-1,098
Asymp. Sig. (2-tailed)	,272

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Appendix 13: Tests to Several Variables Between Groups

SORT CASES BY Promotor. SPLIT FILE SEPARATE BY Promotor. NPAR TESTS /M-W= Satisfaction BY gruposduracao
NPar Tests
Promoter = EVOLUI.COM
Mann-Whitney Test

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	1	89	470,45	41870,00
	2	1032	568,81	587011,00
	Total	1121		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	37865,000
Wilcoxon W	41870,000
Z	-2,831
Asymp. Sig. (2-tailed)	,005

a. Promoter = EVOLUI.COM
b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	1	89	278,31	24769,50
	3	508	302,63	153733,50
	Total	597		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	20764,500
Wilcoxon W	24769,500
Z	-1,256
Asymp. Sig. (2-tailed)	,209

a. Promoter = EVOLUI.COM
b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	1	89	182,06	16203,00
	4	316	208,90	66012,00
	Total	405		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	12198,000
Wilcoxon W	16203,000
Z	-1,960
Asymp. Sig. (2-tailed)	,050

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	1	89	66,81	5946,00
	5	49	74,39	3645,00
	Total	138		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	1941,000
Wilcoxon W	5946,000
Z	-1,085
Asymp. Sig. (2-tailed)	,278

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	2	1032	797,20	822708,00
	3	508	716,26	363862,00
	Total	1540		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	234576,000
Wilcoxon W	363862,000
Z	-3,452
Asymp. Sig. (2-tailed)	,001

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	2	1032	682,25	704080,00
	4	316	649,20	205146,00
	Total	1348		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	155060,000
Wilcoxon W	205146,000
Z	-1,360
Asymp. Sig. (2-tailed)	,174

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	2	1032	541,95	559290,00
	5	49	521,04	25531,00
	Total	1081		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	24306,000
Wilcoxon W	25531,000
Z	-,472
Asymp. Sig. (2-tailed)	,637

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	3	508	403,36	204904,50
	4	316	427,20	134995,50
	Total	824		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	75618,500
Wilcoxon W	204904,500
Z	-1,435
Asymp. Sig. (2-tailed)	,151

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	3	508	277,86	141151,00
	5	49	290,86	14252,00
	Total	557		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	11865,000
Wilcoxon W	141151,000
Z	-,553
Asymp. Sig. (2-tailed)	,580

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global satisfaction	4	316	183,00	57828,00
	5	49	183,00	8967,00
	Total	365		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction
Mann-Whitney U	7742,000
Wilcoxon W	8967,000
Z	,000
Asymp. Sig. (2-tailed)	1,000

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	1	89	454,75	40473,00
	2	1029	568,56	585048,00
	Total	1118		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	36468,000
Wilcoxon W	40473,000
Z	-3,289
Asymp. Sig. (2-tailed)	,001

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	1	89	271,59	24171,50
	3	507	303,22	153734,50
	Total	596		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	20166,500
Wilcoxon W	24171,500
Z	-1,635
Asymp. Sig. (2-tailed)	,102

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	1	89	181,37	16142,00
	4	316	209,09	66073,00
	Total	405		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	12137,000
Wilcoxon W	16142,000
Z	-2,021
Asymp. Sig. (2-tailed)	,043

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	1	89	64,14	5708,50
	5	48	78,01	3744,50
	Total	137		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	1703,500
Wilcoxon W	5708,500
Z	-1,994
Asymp. Sig. (2-tailed)	,046

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	2	1029	796,13	819217,50
	3	507	712,42	361198,50
	Total	1536		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	232420,500
Wilcoxon W	361198,500
Z	-3,580
Asymp. Sig. (2-tailed)	,000

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	2	1029	684,82	704680,50
	4	316	634,51	200504,50
	Total	1345		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	150418,500
Wilcoxon W	200504,500
Z	-2,077
Asymp. Sig. (2-tailed)	,038

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	2	1029	537,95	553555,50
	5	48	561,41	26947,50
	Total	1077		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	23620,500
Wilcoxon W	553555,500
Z	-,527
Asymp. Sig. (2-tailed)	,598

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	3	507	406,49	206089,50
	4	316	420,84	132986,50
	Total	823		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	77311,500
Wilcoxon W	206089,500
Z	-,864
Asymp. Sig. (2-tailed)	,388

