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# How to build an e-learning product: Factors for student/customer satisfaction

**Gandolfo Dominici** [a,*], **Federica Palumbo** [b]

[a] *University of Palermo, viale delle Scienze ed. 13, 90128, Palermo, Italy*
[b] *Sapienza University of Rome, Via del Castro Laurenziano, 00161, Rome, Italy*

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**Abstract** The increasing use of web technologies has changed the way business is done, including in the field of education. In the last decade, the development of electronic learning (*e-learning*) systems became crucial to meet students' demand. In this study, we adopt a relationship marketing perspective and apply the Kano Model to propose a way to build a non-academic e-learning course that can achieve student satisfaction. We measure the relevance of e-learning requirements from university students' perspective to identify their expectations about e-learning courses and obtain relevant characteristics that can help to plan an e-learning product capable of achieving high customer satisfaction. Our study is based on interviews of 239 students from the Faculty of Economics at the University of Palermo. Through surveys, we measure users' satisfaction of e-learning courses and classify quality attribute expectations into Kano Model categories. The indexes we create reveal key elements that can increase or decrease customers' perceived satisfaction of e-learning courses. This study has specific value for academics who work on new product development in the field of customer satisfaction. Highlighting the correlation between the classification of expectations and satisfaction level, we find practical implications for educational institutions and/or other companies interested in developing and selling e-learning courses based on students' needs using a customer-oriented approach.


## 1. School in my computer: The emergence of e-learning

In the last decade, the increased use of the Internet and web technologies has grown so considerably that it caused a technological revolution. Organizations of various types and sizes and across almost every sector are adapting their old brick-and-mortar systems into virtual systems and are integrating web technologies into their operations (Aladwani & Palvia, 2002; Currie, 2000; Murillo & Velázquez, 2008).

This technological revolution has affected many sectors, including the educational system. That is, the evolution of technology changed not only the

* Corresponding author
*E-mail addresses:* gandolfo.dominici@unipa.it (G. Dominici), federica.palumbo@uniroma1.it (F. Palumbo)

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way we live, but also the way we learn. The traditional context of teaching and learning now involves experiencing online alternatives to traditional types of education and training systems (Marold, Larsen, & Moreno, 2002; Zhang & Nunamaker, 2003).

In this article, we consider students as potential customers of electronic learning (*e-learning*) courses. In Italy, as well as in other European countries, policymakers have recently addressed the matter of attracting university students with more aggressive marketing programs. As a result, public universities have also started considering students as customers to whom university programs must be sold. We do not subscribe to this point of view about university courses, but believe this approach can be useful if adopted to create non-university e-learning courses that students can follow individually to gain more knowledge about topics in which they are interested or to accomplish professional goals. For this reason, we also think that university students represent a primary target for e-learning courses.

Referring to learning via the Internet, e-learning has been widely adopted as a promising solution to offering learning-on-demand opportunities to individuals to reduce training time and costs, as well as to reduce the gap between needs and preferences and regional, national, and international distances (Murillo & Velázquez, 2008; Wang, Wang, & Shee, 2007). E-learning is not synonymous with distance learning because while distance is one element of e-learning, it is not the main differentiator. In other words, e-learning is not synonymous with ubiquitous learning (*u-learning*), which refers to the possibility of learning in any place. In addition, it is more than personal learning, which is a self-organized kind of learning. What constitutes the distinctive feature of e-learning is basic technology support. The European Commission describes e-learning as the use of the Internet and new multimedia technologies to advance the quality of learning by providing access to resources and services, as well as enabling remote exchange and collaboration (Alptekin & Karsak, 2011).

E-learning service providers are becoming conscious of the implications of the Internet on their activities and are investing significant time and money in developing new instruments directly targeted to new interfaces and applications. In fact, the e-learning market has had a growth rate of 35.6% in recent years (Alptekin & Karsak, 2011). E-learning systems represent a valid solution of avoiding problems related to physical mobility, allowing students/customers to follow individual online courses within their homes.

