

# Using Kano's Theory of Attractive Quality to Better Understand Customer Experiences with E-Services

By

**Anders Fundin**

Department of Quality Sciences  
School of Technology Management and Economics  
Chalmers University of Technology  
SE-412 96 Gothenburg, Sweden  
Phone: +46-31-7728182  
Fax: +46-31-7728185  
E-mail: Anders.Fundin@mot.chalmers.se

**Lars Nilsson**

Service Research Center  
Karlstad University  
SE-651 88 Karlstad, Sweden  
Phone: +46-54-7002134  
Fax: +46-54-836552  
E-mail: Lasse.Nilsson@kau.se

## Abstract

The interest in on-line services has increased during the last couple of years and there are now several models developed to better understand how customers evaluate e-service quality. In this empirical study we combine the use of the theories of attractive quality and technology readiness so as to explain customer experiences of e-services. A survey was conducted with 188 students at three universities in Sweden, asking how they assess an e-service that enables one to reserve and buy cinema tickets on-line. The main contribution of the study is its provision of evidence on how to interpret and improve customer satisfaction when designing e-services. Our belief is that an organization can gain a clearer grasp of how customer satisfaction is created with an e-service by taking into account customers' experiences with new technology.

**Key Words:** attractive quality, customer satisfaction, e-services, technology readiness.

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## 1. Introduction

Every year in Sweden brings eighteen million visits to the cinema. A large proportion of these are preceded by a visit to the different cinemas' web sites where customers can get information on actors and movies, watch trailers or order tickets to the movies of interest. The leading company on this e-market has about six million visitors annually using its e-service in order to reserve or buy cinema tickets on-line. In a research study of 278 Nordic retail banks, it was found that 85 percent of the banks offer an e-banking solution to their customers (Nielsen, 2002). For most customers the large supply of e-services is perceived as very promising. The customers can use these services anytime and anywhere; moreover, they can create a flexible and personalized service process. Gustafsson and Johnson (2003) suggest that self-service technologies such as e-ticket kiosks and on-line services have become important sources of customer satisfaction and loyalty. Such additions of e-services to the main service could be a first step in an effective multi-channel strategy. Technologies cannot replace service with its human elements, but a multi-channel strategy provides even greater opportunities. However, in order to integrate e-services within the strategies of organizations, the qualities of e-services must be considered as important as the qualities of the main services. In other words, it becomes essential to understand what e-service quality is and what defines its role in the customer experience.

There are several conceptual models of how to understand and improve the quality of e-services. Zeithaml et al. (2002) describe how the traditional SERVQUAL model has to be revised in order to be useful for companies interacting with their customers through the Internet. Parasuraman and Zinkhan (2002) explain that a critical question with e-services is to find what technology customers are willing to use, but also to find how these customers want to use the technology. Important sources of attractive product concepts are the lead users (von Hippel, 1986), and research presented by Parasuraman (2000) describes how to find these lead users by classifying users into categories by means of technology readiness. However, what is really attractive service quality and how can we measure the degree of customer satisfaction with different e-service attributes?

Inspired by Herzberg's Motivator-Hygiene Theory (M-H Theory), Professor Kano and his co-workers developed the theory of attractive quality (Kano et al., 1984). The theory is intended to better understand different aspects of how customers evaluate and perceive quality attributes. It explains how the relationship between the degree of sufficiency of a quality attribute, and customer satisfaction with it, can be classified into five categories of perceived quality: 'attractive quality', 'one-dimensional quality', 'must-be quality', 'indifferent

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quality' and 'reverse quality'. The theory predicts that quality attributes are dynamic, i.e. over time an attribute will change from being a satisfier to become a dissatisfier. One practical difficulty for service developers is that the dynamics of attributes only have been possible to observe in a historical perspective. Our paper suggests that service developers can use technology readiness to explain how the dynamics of attributes will occur and how the perceptions of attributes influence customer satisfaction.

As a result of a study of how 188 students in Sweden use an e-service to order cinema tickets, the present paper attempts to apply Kano's customer satisfaction measurement form, but also to combine it with theories of technology readiness. Our belief is that an organization can gain a better understanding of how customer satisfaction is created with an e-service by taking into account the individual customers' experiences with new technology. First, theories of customer satisfaction and e-service quality are discussed. This is followed by theories of attractive quality and technology readiness. Further, an application of on-line ordering of cinema tickets is provided. The present study provides evidence that customers' technology readiness influences the perception of specific quality attributes.