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	3	507	274,81	139330,50
	5	48	311,66	14959,50
	Total	555		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	10552,500
Wilcoxon W	139330,500
Z	-1,558
Asymp. Sig. (2-tailed)	,119

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Immediate utility	4	316	179,88	56840,50
	5	48	199,78	9589,50
	Total	364		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Immediate utility
Mann-Whitney U	6754,500
Wilcoxon W	56840,500
Z	-1,255
Asymp. Sig. (2-tailed)	,210

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	1	87	451,63	39291,50
	2	1031	568,60	586229,50
	Total	1118		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	35463,500
Wilcoxon W	39291,500
Z	-3,372
Asymp. Sig. (2-tailed)	,001

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	1	87	272,48	23705,50
	3	507	301,79	153009,50
	Total	594		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	19877,500
Wilcoxon W	23705,500
Z	-1,512
Asymp. Sig. (2-tailed)	,131

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	1	87	182,23	15854,00
	4	316	207,44	65552,00
	Total	403		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	12026,000
Wilcoxon W	15854,000
Z	-1,837
Asymp. Sig. (2-tailed)	,066

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	1	87	64,42	5604,50
	5	48	74,49	3575,50
	Total	135		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	1776,500
Wilcoxon W	5604,500
Z	-1,468
Asymp. Sig. (2-tailed)	,142

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	2	1031	802,65	827536,00
	3	507	702,08	355955,00
	Total	1538		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	227177,000
Wilcoxon W	355955,000
Z	-4,325
Asymp. Sig. (2-tailed)	,000

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	2	1031	688,17	709500,00
	4	316	627,78	198378,00
	Total	1347		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	148292,000
Wilcoxon W	198378,000
Z	-2,507
Asymp. Sig. (2-tailed)	,012

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	2	1031	540,64	557404,00
	5	48	526,17	25256,00
	Total	1079		

Test Statistics[a,b]

	Future utility
Mann-Whitney U	148292,000
Wilcoxon W	198378,000
Z	-2,507
Asymp. Sig. (2-tailed)	,012

a. Promoter = EVOLUI.COM

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	24080,000
Wilcoxon W	25256,000
Z	-,328
Asymp. Sig. (2-tailed)	,743

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	3	507	406,35	206020,00
	4	316	421,06	133056,00
	Total	823		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	77242,000
Wilcoxon W	206020,000
Z	-,888
Asymp. Sig. (2-tailed)	,374

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	3	507	276,03	139949,00
	5	48	298,77	14341,00
	Total	555		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	11171,000
Wilcoxon W	139949,000
Z	-,966
Asymp. Sig. (2-tailed)	,334

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Future utility	4	316	181,40	57321,00
	5	48	189,77	9109,00
	Total	364		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Future utility
Mann-Whitney U	7235,000
Wilcoxon W	57321,000
Z	-,530
Asymp. Sig. (2-tailed)	,596

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	1	88	497,75	43802,00
	2	1026	562,62	577253,00
	Total	1114		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	39886,000
Wilcoxon W	43802,000
Z	-1,884
Asymp. Sig. (2-tailed)	,060

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	1	88	299,07	26318,50
	3	507	297,81	150991,50
	Total	595		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	22213,500
Wilcoxon W	150991,500
Z	-,065
Asymp. Sig. (2-tailed)	,948

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	1	88	194,87	17148,50
	4	316	204,63	64661,50
	Total	404		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	13232,500
Wilcoxon W	17148,500
Z	-,715
Asymp. Sig. (2-tailed)	,475

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	1	88	66,84	5881,50
	5	49	72,89	3571,50
	Total	137		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	1965,500
Wilcoxon W	5881,500
Z	-,878
Asymp. Sig. (2-tailed)	,380

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	2	1026	801,24	822069,50
	3	507	697,71	353741,50
	Total	1533		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	224963,500
Wilcoxon W	353741,500
Z	-4,458
Asymp. Sig. (2-tailed)	,000

a. Promoter = EVOLUI.COM

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	2	1026	801,24	822069,50
	3	507	697,71	353741,50
	Total	1533		

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	2	1026	683,97	701757,50
	4	316	631,00	199395,50
	Total	1342		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	149309,500
Wilcoxon W	199395,500
Z	-2,205
Asymp. Sig. (2-tailed)	,027

