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Customer satisfaction in IT development

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# Customer Satisfaction in IT Development

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in Innovation management**

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# Abstract

This research tested the impact of 13 identified attributes on Customers satisfaction in IT development contexts. Secondly, an evaluation of measuring methodologies was made by comparing a Performance-Only versus a Performance-Expectation measure and identifying whether the Kano classification method classifies the attributes according to the form of their relationship with Customer Satisfaction. Thirdly, an evaluation was made of the OTACE customer satisfaction tool of Capgemini.

## Management Summary

This master thesis research focused on the subject of Customer Satisfaction in IT Development contexts. Previous research indicated that the failure rate of IT Development projects is still very high. As Customer satisfaction has been argued to create future revenue, it is important to know how to achieve it. In order to create an understanding of the subject, an elaboration has been made on what Customer satisfaction actually is, how it is formed and what the most important areas of research are. The next step was to translate this theory to IT development contexts which resulted in a list of 13 potentially influencing attributes of Customer Satisfaction.

The next step was to identify the relative impact of these attributes on Customer satisfaction. The results indicated that the three most influential attributes on Customer satisfaction are: **Reliability of Service** (the ability to perform the promised service dependably and accurately), **Responsiveness of Organization** (Willingness to help customers and provide prompt service.) and **Assurance** (Knowledge and courtesy of employees and their ability to inspire trust and confidence.). All three are related to Customer Satisfaction in a negative non-linear way which resembles the Must-Be classification definition of Kano et al. (1984)

Two analyses were used to identify the impact of attributes on Overall satisfaction: A regression between a performance measure of the attribute and overall satisfaction, a regression analysis between a differential score (Performance-expectations) and Overall satisfaction. The results indicated that the identified attributes can best be measured using only a Performance Only rating, instead of calculating a differential score between performance and expectations. As an additional analysis, the attributes were also evaluated using the Kano classification method, which classifies the attributes as Attractive, One-Dimensional, Must-Be, Indifferent or Reverse. According to the theory, these classifications correspond to a certain curve that represents the relationship between the specific attribute and Overall satisfaction. The results indicated that the classification does not classify the attributes according to the form of their relationship with Overall satisfaction, which lead to the conclusion to be cautious in interpreting the outcome of the original Kano classification method. Conclusively, an analysis has been made of the effects of Experience and Affective State. Previous Experience has been tested to have no direct effect on expectations. However, Experience with the supplier has been tested to have an effect on the Kano classification of the Tangibles attribute and Personal Experience with IT Development has been shown to have effect on the Kano classification of the Assurance attribute. Affective state, both positive and negative, showed no significant effects on Satisfaction.

The results of the research have been translated to some practical implications for the OTACE tool, which is the tool Capgemini uses to measure Customer satisfaction. As the three most influential attributes identified are generally applicable to service contexts, it is advised to include all three as cross project non-optional measurements, like the "On Time yes/no" measure already incorporated in OTACE. The method of using performance ratings of attributes to evaluate overall satisfaction is the best method to use for these rigid measurements. For measuring the project specific attributes, a Performance-Expectation measuring method is suggested as this provides additional insight into Expectations. There are some criticisms for using the Importance rating as a weight between attribute performance and Overall Satisfaction, and it is advised is to interpret results with caution.

# Preface

This document forms the crown on my Master of Science study in Innovation Management. It describes a process which really took off one year ago. Back then, a decision was made on the research subject: Customer satisfaction in IT development processes. The reason for choosing this subject originated from a personal interest in these types of processes. During my Bachelor Thesis project, I've been involved in a Custom IT development project. This project enabled me to get a taste of determinants of Customer satisfaction in these projects. The unique characteristics and the blend between Service and Product quality attributes formed enough reason for further investigation. The goal of the research was to get an overview of the determinants of Customer satisfaction and to create insight into their relative impact. To reach this goal, two steps had to be taken: The first step was to conduct a literature study to identify possible determinants and the second step was the conduction of a quantitative research to identify the determinants' relative impact on Overall satisfaction.