## **2. Customer satisfaction and e-service quality**

Johnson (2001) views customer satisfaction as customers' evaluation of their purchase and consumption experience with a product service, brand or company. There are two main perspectives on customer satisfaction, i.e. cumulative and transactional satisfaction. Cumulative satisfaction is a customer's overall experience with a service or a product provider, and transactional satisfaction is the customer's reaction to a particular product transaction. It is not obvious, however, that there is a linear relationship between satisfaction and dissatisfaction (Oliver, 1997). Bleuel (1990) states that there is "...no one-to-one correspondence between satisfaction and dissatisfaction" and explains that there is a zone of uncertainty between these; the elements of satisfaction are not the same as those of dissatisfaction. Thus, it is not altogether easy to turn a dissatisfied customer into a satisfied one by merely providing the same service a second time with better performance.

Parasuraman et al. (1990) present the SERVQUAL model as a means for estimating the discrepancy between expected service and perceived service from a customer's viewpoint. The model facilitates the process of how to find critical areas for improvement in service organizations. These potential improvement areas were originally defined in ten dimensions of service quality; however, later on they were reduced into five critical dimensions:

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tangibles, reliability, responsiveness, assurance and empathy. In a series of studies, reliability has consistently been found to be the most important dimension.

Li et al. (2002) study how to transform the SERVQUAL model to fit a web-based service quality perspective. The authors found two additional dimensions, which they term 'quality of information' and 'integration of communication'. The quality of information in their study is defined as "...the attributes of information contained in e-mails or websites" and integration of communication is defined as a "...complementary function of traditional communication media to the digital media". Li et al. (2002) also found that content-oriented dimensions, intangibles such as web assistance and quality of information, had the most significant correlation of customer dissatisfaction and satisfaction with e-service qualities.

Due to an increased interest in e-service quality during the last ten years, many authors have studied the evaluation of e-service quality; see Table 1. Cox and Dale (2002) describe four crucial factors when deciding on the quality of a web site. The authors indicate that not only the design of the web site is critical in evaluating e-service quality, but also personal service seems to be an important factor. In a study of consumer perceptions of Internet retail service quality, Janda et al. (2002) present five critical dimensions. 'Performance' is described as the grade of fulfilment of an order, while 'access' refers to the ability to purchase several products from a web site independently of where in the world the consumer is ordering. 'Security' refers to safety issues when doing financial transactions on the web, but also to management of personal information. 'Sensation' explores customers' ability to interact with other consumers when shopping on the web site, while 'information' refers to credibility of information and to information quantity. Information quantity is meant to facilitate the purchase situation by e.g. offering a comparison of prices of the same product or service of interest.

Another e-service quality perspective is presented by Santos (2003), with a model that includes an incubative dimension and an active dimension. The incubative dimension is about the design of the web site and refers to dimensions before the site is released. The active dimension is about supportive matters and refers to dimensions that function after the release of the web site. Among the incubative dimensions, 'ease of use' was found to be the most important. Among the active dimensions, 'reliability' was discovered to be the most critical. Reliability refers to issues such as the ability to perform the promised service consistently and accurately (Santos, 2003).

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**Table 1.** Some examples of models for quality of e-services.

| Madu & Madu(2002)                                  | Cox & Dale(2002)  | Janda <i>et al.</i> (2002) | Santos(2003)             |
|--|-------------------|----------------------------|--------------------------|
| Performance  | Ease of use       | Performance                | <i>Incubative</i>        |
| Features   | Customer          | Access                     | <i>dimensions</i>        |
| Structure  | confidence        | Security                   | Ease of use              |
| Aesthetics   | On-line resources | Sensation                  | Appearance               |
| Reliability  | Relationship      | Information                | Linkage                  |
| Storage capability                                 | services          |                            | Structure and layout     |
| Serviceability                                     |                   |                            | Content                  |
| Security and system integrity                      |                   |                            | <i>Active dimensions</i> |
| Trust  |                   |                            | Reliability              |
| Responsiveness                                     |                   |                            | Efficiency               |
| Product/service differentiation and customizations |                   |                            | Communication            |
| Web store policies                                 |                   |                            | Security                 |
| Reputation   |                   |                            | Incentive                |
| Assurance  |                   |                            |                          |
| Empathy  |                   |                            |                          |

Referring to Yang et al. (2003), user-friendly and well-designed web sites result in increased satisfaction. Options at the web site should be designed so that the user has a feeling of control. The authors used the AIPD framework (Attracting, Information, Positioning and Delivery) developed by Simeon (1999) as a means to evaluate commercial web sites within or across borders. Yang et al. (2003) found 'delivery' to be the most important factor in their study. 'Delivery' means here that the users have easy access to the information they need, for example fast download of information. Other issues related to this dimension are security and privacy issues. In order to define quality and customer satisfaction on the web, Madu and Madu (2002) introduce a quality perspective termed 'virtual operation', containing 15 dimensions of e-quality. Virtual operations are defined here as "...online operations that often involve business transactions through the Internet".