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	2	1026	537,78	551763,50
	5	49	542,58	26586,50
	Total	1075		

a. Promoter = EVOLUI.COM

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	3	507	402,73	204186,50
	4	316	426,87	134889,50
	Total	823		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	75408,500
Wilcoxon W	204186,500
Z	-1,459
Asymp. Sig. (2-tailed)	,145

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	3	507	275,78	139819,50
	5	49	306,66	15026,50
	Total	556		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	11041,500
Wilcoxon W	139819,500
Z	-1,321
Asymp. Sig. (2-tailed)	,187

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Ranks[a]

	Groups	N	Mean Rank	Sum of Ranks
Global quality perception	4	316	181,31	57294,50
	5	49	193,89	9500,50
	Total	365		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	7208,500
Wilcoxon W	57294,500
Z	-,801
Asymp. Sig. (2-tailed)	,423

a. Promoter = EVOLUI.COM

b. Grouping Variable: Groups

Appendix 14: Tests to the Equality Between the Trainer's Inicial Certification Course and Regular Online Courses

Ranks[a]

	The course is trainer's initial certification course	N	Mean Rank	Sum of Ranks
Global quality perception	Not a Trainer's Initial Training Course	1322	955,24	1262823,50
	A Trainer's Initial Training Course	664	1069,68	710267,50
	Total	1986		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global quality perception
Mann-Whitney U	388320,500
Wilcoxon W	1262823,500
Z	-4,338
Asymp. Sig. (2-tailed)	,000

a. Promoter = EVOLUI.COM

b. Grouping Variable: The course is trainer's initial certification course

Ranks[a]

	The course is trainer's initial certification course	N	Mean Rank	Sum of Ranks
Global satisfaction	Not a Trainer's Initial Training Course	1325	967,86	1282412,50
	A Trainer's Initial Training Course	669	1056,21	706602,50
	Total	1994		
Fulfillment of expectations	Not a Trainer's Initial Training Course	1322	952,11	1258690,00
	A Trainer's Initial Training Course	670	1084,09	726338,00
	Total	1992		
Initial motivation	Not a Trainer's Initial Training Course	1323	1005,71	1330557,50
	A Trainer's Initial Training Course	670	979,80	656463,50
	Total	1993		
Final motivation	Not a Trainer's Initial Training Course	1317	944,50	1243909,00
	A Trainer's Initial Training Course	661	1079,16	713322,00
	Total	1978		
Fulfillment of training objectives	Not a Trainer's Initial Training Course	1319	975,28	1286394,00
	A Trainer's Initial Training Course	667	1029,53	686697,00
	Total	1986		
The platform and its functions	Not a Trainer's Initial Training Course	1318	996,06	1312810,50
	A Trainer's Initial Training Course	668	988,44	660280,50
	Total	1986		
Training contents	Not a Trainer's Initial Training Course	1322	985,28	1302544,50
	A Trainer's Initial Training Course	669	1017,18	680491,50
	Total	1991		

The trainer's expertise	Not a Trainer's Initial Training Course	1315	1005,01	1321584,50
	A Trainer's Initial Training Course	668	966,39	645551,50
	Total	1983		
The contribution of the forum for the learning process	Not a Trainer's Initial Training Course	1319	983,68	1297468,00
	A Trainer's Initial Training Course	669	1015,84	679598,00
	Total	1988		
The dynamics and help of the tutor in the forum	Not a Trainer's Initial Training Course	1308	1002,93	1311831,00
	A Trainer's Initial Training Course	668	960,25	641445,00
	Total	1976		
Competence, kindness and promptness of the staff	Not a Trainer's Initial Training Course	1316	1029,12	1354317,00
	A Trainer's Initial Training Course	669	921,96	616788,00
	Total	1985		
Immediate utility	Not a Trainer's Initial Training Course	1322	963,00	1273090,00
	A Trainer's Initial Training Course	667	1058,42	705965,00
	Total	1989		
Future utility	Not a Trainer's Initial Training Course	1319	948,80	1251461,50
	A Trainer's Initial Training Course	670	1085,96	727593,50
	Total	1989		
Global quality perception	Not a Trainer's Initial Training Course	1322	955,24	1262823,50
	A Trainer's Initial Training Course	664	1069,68	710267,50
	Total	1986		
Quality-price relation	Not a Trainer's Initial Training Course	1318	938,04	1236338,50
	A Trainer's Initial Training Course	657	1088,22	714961,50
	Total	1975		

a. Promoter = EVOLUI.COM

Test Statistics[a,b]