Although we consider e-learning for university students in this work, it is important to note that corporate training is another major target for e-learning providers. To be competitive in the turbulent business environment, companies have to keep their employees updated with the latest knowledge and technologies. There are numerous examples of large companies adopting e-learning solutions for their corporate training, such as Hewlett-Packard (HP) and Cisco Systems (Zhang, 2002; Zhang & Nunamaker, 2003). Cisco developed a video e-learning platform, vSearch, to train employers and update their skills through video-based instruction on the web. vSearch videos have different topics, such as product information and features, and are available on-demand to employers around the globe. HP has aligned its e-learning strategies with employees' preferences, considering that they differ substantially by region. Hence, HP has customized its training programs to meet all employees' needs and expectations, and improve trainee performance (DeRouin, Fritzsche, & Salas, 2005; O'Leonard, 2004).

## 2. Student/customer satisfaction as the e-learning provider's goal

### 2.1. The relational approach to marketing and the relevance of customer satisfaction

The real aim of every business is not to supply, not to sell, or not to serve, but rather to satisfy the needs that drive customer satisfaction. Organizations able to rapidly understand and satisfy customers' needs make greater profits than those which cannot (Barsky & Nash, 2003). To focus on customer satisfaction is not an easy task; it is necessary to develop strategies, operative routines, and tools to identify consumers' needs and transform them into products and services. Customer satisfaction must not only be conceived as a key differentiator from competitors, but also needs to be considered a business philosophy that tends to the creation of value for customers, anticipating and managing their expectations and demonstrating the ability and responsibility to satisfy their needs. In fact, enterprises exist because they have a customer to satisfy (Valdani, 2009).

On the customer side, the proliferation of the Internet and the World Wide Web has increased the possibilities to interface and interact with web-based applications, empowering the role of the customer, which is progressively shifting from consumer to 'prosumer.' In *Take Today*, McLuhan and Nevitt (1972) suggested that electronic technologies would transform consumers into producers.

Some years later, in *The Third Wave*, futurologist Alvin Toffler (1980) coined the term *prosumer*, predicting the blurring distinction between the producer and consumer due to the saturation of markets with standardized products, which would in turn drive the search for higher levels of product differentiation and personalization. This implies that identifying customers' needs is no longer sufficient to achieve customer satisfaction because customers also want to be involved in designing a new product or service. Firms have to manage the co-creation of value with customers.

## 2.2. The student as a customer

Today, marketing has become more accepted in the higher education environment (Jurkowitsch, Vignali, & Kaufmann, 2006). Goldgehn (1991, p. 40) views marketing "as an excellent way to attract students. . . .For many institutions, student satisfaction remains caught in the admissions office, and fulfils [sic] strictly a sales and promotional function."

The concept of student satisfaction is derived from that of customer satisfaction. Zeithaml, Parasuraman, and Berry (1990) highlighted how the concept of satisfaction can be measured by the gap between consumption experiences and expectations. The customer satisfaction concept needs to be modified to be applied to educational services in order to comprise constitutional amendments, administrative policies, and educational goals (Stone & Thomson, 1987). As Oliver and Swan (1989) pointed out, satisfaction is an emotional issue that can be viewed as an individual consideration based on personal experiences and beliefs. Applying emotional issues to students' satisfaction, we define satisfaction in this context as students' perceptions of or attitudes toward learning activities. According to this view, students' happiness is an index of their satisfaction. Thus, students' satisfaction can be seen as a key outcome of education (Sanders & Chan, 1996) and as a quality-enhancement tool designed to improve the quality of the student experience (Harvey, Plimmer, Moon, & Geall, 1997).

Monitoring the satisfaction of students requires that educational institutions continuously collect data and information on what students think about the services provided. Universities can employ information on student satisfaction to better understand student needs and make changes in their offers to meet students' desires. Many authors consider this ability of educational institutions as an index of their attentiveness to students' requirements and a measure of efficacy and success (Rasli, Danjuma, Yew, & Igbal, 2011; Schuh & Upcraft, 2000).

E-learning is a growing and relevant educational method because it gives power to users. This means that thanks to e-learning, the user can choose from a wide range of available products. In contrast to a traditional course, in the case of e-learning, students are free to choose the course that best fits their requirements because they are not constrained by geographical, physical, or financial limitations. Hence, in the context of e-learning, students can be conceived as customers, and as customers, they can choose the products or services they desire and will guarantee their satisfaction.

Also, in countries like Italy, where most university education is based on state universities, as well as in other countries, policymakers have started to consider university education as a service supplied to customers (i.e., students). As a result, most Italian public universities have begun to gather customer satisfaction data from students in order to make changes in their educational offerings and become more attractive.