I'd like to thank a couple of people who played a critical role in the formation and execution of this research. First of all, I'd like to thank my first supervisor Jan de Jonge for his guidance and critical view. The meetings we had delivered a valuable contribution in the structured thinking process needed to comprehend the subjects and design the research. Second of all, I'd like to thank Josette Gevers who played a vital role as second supervisor.

Two people played a vital role in enabling the execution of this research: Robert Eussen and Frank Harmsen at Capgemini. They provided me an opportunity to execute this research within the compelling environment of Capgemini. I'd like to thank Robert for his critical view, his day-to-day guidance and his efforts for providing me everything I needed during this research. I'd like to thank Frank for his valuable inputs and for having trust in me when deciding to offer me the opportunity to graduate within Capgemini. Also, I'd like to thank all the people at Capgemini Office South Netherlands, who provided me with feedback and supported me by forming one of the most pleasant work environments I've ever experienced. Finally, I would like to thank all participants of this research for their time and effort.

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# Table of Contents

# 1 Introduction

Customer satisfaction has been an important point of focus for a vast majority of companies worldwide for quite some time. The decision to focus on this subject is not inappropriate: Customer Satisfaction has been argued to be a critical point in achieving and retaining competitive advantage (Stefanou, Sarmaniotis & Stafyla, 2003) and a leading indicator of financial performance (Ittner, Larcker & Rajan,, 1997, Lambert, 1998 ); Satisfied customers will buy again and will bring "friends" with them. Therefore Customer Satisfaction is argued to be an indicator for future revenue.

This research investigates Customer Satisfaction in the context of IT Development. According to the Standish Group's 2004 report of IT project resolution history (www.standishgroup.com), 29% of IT projects failed, and another 53% were "challenged." Only 18% were successful. This low percentage of implementation successes presents an invitation for a closer look what satisfies customers in IT development contexts. The initial goal of this research is to present a list containing the most important determinants of Customer satisfaction in IT development contexts. The first question posed in this research is therefore:

**"What is Customer Satisfaction and what are the most important attributes that determine Customer Satisfaction in the context of IT Development Processes? "**

However, in order for this list to become relevant for companies, one needs to know how to evaluate the identified attributes in performing Customer Satisfaction research among customers. Therefore the second goal of this research is to provide guidelines for assessment of these attributes. The research question following from this goal is:

**"How should the identified determining attributes be assessed in practice?"**

To come to an answer to these questions, this report has been structured in three main chapters. Chapter 2 contains a review of the existing literature. It consists of four sections. The first section will elaborate on the concept of Customer Satisfaction. The second section will describe IT Development and highlight some important aspects which might be of influence on satisfaction levels. The third section will merge the theory on Customer Satisfaction and IT Development, resulting in a formulation of influential attributes of Customer satisfaction in IT Development. The fourth section will identify some measurement methodologies used in customer satisfaction assessments. The literature review will conclude with a discussion of the existing literature to form an input for a research proposal. Chapter 3 will start off where the literature study ended, by casting the discussed research input into testable hypotheses. Chapter 4 will describe the research conducted to test these hypotheses. Conclusively, Chapter 5 will discuss the results, implications, limitations and indications for future research.

By translating the findings of this research to a practical situation, its relevance can be illustrated. Therefore a review will be made of a customer satisfaction measurement tool used in practice and directions for redesign will be given. A choice has been made to focus on the satisfaction measurement tool used by Capgemini: OTACE. The review will be presented in Chapter 6.

# 2 Literature study

## 2.1 Customer Satisfaction

### 2.1.1 Definition of Customer Satisfaction

Customer satisfaction has been defined in numerous ways through literature. A couple of examples are discussed here. Hill and Alexander (2000) defined it as a measure of how your organization's total product performs in relation to a set of customer requirements. Ives, Olson and Baroudi (1983) define customer satisfaction as the extent to which the user believes that the information system meets his or her information requirements. This differs from the first definition since it explicitly states that it is dependent on the belief of the customer. In other words, instead of being a performance measure, it is a perception of how it relates to requirements. Jobber and Fahy (2003) viewed customer satisfaction as a product of a matching or exceeding of customer perceived performance with customer expectations. This is again a different view since it does not relate the measure to requirements (which are descriptions of how the system should behave, application domain info, constraints on the systems operation, or specifications of a system property or attribute (Kotonya & Sommerville, 1998) but to expectations, which are formed through previous experiences, discussions with other people and suppliers' marketing activities.