Thus, there are many useful dimensions for measuring e-service quality; however, even if the quality dimensions of an e-service are identified, a broad spectrum of users may perceive the service differently. Quality is a multifaceted concept and the quality of an e-service does not only include objective views about a particular product or service. Subjective feelings are also critical when attempting to satisfy customers as a means to

induce a repetitive purchase behaviour on the web. In our empirical investigation of an e-service, we focus on four e-service quality dimensions: availability, correctness of information, sharing personal information, and navigation.

### **3. Development of an e-service**

To integrate an e-service in the overall supply of services, the quality of the e-service must be seen as equal in importance to the quality of the main services. Cox and Dale (2001) point out that an e-service must be designed to reflect the company image, which is what the customers remember and want to return to. Our belief is that by combining the operationalization of Kano's theory of attractive quality (henceforth referred to as the Kano methodology) and technology readiness (henceforth termed the Technology Readiness Index, TRI) in service development, developers of e-services will gain a better understanding of e-service quality. In the present section follow brief descriptions of Kano's theory of attractive quality and technology readiness.

#### **3.1 Theory of attractive quality**

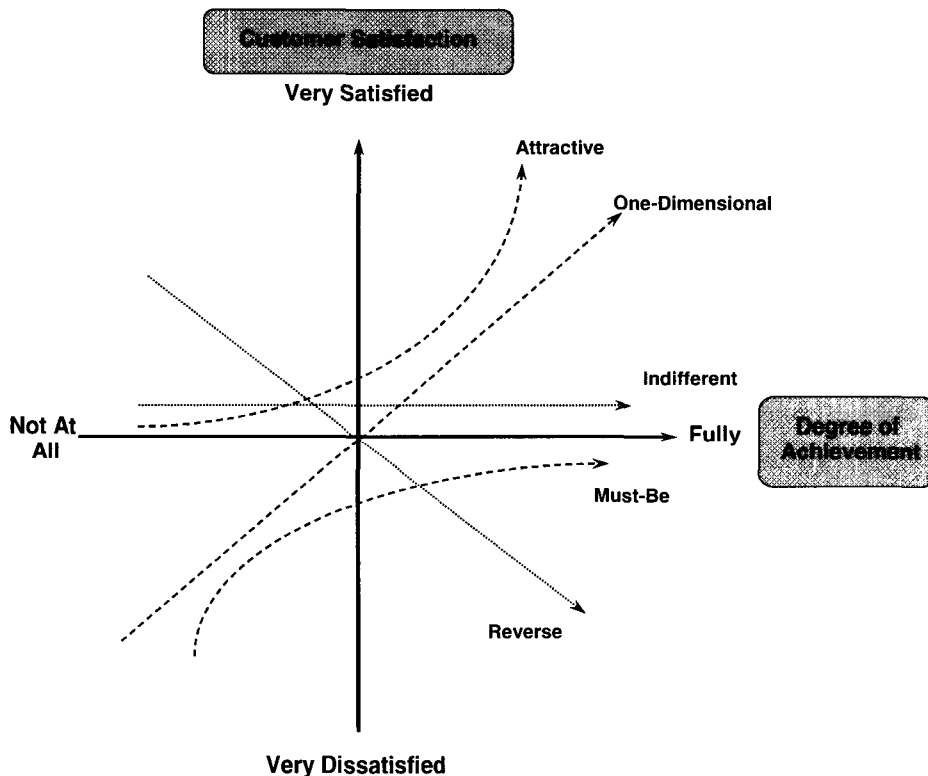
Shewhart (1931) implies that "...we must have in mind a clear picture of what we mean by quality". He classifies the quality concept into two aspects: one objective and one subjective. The quality of a thing is seen as an objective reality, independent of what we think, feel or sense, which refers to a subjective view. Professor Kano and his colleagues developed these theories further and, inspired by Herzberg's Motivator-Hygiene Theory (M-H Theory), they presented the theory of attractive quality (Kano et al., 1984). This theory is helping us to better understand customer satisfaction and gives us a two-dimensional model that visualizes the customers' evaluations.