It is important to point out that a limitation of the customer satisfaction approach to course design is that it does not involve any measure of courses' effective quality in terms of students' learning or teaching quality. According to Bolton and Drew (1991), service quality and customer satisfaction—although related—are distinct concepts. The Kano Model that we use in this study provides some insight into the characteristics of an ideal e-learning course as desired by the student/customer, but cannot be used to evaluate learning results. For this reason, we personally do not agree with the prosumer approach to planning university classes, as we believe that what students desire is not always what is best for them. That being said, we think this approach is valid for private non-academic courses that can use e-learning to help students gain specific knowledge or acquire certain skills useful for finding a good job or enhancing one's career. Satisfying these needs requires implementing appropriate tools to develop e-learning products that can meet student needs concerning the product, the organization, the relationship, and marketing.

## 2.3. Student satisfaction as a path to be competitive in the digital education arena

Offers supplied by universities can be integrated with e-learning courses from private companies or even from the same universities in order to meet technology-savvy students' increasing demand for knowledge and skills. In this scenario, e-learning service providers must remember that the e-learning market has a global dimension and that competition is much tougher compared to that of traditional

courses. For instance, in the e-learning context, students may have the choice to take essentially the same course provided by American, Japanese, and European universities or even private institutions. For this reason, e-learning providers that identify students' needs and involve them in the design of a course (as prosumers) can pursue student satisfaction and be more competitive. Thus, the Kano Model is a valid tool for discovering the right features to design an e-learning product that meets student/customer requirements.

## 3. The Kano Model: How does it work?

### 3.1. Introducing the Kano Model

In this study, we use the model proposed by Noriaki Kano in 1984 to find the ideal characteristics of an e-learning product that can better satisfy student/customer expectations. There is a great deal of literature about applying the Kano Model for a vast variety of products and services, including e-learning issues. Among the literature on applications of the Kano Model to e-learning, Lee, Shih, and Tu (2002) used the Kano Model to construct an ideal web-based learning environment platformed on students' needs and to implement specific e-learning tactics for supplying more specific material to each student. In addition, Chen and Lin (2007) adopted the Kano Model to measure e-learning system satisfaction. Similarly, in order to identify user requirements regarding a commercial bank's e-learning services, Chen and Kuo (2011) applied the Kano Model to sort the e-learning service quality elements into various categories and then calculated customer satisfaction indexes. As these examples demonstrate, the Kano Model provides a useful approach based on the theory of attractive quality to categorize product/service attributes according to how they are perceived by customers and their impact on customer satisfaction.

We chose the Kano Model rather than other customer satisfaction models widely used in the literature, including SERVQUAL (Parasuraman, Zeithmal, & Berry, 1988), e-SERVQUAL (Parasuraman, Zeithaml, & Malhotra, 2005), and E-Learning Satisfaction (ELS) (Wang, 2003), for two main reasons:

1. The Kano Model can be applied both before (i.e., to design the customer's ideal product or service) and after (i.e., to measure customer satisfaction) the consumption experience. As Chaudha, Jain, Singh, and Mishra (2011) pointed out, the Kano Model is an useful tool for identifying customers' needs and transforming these needs into design requirements, engineering specifications, and ultimately into production details. Applying this model to e-learning courses for individual students allows us to identify the main requirements that an e-learning course should have to be considered attractive by students.

2. Compared with other models, the Kano Model does not assume the existence of a linear relationship between product/service performance and customer satisfaction. Kano noticed that customers' requirements are not equivalent and that some requirements, in fact, are capable of generating more satisfaction than others. Moreover, customer satisfaction is not always proportional to the functionality of the good, which implies that higher quality does not necessarily lead to higher satisfaction for all product attributes or services requirements.

Kano classified product/service attributes into six categories based on their impact on customer satisfaction:

- Must-be (M) (*dissatisfier* or basic factors): Customers consider these requirements as basic factors; thus, their presence will not increase customers' satisfaction level significantly while their absence will cause extreme dissatisfaction.

- One-dimensional (O) (*performance factors*): These factors cause satisfaction if their performance is high while they cause dissatisfaction if their performance is low. These attributes are linear and symmetric because they are typically connected to customers' explicit needs and desires. The company should try to be competitive here.