However, all these definitions tend not to describe Customer satisfaction in itself but tend to implicitly describe (some of) the determinants of Customer satisfaction (Difference between expectations and performance causes Customer satisfaction). To see what Customer satisfaction is in itself, the psychological literature covering the topic of satisfaction might provide an answer. What is the feeling that us humans perceive as satisfaction? Hart (1999) concludes that a large number of authors view Life Satisfaction and Satisfaction with various life domains as the cognitive component of Subjective Well-Being. "Well-being is most commonly used in philosophy to describe what is non-instrumentally or ultimately good for a person."(Stanford encyclopedia of Philosophy, 2008). The other component of Subjective Well-Being is the affective component Hedonic Balance, which is the balance between pleasant affect and unpleasant affect.

Satisfaction can be viewed as the outcome of a cognitive (= information processing) process, i.e. people weigh up their positive and negative experiences when forming judgments about their levels of satisfaction (Hart, 1999). If we take this into account and view the satisfaction of being a customer as one of the various life domains we can come to a general definition of Customer Satisfaction:

"Customer Satisfaction is the part of Subjective Well-Being that is the outcome of the cognitive process of weighing up all positive and negative experiences in some way related to being a customer."

This definition resembles the definition given by Oliver (1997) who defines customer satisfaction as a customer's judgment that a product or service feature, or the product or service itself, provides (or provided) a pleasurable level of consumption related fulfillment, including levels of under- and over fulfillment."

## 2.1.2 Determinants of Customer Satisfaction

After elaborating on the definition of Customer Satisfaction, this section will provide some insights in determinants of Customer satisfaction to see what causes customers to be satisfied. In researching predictors for Customer Satisfaction, one theory is prominent and has been considered by several authors (e.g. Johnson & Mathews, 1997, Yüksel & Yüksel, 2001, Ladhari, 2007) as the leading framework in Customer Satisfaction assessment: The Expectancy Disconfirmation Paradigm. The Expectancy Disconfirmation Paradigm states that Customer Satisfaction is a result of a comparison between expectations and performance (Ladhari, 2007). Ladhari (2007) divides Expectancy Disconfirmation into Cognitive Expectancy Disconfirmation and Affective Expectancy Disconfirmation (= relating to, resulting from, or influenced by emotions). Both turned out to have a significant impact on Customer Satisfaction. This shows that expectancy disconfirmation can both occur as a cognitive and affective process and that both forms have an impact on Customer Satisfaction. Let's have a closer look at the two components of expectancy disconfirmation: Expectations and Performance.

"Predictive expectation" is dealing with beliefs of how the existing product will likely perform. (Yau, 1994). Expectations are formed through previous experiences, discussions with other people and suppliers' marketing activities. (Jobber & Fahy, 2003). According to Oh and Parks(1997), prior experience, the relationship or history that a customer has with a business, moderates the customer's quality judgment and level of satisfaction. Prior experience will have a similar effect on expectations. As people are constantly exposed to new experiences, expectations can be highly variable. (Johnson & Mathews, 1997)

Performance can be divided into actual performance and perceived performance. Actual performance can be objectively assessed (waiting time, delivery time, mean time between failure, etc.). Perceived performance reflects a personal assessment of performance, which forms the second aspect of expectancy disconfirmation. The two are positively correlated (Burton, Sheather & Roberts, 2003) but differ in concept.

Perceived Performance has also been argued to be a direct determinant of satisfaction (e.g. Cronin & Taylor, 1992, Tse & Wilton, 1988, Nevo & Wade, 2007). According to Au, Ngai & Cheng (2002) this effect can be explained as an affective evaluation of

performance. Carrilat, Jaramillo & Mulki (2007) tested the differing impact of using SERVQUAL or SERVPERF for measuring satisfaction with Overall Service Quality (elaborated on in 2.4). The primary difference between the two is measuring Expectancy disconfirmation (SERVQUAL) or measuring Perceived performance directly (SERVPERF). Their research (a meta analysis on a total of 17 studies containing 42 effect sizes resulting from studying 9,880 respondents) indicated that the SERVPERF – OSQ correlation and the SERVQUAL – OSQ correlation did not differ statistically significant when analyzed across multiple industries. Therefore they argue that there is no significant difference in the predictive validity of the two, indicating that the two are measuring the same effect.