The model evaluates patterns of quality based on customers' satisfaction with specific quality attributes and their degree of sufficiency. On the horizontal axis in the Kano diagram (see Figure 1) the physical sufficiency of a certain quality attribute is displayed, and the vertical axis shows the satisfaction with a certain quality attribute (Kano et al., 1984). The theory explains how the relationship between the degree of sufficiency and the customer satisfaction with a quality attribute can be classified into five categories of perceived quality: 'attractive quality', 'one-dimensional quality' 'must-be quality', 'indifferent quality' and 'reverse quality'.

Kano et al. (1984) explain that if 'must-be quality' is not fulfilled, customers will be dissatisfied. However, only fulfilling these needs is not enough. The basic needs are so

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obvious that customers do not express them as essential qualities. 'One-dimensional quality' is what customers find important. 'Attractive quality' is something customers do not expect. When organizations pre-define unconscious needs, they offer high value to their customers and the number of loyal customers increases (Kano et al., 1984). 'Reverse quality' describes the fact that the higher the state of fulfilment of an attribute, the more dissatisfied is the customer. If any product requirement is classified as an indifferent quality aspect, the degree of satisfaction is not influenced by dependence on the state of fulfilment of that requirement.



**Figure 1.** An overview of Kano's theory of attractive quality.

The theory of attractive quality predicts that quality attributes are dynamic, i.e. over time an attribute will change from being a satisfier to become a dissatisfier. Kano et al. (2001) use the remote control for a TV as an example of an attribute that in the beginning of the 1980s was a satisfier but today is a dissatisfier. By investigating customer perceptions of remote controls through Kano questionnaires in 1983, 1989 and 1998, Kano (2001) provide evidence on that the remote control was an attractive attribute in 1983, in 1989 a

one-dimensional attribute and in 1998 the remote control had turned into a must-be item. One practical problem with this theory is that the dynamics of attributes can be observed only in a historical perspective. This paper suggests that technology readiness can be used to explain how the dynamics of e-service attributes will occur and how the perception of attributes influences customer satisfaction.

### **3.2 Technology readiness**

Technology Readiness (TR) refers to people's propensity to embrace and use new technology, and is suggested to provide a better understanding of how people perceive new technology (Parasuraman, 2000). In order to increase the understanding of technologies' role in marketing and service development, Parasuraman (2000) has developed a multi-item scale to measure the technology readiness of users of new technology. The Technology Readiness Index (TRI) separates users depending on how they assess new technologies and makes it easier to identify lead users, who are the ones that first feel attraction to new technology offerings. Hence, the TRI is a helpful instrument not only as a tool for setting marketing strategies, but also as a means for developing new attractive services.

An individual's readiness to adopt new technology depends on four dimensions, which are termed 'optimism', 'innovativeness', 'discomfort' and 'insecurity'. 'Optimism' and 'innovativeness' are drivers of technology readiness, while 'discomfort' and 'insecurity' are inhibitors. The optimism dimension includes the individual's notion that new technology gives increased control, flexibility, and efficiency. Innovativeness captures individuals' tendency to be thought leaders and their propensity to adopt the latest technology. Discomfort concerns personalities having a belief that new technologies cause less control of our lives. Finally, insecurity gives us an indication of individuals' scepticism regarding new technology.

The TRI framework classifies customers into five categories, namely 'explorers', 'pioneers', 'sceptics', 'paranoids' and 'laggards' (Parasuraman and Colby, 2001). In this classification the 'explorers' have a higher degree of technology readiness, while the 'laggards' have a lower degree. 'Explorers' and 'pioneers' are attracted to cutting-edge technology, while 'laggards' will be attracted to that technology later, when it is seen as obsolete. 'Skeptics' and 'paranoids' are attracted to commonly used technology (Parasuraman and Colby, 2001).