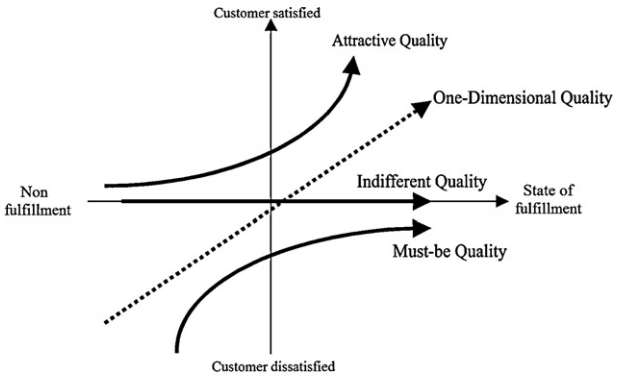
- Attractive (A) (*satisfiers* or excitement factors): These requirements cause customer satisfaction if delivered while they do not cause dissatisfaction if they are not. The company can use these factors to distinguish itself from its competitors in a positive way.

- Indifferent (I): Customers do not care about these features either way.

- Reverse (R): Customers do not desire these product attributes and also expect the reverse.

- Questionable (Q): It is unclear whether customers expect these attributes because they gave unusable responses due to misunderstanding the

**Figure 1. Kano Model**




Source: Adapted from Kano et al. (1984)

questions on the survey or making an error when filling out the questionnaire.

The horizontal axis in the Kano diagram (see Figure 1) shows the state of fulfillment of a certain quality attribute while the vertical axis displays customer satisfaction with a certain quality attribute (Kano, Seraku, Takahashi, & Tsuji, 1984). In this diagram, only the first four requirements are represented.

## 3.2. Implementing the Kano Model

Measuring the Kano Model follows four steps:

1. Identifying customer needs
2. Developing a Kano questionnaire
3. Administering the questionnaire
4. Interpreting and evaluating the results

Identifying customer needs can be achieved via individual interviews or through focus group interviews with members who already know the product/service. Even if individual interviews are characterized by reduced time and cost, focus groups are usually more useful because interaction among group members facilitates the emergence of latent needs. Typically, individual interviews are helpful to identify one-dimensional quality attributes while focus groups are useful for identifying attractive elements. Shiba, Graham, and Walden (1993) formulated five questions that are useful in this phase to investigate customer needs:

1. Which associations does the customer make when using product/service X?
2. Which problems/defects/complaints does the customer associate with the use of product/service X?
3. Which criteria does the customer take into consideration when buying product/service X?
4. Which new features/services would better meet the customer's expectations?
5. What would the customer change in product/service X?

After identifying customer needs and ideal product/service features, the questionnaire must be created. Kano's questionnaire is characterized by pairs of customer requirement questions. As such, each question is composed of two parts:

- How do you feel if feature X is present in the product/service? (Functional form of the question.)
- How do you feel if feature X is not present in the product/service? (Dysfunctional form of the question.)

For each functional and dysfunctional question, the customer can select one of five alternative answers, which are expressions of different degrees of customer perceptions: (1) I like it that way, (2) It must be that way, (3) I'm neutral, (4) I can live with it that way, and (5) I dislike it that way. Crossing the answers for the functional and dysfunctional questions for every questionnaire, through the help of a matrix formulated by Kano, customer perceptions can be evaluated into quality dimensions (M: must-be requirement, O: one-dimensional, A: attractive, I: indifferent, R: reverse, Q: questionable requirements) (Table 1).

For each couple of degrees of customer perceptions, the matrix associates one of the requirements listed above. For example, if the customer replies, "I'm neutral" to the functional question and "I dislike it that way" to the dysfunctional question, the requirement, according Kano's matrix, is considered 'must-be' (M).