Some authors even argue that Customer Satisfaction is equal to Expectancy Disconfirmation, either by definition (e.g. Tse & Wilton, 1988) or by measurement scale (Danaher & Hadrell, 1996) but some criticisms have emerged from literature on the drawing of an equilibrium between the two. Yüksel and Yüksel (2001) address the following issues:

1. **Without expectations, disconfirmation cannot occur. How realistic would it be to expect customers to have firm expectations of all attributes prior to purchase in every consumption situation?** Despite the fact that prior expectations might be absent, a customer can still evaluate what his level of satisfaction is. However, a counterargument for this issue could be that the expectations could have formed while experiencing the service, resulting in an adaptation of their initial expectations.

2. **Does customer satisfaction come from disconfirmation of expectations alone?** Following from the first issue.

3. **Why do customers report overall satisfaction when their ratings indicate service performance falling short of their initial expectations?** Again an indicator that Customer Satisfaction Judgments are dependent on more attributes than just Expectancy Disconfirmation.

Despite the above issues addressed about the drawing of an equilibrium between the two, Expectancy Disconfirmation has proven to be a good indicator of Customer Satisfaction (Danaher & Hadrell, 1996, Devlin, Dong & Brown ,1993, Rust, Zahorik & Keiningham, 1994, Carrilat, Jaramillo & Mulki, 2007). So instead of drawing equilibrium between Expectancy Disconfirmation and Customer Satisfaction, resulting in the implication that there are no other determinants of Customer Satisfaction, the best option is to think of Expectancy Disconfirmation as a predictor or determinant of Customer Satisfaction. (Figure 1)
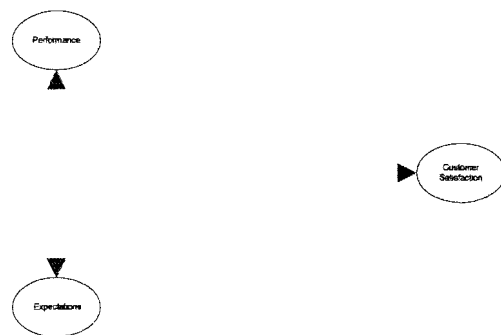


*Figure 1: Expectancy disconfirmation*

To understand the impact of Expectancy Disconfirmation on customer satisfaction, we might take a look at Kano's (Kano, Seraku, Takahashi & Tsuji, 1984) theory of Attractive Quality. Kano et al. (1984) divide quality attributes into five types: Must-be Quality attributes, One-dimensional quality attributes, Attractive quality attributes, Indifferent quality attributes and Reverse quality attributes. Each has a different impact on customer satisfaction according to the level of fulfillment of expectations.
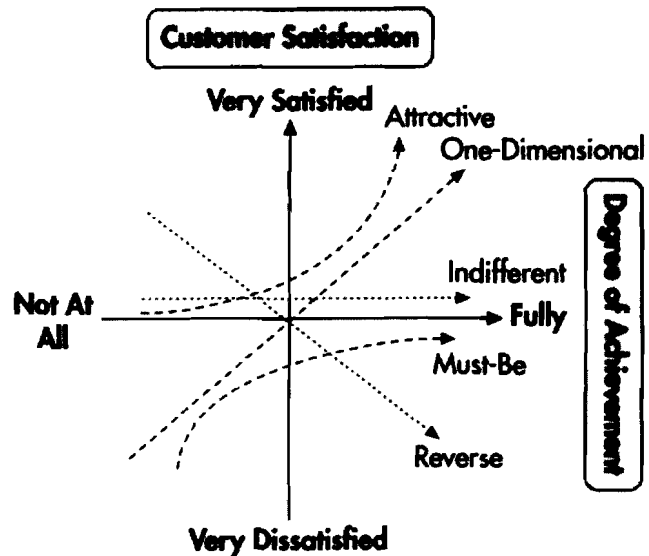


Figure 2: Kano classification (Lofgren & Witell, 2008)

Must-be quality attributes need to be fulfilled. They are considered self-evident by the customer and therefore not mentioned since for a customer it's logical to expect fulfillment of them. They will mainly contribute to a satisfactory product, even when they exceed expectations. Non-fulfillment of them will have a strong negative impact on Customer satisfaction while fulfillment has a relatively smaller positive impact on Customer satisfaction. For example, when you buy a new car, you expect it to start every time you get in. It won't contribute to delightness but if it doesn't start you're extremely dissatisfied.