## **4. An on-line application of cinema ticket transactions**

Approximately eighteen million visits to the cinema in Sweden are recorded every year

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(Swedish Film Institute 06/03/03). Of these customers, the leading cinema operator in the country has approximately 50% of the market and around 6 million of its visitors use the company's web service for reserving or buying cinema tickets on-line. The second major cinema operator, with about 20% of the market, also has a web site that offers on-line reservations and/or transactions of cinema tickets. The service investigated in this study, which offers the opportunity to reserve and buy tickets on-line, can be seen as an application additional to the main service of cinema operators. Our investigation includes 9 attributes of the e-service. First, customer perceptions of the overall service to order tickets on-line are of interest. In addition, four core e-services ('select seating online', 'watching trailers on the web', 'SMS services via the web', and 'advanced booking') and four e-service quality dimensions ('web navigation possibilities', 'treatment of personal information', 'reliability of information', 'availability of the web service') were investigated.

This study attempts to understand how customers perceive these on-line service attributes. Students at three universities in Sweden have taken part in the survey. First a pilot study with 23 participants was conducted. Its findings resulted in measures to improve the survey, i.e. the number of investigated service attributes and the wording of some survey items were changed. To the final survey, 165 students responded. The present study has an interest in using the Kano methodology as a means to classify and prioritise customer needs of e-services, but also in combining Kano's theory of attractive quality and the TRI to better understand customer needs and how these needs evolve over time.

#### **4.1 Items and questionnaire**

The Kano questionnaire is constructed of pairs of customer requirement questions (Kano et al., 1984; Kano et al., 1993). Each question consequently has two parts: How do you feel if that feature is present in the product (functional form of the question), and how do you feel if that feature is not present in the product (dysfunctional form of the question) (Kano et al., 1993). For each part of the questions, the customer can answer with one of five alternatives. According to Kano et al. (1993) the wording of the alternatives is the most critical choice made when using the Kano methodology. The number of attributes that were classified as questionable was about 6 percent in the pilot study. This made us rethink the wording used in the Kano questionnaire. In the pilot survey, an American version of the questionnaire was used (I enjoy it that way, I expect it that way, I am neutral, I can accept it, I dislike it that way) (Kano et al., 1993). In the final survey, the wording was changed according to a Japanese alternative (I like it that way, It must be that way, I am neutral, I can live with it that way, I dislike it that way) (Kano et al., 1984). As a result of the

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change of wording, the number of questionable attributes decreased to 1.5 percent of the categorized alternatives.

The technology readiness of customers was operationalized through the technology readiness index. Prof. Parasuraman originally developed this questionnaire in his research when surveying technology readiness of the American population; see Parasuraman (2000). The multi-item scale was initially generated through several focus group studies with participants from service industries such as financial services, electronic commerce, telecommunications and on-line service providers. The TRI is a 36-item scale providing measures on four dimensions: optimism, innovativeness, discomfort, and insecurity. The mean value of the different questions in each dimension is summed to construct an index, which is called the Technology Readiness Index. In this study, the reliability of the constructs meets the acceptable levels for this kind of explorative research.

#### **4.2 Using the Kano methodology to classify and prioritise service attributes**

The first part of the analysis was concerned with classification of the nine service attributes according to Kano's theory of attractive quality. Each attribute was classified according to the classification scheme as either attractive, one-dimensional, must-be, indifferent, reverse or questionable; see Kano et al. (1984) for a classification scheme. If two or more categories are linked or nearly tied, it may be an indication that more information is needed: you may be dealing with two market segments, or you may need to ask questions about more detailed customer information (Kano et al., 1993). Lee and Newcomb (1997) use a class called combination to deal with such situations. In the cases where a quality attribute has been classified as combination, this means that a definite classification has not been possible. The classification of service attributes has been examined through a t-test. The statistical assessment was conducted to compare the proportions of customers classifying an attribute into a specific quality class. This evaluation is possible since the conditions for approximation of the multinomial distribution to the normal distribution are satisfied for this empirical investigation.

To provide an overview of how customers perceive the different service attributes, a better-worse diagram was constructed. The positive better numbers indicate that customer satisfaction will be increased by providing a quality attribute, and the negative worse numbers indicate that customer satisfaction is decreased by not providing a quality attribute. The formulas for calculating the indices of better and worse are provided in Kano et al. (1993).