## 3.3. Interpretation and evaluation

The last phase of the Kano Model is interpreting and evaluating the results. There are several methods to evaluate results (Matzler & Hinterhuber, 1998):

- *Evaluation according frequencies*: Starting from the results obtained through the function/dysfunction matrix described above, every

**Table 1. Kano evaluation matrix**

| | | **Dysfunctional question:** How do you feel if requirement X is not present? | | | | |
|---|---|---|---|---|---|---|
| | | *I like it that way* | *It must be that way* | *I'm neutral* | *I can live with it that way* | *I dislike it that way* |
| **Functional Question:** How do you feel if requirement X is present? | *I like it that way* | Q | A | A | A | O |
| | *It must be that way* | R | I | I | I | M |
| | *I'm neutral* | R | I | I | I | M |
| | *I can live with it that way* | R | I | I | I | M |
| | *I dislike it that way* | R | R | R | R | Q |
| | | **RESULTS:** | | | | |
| | | **M** = must-be requirement<br>**O** = one-dimensional requirement<br>**A** = attractive requirement | | | **I** = indifferent requirement<br>**R** = reverse requirement<br>**Q** = questionable requirement | |

Source: Adapted from Kano et al. (1984)

requirement can be classified in one of the five categories on the basis of the highest frequency of responses.

- *The evaluation rule M>O>A>I*: When it is not possible to identify a requirement with a precise category and it is only possible to determine its generic impact on customer satisfaction, a hierarchical rule of category importance can be used to design a product/service. (The most important requirements that cannot be neglected in a product/service are must-be requirements followed by—in order of importance—one-dimensional, attractive, and indifferent).

- *Customer satisfaction index*: This method was developed by Berger and colleagues in 1993. The customer satisfaction coefficient indicates if satisfaction can be improved by meeting a product requirement or if fulfilling this product requirement just prevents the customer from being dissatisfied (Berger et al., 1993). To estimate the average impact on customer satisfaction, it is necessary to add the attractive and one-dimensional values and then divide them by the total number of attractive, one-dimensional, must-be, and indifferent responses. To calculate the average impact on dissatisfaction, add the must-be and one-dimensional columns and divide by the same normalizing factor. The customer satisfaction index has a value between 0 and 1 (values close to 1 indicate great satisfaction while values close to 0 indicated low satisfaction). The customer dissatisfaction index can have a value between -1 and 0 (values close to -1 indicate great dissatisfaction while values close to 0 indicate low dissatisfaction).

Customer Satisfaction Index (CS)

$$(\mathrm{CS}) = \frac{\mathrm{A} + \mathrm{O}}{\mathrm{M} + \mathrm{O} + \mathrm{A} + \mathrm{I}}$$

Customer Dissatisfaction Index (CD)

$$(\mathrm{CD}) = \frac{\mathrm{M} + \mathrm{O}}{\mathrm{M} + \mathrm{O} + \mathrm{A} + \mathrm{I}} \cdot (-1)$$

Once the typology of expected requirements for the product or service is recognized, the company can obtain detailed information about the best way to model its offering to maximize customer satisfaction. In more detail, the strategic implications of the Kano Model are to (1) fulfill all must-be requirements, (2) be competitive regarding one-dimensional requirements, (3) stand out with attractive requirements, (4) not spend time and money in developing a requirement to which customers are indifferent, and (5) avoid reverse requirements.

This model can be particularly useful for creating advantage in e-learning courses, as it allows designers to identify priorities for service development, better understand service requirements, and distinguish the essential requirements (i.e., must-be and one-dimensional) from the attractive requirements. An e-learning course characterized by must-be and one-dimensional requirements surely does not cause student dissatisfaction, but it risks being interchangeable. Hence, attractive elements are important to differentiate e-learning course offerings, especially in this sector, which is characterized by high levels of competition.

## 4. Identifying the customer satisfaction of e-learning

### 4.1. The sample

As we mentioned before, university students are a major target for e-learning services. To determine their expectations and requirements in terms of customer satisfaction for a generic e-learning course, we applied the Kano Model using the data collected from a sample of undergraduate students of the Faculty of Economics at the University of Palermo (Italy). Prior to submitting questionnaires to students, we held a focus group interview with 10 students who were already familiar and had different experiences with e-learning courses. At the focus group, the students answered questions originally formulated by Shiba et al. (1993) and provided answers based on their previous satisfaction experiences. According to their answers, we identified six main expected features for an e-learning course:

1. A user-friendly e-learning platform
2. The presence of a personal tutor
3. A certificate of attendance as a result of completing the course
4. The possibility to choose the days and hours to take the course
5. The presence of mandatory quizzes and exercises at the end of every teaching unit
6. The presence of a download area of documents and material to study offline