	Global satisfaction	Fulfillment of expectations	Initial motivation	Final motivation	Fulfillment of training objectives	The platform and its functions	Training contents	The trainer's expertise	The contribution of the forum for the learning process	The dynamics and help of the tutor in the forum	Competence, kindness and promptness of the staff	Immediate utility	Future utility	Global quality perception	Quality-price relation
Mann-Whitney U	403937,500	384187,000	431678,500	376006,000	415854,000	436834,500	428041,500	422105,500	426928,000	417999,000	392673,000	398587,000	380921,500	388320,500	367117,500
Wilcoxon W	1282412,500	1258690,000	656463,500	1243909,000	1286394,000	660280,500	1302544,500	645551,500	1297468,000	641445,000	616788,000	1273090,000	1251461,500	1262823,500	1236338,500
Z	-3,323	-4,946	-,972	-5,076	-2,043	-,287	-1,203	-1,487	-1,242	-1,630	-4,147	-3,597	-5,206	-4,338	-5,644
Asymp. Sig. (2-tailed)	,001	,000	,331	,000	,041	,774	,229	,137	,214	,103	,000	,000	,000	,000	,000

a. Promoter = EVOLUI.COM

b. Grouping Variable: The course is trainer's initial certification course

Appendix 15: Instrument on Motivation and Perceptions of Value

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De quem partiu a ideia de frequentar este curso?

- Partiu de mim
- Partiu da empresa para a qual trabalho

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Quem vai pagar a sua inscrição?

- Eu
- A empresa para a qual trabalho

Se foi a empresa que pagou a inscrição, responda à seguinte questão. Se não, ignore-a.

Se tivesse de pagar a formação do seu bolso, frequentaria à mesma o curso?

- Sim
- Não, o tema não me interessa particularmente
- Não, não podia pagar
- Não, porque existem outras formações mais prioritárias para mim

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Decidiu frequentar este curso:

- Pelos efeitos que esta formação pode ter (por exemplo, por lhe abrir oportunidades profissionais ou o auto-realizar)
- Por outros factores (por exemplo, porque gosta destes cursos, porque costuma gostar das formações a que vai, porque gosta de fazer formações, etc.)

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Frequentou acções de formação nos últimos 6 meses?

Sim Não

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Frequentou acções de formação nos últimos 6 meses

Identifique o principal motivo que o levou a frequentar essas formações:

- Porque posso vir a precisar no futuro
- Porque precisava de enriquecer o meu curriculum
- Porque precisava de mudar de emprego e a formação ia ajudar-me nisso
- Porque mudei de função e precisava de formação
- Porque a formação era importante para poder vir a progredir na empresa onde estou
- Porque na minha área de trabalho preciso de estar sempre a fazer formações para me manter actualizado
- Porque gosto muito de ir fazendo formações para me ir enriquecendo
- Porque faz parte da politica da empresa dar muita formação aos seus colaboradores
- Porque precisava urgentemente de fazer uma formação sobre o tema para desempenhar melhor a minha função
- Porque me sindo desactualizado(a) e as novas gerações já sabem tudo sobre o tema e eu precisava também de passar a saber

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Não frequentou acções de formação nos últimos 6 meses

Identifique o principal motivo que o levou a não fazer formação:

- Porque não precisei
- Porque a empresa não tem uma politica de formação definida
- Porque não precisava de mudar de emprego
- Por incompatibilidade de horários
- Por falta de tempo
- Por os preços das formações que existiam serem demasiado elevados
- Porque sou uma pessoa auto-didacta e prefiro ir aprendendo sozinho
- Porque as formações que existiam não me iam trazer valor acrescentado nenhum
- Porque não penso mudar de função dentro da empresa nos próximos tempos
- Porque acho que não se aprende nada estando 'fechado' numa sala de formação

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No seu entender, o valor de uma formação vem, essencialmente:

- Das oportunidades profissionais que a formação pode vir a proporcionar
- Do preço pago pela formação e do sacrifício financeiro necessário envolvido
- Do estatuto (pessoal e profissional) que a formação garante
- Da auto-realização que a formação lhe proporciona
- Da experiência em si que a formação lhe proporciona
- Da utilidade prática que a formação tem para si
- Da excelência ou da qualidade da formação

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Considera-se uma pessoa que precisa de estar permanentemente em formação?