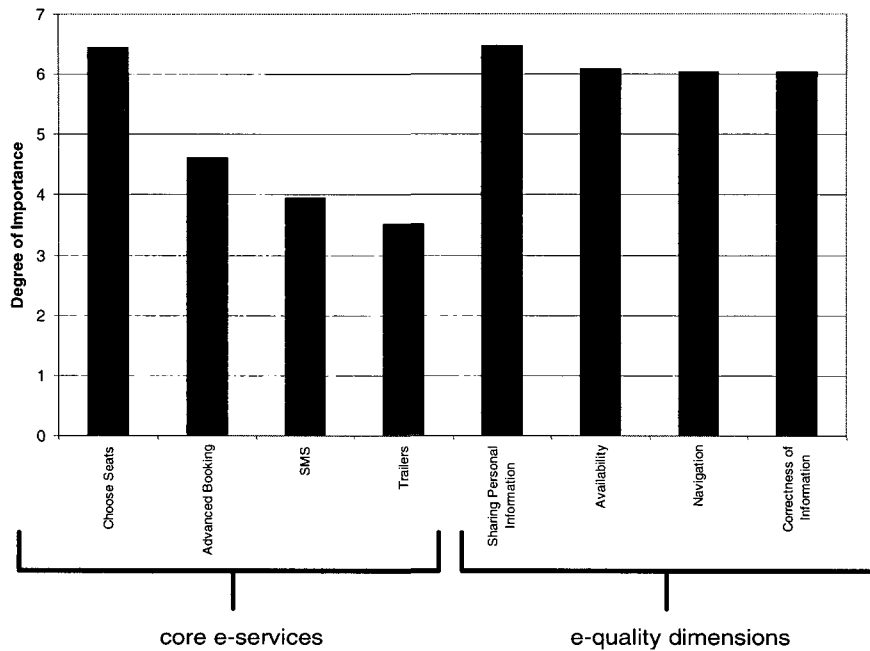
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Asking the customers how they assess the service that offers on-line ordering of cinema tickets, 48 percent consider the service attractive. Accordingly, the service is seen as an attractive part in addition to the experience of watching a movie at the cinema. The classification of the eight service attributes and the overall e-service offering is displayed in Table 2. For instance, being able to choose seats in the movie hall on-line was perceived as attractive. This is interesting, since at the time of the study only one of the two major competitors was providing this service.

**Table 2.** An overview of quality attributes of booking tickets on-line. (A= Attractive, I= Indifferent, M-b= Must-be, O= One-dimensional).

| Quality attributes             | Classification | Classification Agreement (%) | t-test     | Better | Worse |
|--------------------------------|----------------|------------------------------|------------|--------|-------|
| Booking ticket on-line         | Attractive     | 48                           | $p < 0.01$ | 0.64   | -0.28 |
| Choose seats by yourself       | Attractive     | 41                           | $p < 0.01$ | 0.70   | -0.46 |
| Advanced booking               | Combination    | 44% A and 37% I              | n.s.       | 0.52   | -0.11 |
| Trailers                       | Attractive     | 51                           | $p < 0.05$ | 0.56   | -0.06 |
| Send SMS through webpage       | Attractive     | 66                           | $p < 0.01$ | 0.69   | -0.04 |
| Availability                   | Combination    | 41% M-b and 34% O            | n.s.       | 0.46   | -0.76 |
| The correctness of information | Must-be        | 61                           | $p < 0.01$ | 0.28   | -0.80 |
| Sharing personal information   | Must-be        | 60                           | $p < 0.01$ | 0.18   | -0.82 |
| Navigation                     | Must-be        | 48                           | $p < 0.01$ | 0.43   | -0.82 |

The respondents in the pilot study were asked how they assess the importance of the different service attributes (they scaled the importance from 1 to 7). According to Kano (1993) the idea is to classify all service attributes according to Kano's theory of attractive quality and then to use importance weights as a means for giving priority to the attribute within each class of perception. The suggestion is to fulfil all basic quality attributes, but also to be competitive with market leaders on the one-dimensional quality attributes. Moreover, some of the attractive quality attributes have to be included. As can be seen in Figure 2, the customers feel difficulties about how to give priority to the e-service quality dimensions. All of these attributes seem to be equally important. Among the core e-services, the importance weights seem to provide good guidance for making a decision on which attributes to include in the e-service. To be able to choose seating on-line is considered to be most important among the core e-services.