We then prepared questionnaires for the larger sample according to these characteristics. Regarding sex distribution, 44% of the student respondents were male while 56% were female; this reflects the average composition of university students at the University of Palermo. The average age was 22 years old, with the median distribution 21. The sample was composed of young students, which can be an interesting target for e-learning service providers. Half of the students interviewed lived in Palermo, 16.7% lived in the district of Palermo, 28.5% lived in other districts of Sicily, and 0.4% lived outside Sicily. Only a low percentage (3.8%) of students surveyed had previously taken an e-learning course; this aspect may indicate a potential and still unexpressed demand for e-learning. The main topics of the courses the students attended included marketing (30%), computer science (30%), foreign language (10%), business administration (10%), statistics (10%), and accounting (10%).

### 4.2. Applying the model

Using the evaluation method to evaluate the results, we determined the frequencies for each group of characteristics as described in Table 2. As is evident, questionable results (Q) had very low frequencies, implying that the questionnaire had high reliability.

Using the evaluation according to frequencies, some requirements (e.g., flexibility of time and hours, mandatory quizzes and exercises, a download area) cannot be considered as fitting neatly into one category because there is too little of a difference between the highest frequency and the frequencies of other characteristics. As such, we used the M>O>A>I rule to organize the importance of these requirements. The students interviewed considered the download area (whose frequency was between one-dimensional and attractive) as more important than flexibility of time and hours and mandatory quizzes and exercises (whose frequencies were between attractive and indifferent). We have to point out that while the requirement 'mandatory quizzes and exercises' has been considered attractive by the majority of respondents, 41 students indicated just the opposite. This is a typical example of mismatch between students' desires and what is better for their learning. The considerable number of responses that regard quizzes and exercises a

**Table 2. Classification of the requirements according to the Kano Model**

| | O | M | A | I | R | Q | Category |
|---|---|---|---|---|---|---|---|
| User-friendly platform | 68 | **90** | 45 | 34 | 2 | 0 | Must-be |
| Personal tutor | 19 | 41 | 41 | **126** | 10 | 2 | Indifferent |
| Certificate of attendance | 53 | 33 | 50 | **94** | 6 | 3 | Indifferent |
| Flexibility of time and hours | 42 | 19 | **83** | 74 | 15 | 6 | Attractive |
| Mandatory quizzes and exercises | 22 | 15 | **77** | 75 | 41 | 9 | Attractive |
| Download area | 80 | 20 | **84** | 44 | 3 | 8 | Attractive |

'reverse requirement' suggests that in order to meet all students' satisfaction, quizzes and exercises have to be designed in a way that does not annoy students (i.e., give priority to quick forms of assessment, such as multiple choice).

### 4.3. Results of the study

By analyzing the results of the model, we discovered the following points:

- A user-friendly platform is a requirement that consumers take for granted (i.e., a must-be requirement). Its presence does not determine satisfaction while its absence causes great dissatisfaction.

- The presence of a personal tutor and earning a certificate of attendance are considered unimportant by students (i.e., indifferent requirements). The presence of these requirements has no impact on customer satisfaction.

- Flexibility of time and hours, mandatory quizzes and exercises, and the presence of a download area are all elements whose presence increases the value of the e-learning course, as perceived by students (i.e., attractive requirements). Their fulfillment increases customer satisfaction while their absence does not determine dissatisfaction.

Analyzing these results, some practical implications emerge for designing e-learning courses. According to our findings, the service provider has to guarantee a user-friendly platform. It can also differentiate its offering from competitors by providing students the possibility of choosing when to follow the course, including mandatory quizzes and exercises at the end of every teaching unit, and providing the possibility of downloading teaching materials. On the other hand, it appears useless to expend resources toward tutors and certificates of course completion (Table 3).

To summarize and to verify the findings of applying the Kano Model to a generic e-learning product, we calculated the customer satisfaction index and the customer dissatisfaction index for each requirement in order to confirm if they coincided with results obtained through the Kano Model. The results of the customer satisfaction index indicate the following:

- The download area requirement has the greatest impact on customer satisfaction because its value is closest to 1. This result is in line with the results of the Kano Model. According to the Kano Model, the download area was, in fact, between one-dimensional and attractive—the two groups that influence customer satisfaction most of all.