Sim | Não

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Considera-se uma pessoa que precisa de estar permanentemente em formação

Porquê?

Identifique o motivo com o qual mais se identifica:

- Porque a minha profissão exige que esteja sempre a actualizar-me
- Porque faz parte da minha maneira de ser procurar saber um pouco de tudo
- Porque se não o fizer, outros o farão e não podemos perder a 'carruagem'
- Porque preciso que me surjam novas oportunidades
- Porque não tenho um emprego estável

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Não se considera uma pessoa que precisa de estar permanentemente em formação

Porquê?

Identifique o motivo com o qual mais se identifica:

- Porque a minha função actual não o exige
- Porque só vale a pena dedicarmo-nos a aprender coisas que possamos aplicar na prática
- Porque não sou uma pessoa com uma ambição desmedida
- Porque não estou à procura de novos oportunidades de carreira
- Porque tenho um emprego estável

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Decidiu frequentar este curso:

- Porque precisa mesmo de aprender alguns conceitos abordados ao longo do curso e tem uma necessidade efectiva de formação nesta área
- Porque o tema lhe interessa e sente-se realizado a frequentar acções de formação

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Quais os motivos que o levam a frequentar esta formação?

- Para superar obstáculos
- Para me realizar profissionalmente
- Para ganhar mais
- Para ser mais autónomo (a)
- Para saber mais
- Para resistir à agressividade do mercado de trabalho
- Para me integrar num grupo
- Para poder mostrar os meus conhecimentos e contar as minhas experiências
- Para evitar cometer erros
- Para conhecer novas pessoas e criar novos contactos
- Para me sentir bem comigo mesmo
- Para me divertir
- Para ganhar estatuto
- Para cumprir uma exigência da empresa para a qual trabalho
- Para ter mais poder (por exemplo, poder de decisão, ou autonomia)
- Para ter uma experiência agradável

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Quando frequenta formações geralmente fá-lo:

- ☐ Para realização pessoal ou profissional
- ☐ Para conhecer novas pessoas e criar um novo circulo de amizades e conhecimentos
- ☐ Para progredir na carreira e ter mais poder de decisão ou de autonomia

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Se a sua entidade patronal lhe marca uma formação relacionada com a sua função isso faz com que se sinta mais motivado para desempenhar a sua função?

Sim Não

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Quando sua entidade patronal lhe marca uma formação relacionada com a sua função isso faz com que se sinta mais motivado para desempenhar a sua função.

Porquê?

Identifique o principal motivo:

- Porque geralmente a formação vai ajudar-me a fazer melhor o meu
- Porque sempre se aprende mais
- Porque isso significa que se preocupam comigo e com o meu trabalho
- Porque geralmente passo a gostar mais do que faço

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Quando sua entidade patronal lhe marca uma formação relacionada com a sua função isso não faz com que se sinta mais motivado para desempenhar a sua função.

Porquê?

Identifique o principal motivo:

- Porque o trabalho continua o mesmo
- Porque eu não gosto do meu trabalho
- Porque a formação não tem utilidade prática na minha função
- Porque depois não me dão novas oportunidades

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Se a sua entidade patronal não lhe proporcionar formação profissional relacionada com a sua função isso causa-lhe algum desconforto?

Sim Não

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Se a sua entidade patronal não lhe proporcionar formação profissional relacionada com a sua função isso causa-lhe algum desconforto.

Porquê?

Identifique o principal motivo:

- Porque precisava de formação e não ma dão
- Porque isso transmite-me a ideia de que não me valorizam
- Porque a lei obriga a empresa a dar-me formação e não ma dão
- Porque posso vir a precisar desses conhecimentos no futuro e depois não os tenho

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Se a sua entidade patronal não lhe proporcionar formação profissional relacionada com a sua função isso não lhe causa desconforto.

Porquê?

Identifique o principal motivo:

- Porque eu vou fazendo formação e pago-a eu
- Porque para a função que actualmente desempenho, não preciso de
- Porque as formações não iam resolver os problemas que tenho no trabalho
- Porque não sou de me pôr com exigências

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Para terminar o seu inquérito, carregue no botão abaixo:

Terminar