**Figure 2.** An overview of the perceived importance of the different e-service attributes.

An overview of the 8 quality attributes is provided in the better-worse diagram in Figure 3. The ninth attribute is the overall e-service offering (booking tickets on-line); hence, it is not included in this diagram. Pairs of better and worse points for each quality attribute have been plotted in a two-dimensional graph (the negative sign in front of worse has been ignored in the graph for purposes of clarity). The focus of this analysis is on the two different classes of attributes, i.e. core e-services and e-service quality. The core e-services can be viewed as creators of attractive quality. Although the advance booking is perceived as indifferent by a large proportion of the customers, the core e-services are important because they can distinguish the e-service as truly unique in its competitive market (Watson, 2003). The four attributes representing dimensions of e-service quality are all in the lower must-be quadrant of the better-worse diagram. These attributes contribute little in creating customer satisfaction; on the contrary, they are important to the elimination of dissatisfaction with the e-service.

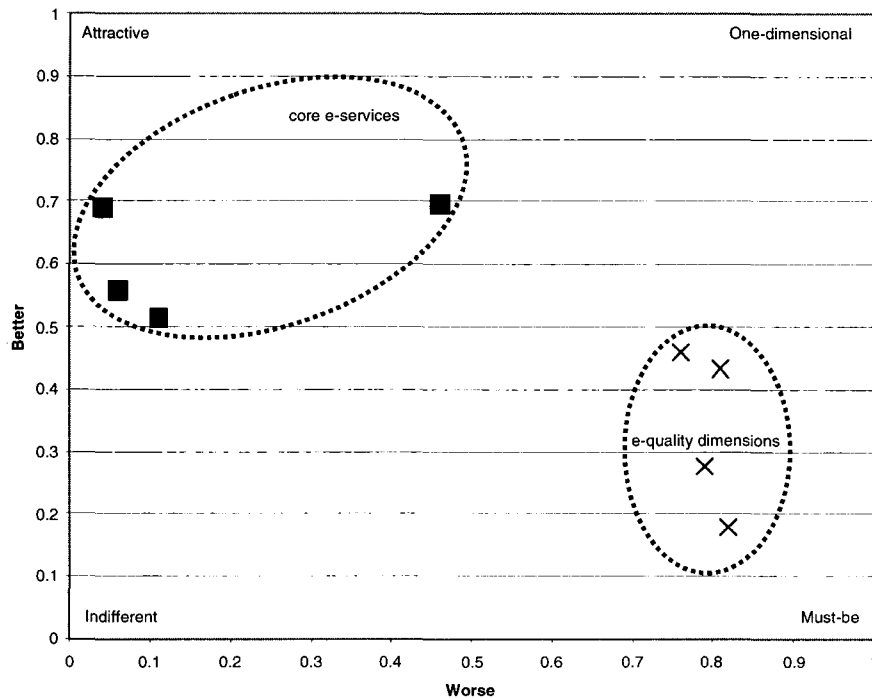


Figure 3. An overview of the e-service attributes in a better-worse diagram.

#### 4.3 Using technology readiness to understand the dynamics of service attributes

Of the 165 respondents, 79 considered the service to be attractive, 37 considered it to be indifferent, and 44 classified it as a basic or one-dimensional service. The assumption of our investigation was that the perception of the on-line service was dependent on the technology readiness of the customers. To bring validity to this assumption, the characteristics of these three groups were investigated in detail. It is possible to find systematic differences in the usage of the e-service between these groups; on average the respondents considering the service indifferent have tried the service one time, attracted respondents have tried it once or twice, while the respondents who view it as a must-be service have used it somewhat more than twice. In Table 3, the overall TRI and the four distinct technology readiness dimensions are compared between these three groups. The analysis shows that the respondents considering the on-line service as basic or one-dimensional have a higher TRI compared to the two groups considering the service as attractive or indifferent.

Thus, it seems that customers who are more mature concerning the use of technology do

not consider this as an attractive service; instead, on-line ordering of cinema tickets is a basic service to them. Investigating the differences in technology readiness in detail reveals that statistically significant differences can be found regarding optimism, innovativeness and insecurity. The customers expecting the service are more optimistic, more innovative and less insecure in their use of new technology. According to Parasuraman (2000), these customers are early adopters of services based on new technology. The customers who perceive the service as attractive are less optimistic and more insecure compared to those who perceive that service as one-dimensional or must-be, while the customers feeling indifferent about the service are the most insecure about using new technology. This insecurity influences them to try new services later than other customer segments and, even though they are optimistic about services based on new technology, they are late adopters of these services (Matting, Kristenson and Gustafsson, 2003).