- The personal tutor requirement, followed by a certificate of attendance and a user-friendly platform, have low levels on the customer satisfaction index. These results also agree with the Kano Model. In fact, these requirements are indifferent (personal tutor and certificate of attendance) and must-be (user-friendly platform). Hence, their presence does not determine satisfaction.

**Table 3. Customer satisfaction and customer dissatisfaction indexes for each e-learning requirement**

| E-learning requirement | CS | CD |
|---|---|---|
| User-friendly platform | 0.48 | -0.67 |
| Personal tutor | 0.26 | -0.26 |
| Certificate of attendance | 0.45 | -0.37 |
| Flexibility of time and hours | 0.57 | -0.28 |
| Mandatory quizzes and exercises | 0.52 | -0.20 |
| Download area | 0.72 | -0.44 |

With regard to the customer dissatisfaction index, we observed the following:

- The requirement whose absence causes the greatest level of dissatisfaction is the user-friendly platform. According to the Kano Model, a user-friendly platform is a must-be requirement. Must-be requirements cause a high degree of dissatisfaction when they are not provided because the customer takes their presence for granted. This result confirms the Kano Model findings.

- The requirement that causes a low degree of dissatisfaction when it is not provided is flexibility of time and hours. This is an attractive requirement, so its presence causes satisfaction, but its absence does not cause excessive dissatisfaction.

The results of customer satisfaction and dissatisfaction indexes coincide and confirm the results of the Kano Model. These indexes also supply numerical guidance for e-learning service providers who, through the values of these indexes, can better understand how to increase customer satisfaction and decrease customer dissatisfaction.

## 5. Conclusions: How e-learning courses can have market success

Through this empirical research, we distilled some relevant hints that can be useful for developing e-learning courses targeting university students.

We found that a user-friendly platform is a must-be requirement that needs to be a part of the service provided to avoid dissatisfying customers. We also found that the presence of a personal tutor and the release of a certificate of attendance as a result of completing the course are not important for customer satisfaction, while flexibility of time and hours, mandatory quizzes and exercises, and the presence of a download area are important elements to increase the perceived value of e-learning courses (i.e., attractive requirements).

We are aware of the limits of our research. First, while the proffered findings may be useful in 'selling' e-learning services, what is useful for selling products is not necessarily what is useful for learning. This is a general limit of customer satisfaction measurement that is worth a few words (even though it is not strictly related to the aim of this research). According to our personal and limited experience (based on the basic evaluations made in our faculty), students find the best teachers to be those who have two characteristics that are not explicitly included in the questionnaires:

1. They are not boring. The teachers that take a more relaxed approach in class tend to get better evaluations from students. In this case, student satisfaction and quality of learning may coincide, as this can be an enhancing characteristic for learning.

2. They give higher marks on final exams. This finding partially emerged from our results, from which we found that 41 students consider mandatory quizzes and exercises as a reverse requirement. We think the final exam is an important aspect of learning and not just a way for teachers to get retribution. It is through the final exam that students can become more aware of the limits of and/or satisfaction with what they learned. Unfortunately, many students are satisfied by a higher mark, even if this does not represent their true learning achievements.

This warns us that we need to put everything in the right place: quality of learning is not linearly linked to student/customer satisfaction. The aim of this study was to provide useful hints toward designing an e-learning service for students who want to learn more from home, in front of the computer, in a time-saving manner. It is not intended to suggest elements for designing university classes, for which an assessment of customer satisfaction characteristics should not be the main issue considered.

Another limit of this study is that we considered an ideal e-learning service ex-ante. Our goal was not to measure actual customer satisfaction of an existing e-learning course designed according to the characteristics we indicated. However, we may attempt this in future research if an e-learning provider designs an e-learning course according to our findings.

The third limitation is that the sample we interviewed is restricted in terms of place and number. However, we think our results can be useful in other contexts and countries as the social and income characteristics of our Sicilian university students are comparable to those of students from other Mediterranean countries with similar levels of educational development (e.g., Spain, Portugal, Greece). We plan to conduct further research to repeat this analysis at other universities in other countries to uncover differences and similarities in students' customer satisfaction requirements for e-learning.

## End Note

According to the Italian academic regulation, the attribution of the contributions of authors is the following:

- Sections 1, 2, 3, 5 to Gandolfo Dominici;

- Section 4 to Federica Palumbo.

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