**Table 3.** A comparison of technology readiness.

| Technology Readiness | Indifferent | Attractive | Must-be/<br>One-dimensional | I-A    | A-M/O  | I-M/O  |
|----------------------|-------------|------------|-----------------------------|--------|--------|--------|
| TRI                  | 3.00        | 2.99       | 3.29                        | ns     | p<0.05 | p<0.05 |
| Optimism             | 3.54        | 3.36       | 3.66                        | ns     | p<0.05 | ns     |
| Innovativeness       | 2.97        | 2.86       | 3.27                        | ns     | p<0.05 | p<0.10 |
| Discomfort           | 3.04        | 2.97       | 2.84                        | ns     | ns     | ns     |
| Insecurity           | 3.50        | 3.27       | 2.91                        | p<0.10 | p<0.05 | p<0.05 |

The identified differences in TRI between the three groups can also be seen as evidence of the dynamics of Kano's theory of attractive quality, i.e. that perceptions of attributes change over time from a state of attractive to one-dimensional, and finally to a basic perception of the service. An alternative interpretation of these dynamics is that diverse customer segments perceive the service attributes differently. One concrete example concerning on-line ordering of cinema tickets is that the availability and reliability of the web site are considered as a one-dimensional service attribute for the group that perceives the service as attractive, while the group that finds the service one-dimensional perceives the availability as a basic attribute. Also, the service attribute of choosing seats on-line is a one-dimensional quality attribute in this segment, while the rest of the customers view this service attribute as attractive.

In order to make a test of whether the perception of the whole on-line service was similar to the evaluation of individual service attributes, a comparison of the number of

identified attributes belonging to a certain category according to Kano's theory of attractive quality was conducted. As can be seen in Table 4, this analysis seems to reveal that the group which expects the service perceives the on-line service in a significantly different manner compared to the other two groups. This group perceives more one-dimensional and must-be attributes within the e-service than do the other groups.

**Table 4.** A comparison of the number of identified attributes belonging to a certain category.

| Type of attribute | Indifferent | Attractive | Must-be/<br>One-dimensional | I-A    | A-M/O  | I-M/O  |
|-------------------|-------------|------------|-----------------------------|--------|--------|--------|
| Attractive        | 2.3         | 2.5        | 2.3                         | ns     | ns     | ns     |
| One-dimensional   | 0.9         | 1.5        | 1.5                         | p<0.05 | ns     | p<0.05 |
| Must-be           | 2.2         | 2.3        | 2.9                         | ns     | p<0.05 | p<0.10 |

It is an anticipated result that customers who perceive an on-line service differently also observe individual attributes differently, but the implications of this result are important. It shows that, to better understand customer needs, Kano's theory of attractive quality can be used at two distinct levels. First, it can be used on the overall on-line service, to understand how interesting the service is for different customer groups. Second, it can be used to classify specific service attributes, to better understand the role of these attributes in the creation of customer satisfaction.

## 5. Discussion and conclusions

Our empirical investigation shows that Kano's theory of attractive quality works well for understanding customer satisfaction with e-services. Furthermore, the study seems to find potential means of combining Kano's theory of attractive quality with technology readiness in order to create important knowledge for use in the service development process. As indicated, the customers who have high technology readiness also have higher demands on what is attractive to them than the ones who have lower technology readiness. Furthermore, since Parasuraman (2000) state that optimistic and less insecure customers are early adopters of new technology, the present study implies possibilities to learn what offerings attract these early adopters of e-services. The study also shows the dynamics in Kano's theory of attractive quality, since three different groups of users are identified. These groups experience the service attributes differently and their experience of the attributes will change

over time.

As pointed out above, the literature proposes many dimensions that are valuable for measuring quality of e-services. Research shows that customers give priority to reliable e-services and user-friendly web sites. Furthermore, user-friendly web sites seem to result in increased satisfaction. According to the present study, it seems important to know the customers' level of technology readiness before giving priority to different service attributes. Customers who have high technology readiness demand different service attributes compared to the ones who have lower technology readiness. Here, the interest in 'must-be' and 'attractive' quality attributes differs among the participants. As a result of this, the ranges of quality dimensions have to be given different priority depending on the user profile. In our empirical study of on-line ordering of cinema tickets, it becomes clear that most of the dimensions of e-service quality are perceived as must-be attributes. Dimensions such as 'navigation', 'reliability' and 'ease of use' are attributes that must be improved to avoid customer dissatisfaction, but core e-services such as 'trailers', 'SMS' and 'choosing seats' are the service attributes that are the backbones of attractive quality creation.

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