One-dimensional quality attributes are the specified quality attributes. These are the quality attributes that describe what is expected. Exceeding expectations will contribute linearly to Customer Satisfaction. For example when you buy a car, a specification of it is that it goes from 0 to 100 KM/h in 5 seconds. A person who buys it (except if he is a racer) will be more or less linearly more satisfied or dissatisfied when it appears to do it in 4, respectively 6 seconds.

Attractive quality attributes are the ones that are not expressed by the customer. It's likely he does not expect very high of them and fulfillment of them comes as a surprise to the customer. They do not contribute negatively to customer satisfaction, but fulfillment of them will have an exponential positive effect on Customer Satisfaction. When you buy a car and it turns out to include an extra year of free service from the dealer, which has not been specified in the contract, you're likely to be delighted as a customer.

Indifferent quality attributes have no effect on customer satisfaction, whether they are fulfilled or not. Reverse quality attributes have an opposite effect to one-dimensional

quality attributes. They can be considered as "More is less" quality attributes: not something the product should do, but what it should NOT do.

This shows us that the type of quality attribute characterizes the shape of the relation between Expectancy Disconfirmation and Customer Satisfaction. Although this theory has been around for quite some time and has been used frequently in literature, it has been gaining attention in recent years ( Lofgren & Witell, 2008).

As has been stated in the previous section, the largest part of literature focuses on the Expectancy Disconfirmation Paradigm as most important determinant of Customer satisfaction but that there is a possibility that there are more determinants of customer satisfaction judgments than solely Expectancy Disconfirmation.

Ladhari (2007) describes the attributes "Pleasure" and "Arousal" as two additional determinants of Customer Satisfaction. Pleasure is defined as "the degree to which a person feels good, happy, contented, or joyful in the situation (Ladhari, 2007 derived from Mehrabian & Russell, 1974)". Arousal is defined as "the degree to which a person feels excited, alert, stimulated, awake, or active in the situation (Ladhari, 2007 derived from Mehrabian & Russell, 1974)".

Ladhari (2007) also describes some interaction effects between Expectancy Disconfirmation and both Arousal and Pleasure. The effects are caused by the fact that if consumers perceive performance to be better than expected, they will likely experience positive emotions. If consumers perceive performance worse than expected, they will experience negative emotions (Ladhari 2007, derived from Oliver, 1997). The hypotheses were tested by collecting data from 491 moviegoers for four different movies by using a questionnaire consisting of two parts. The first part, which was administered before the movie, included measures of affective expectations and cognitive expectations. The second portion, completed immediately after the movie, included measures of experienced cognitive performance and affective performance, pleasure, arousal, and satisfaction.

Though one might argue whether Arousal and Pleasure are not inherently linked to expectations for moviegoers, Ladhari (2007) states that several efforts in various settings back up the idea that emotional factors influence satisfaction. This would imply that the cognitive and affective components of Subjective Well-Being (Hart, 1999) are linked to each other.

Empirical evidence backs up the idea that emotional reactions have independent effects on satisfaction: The research of Westbrook (1987) firstly supported the existence of positive and negative affect as separate dimensions and secondly supported the existence of a relation between both dimensions and Customer satisfaction judgments. Oliver (1993) concluded from two samples that positive and negative influence overall satisfaction in respectively a positive and a negative way.

Soderlund & Rosengren (2004) explain the effect of affect on satisfaction through so-called affect infusion, initially proposed by Forgas (1995). Affect infusion states that emotions will affect a judgment in terms of valence congruence (affect will influence judgments in the same direction: positive affect will yield positive judgments and vice versa). It consists of two mechanisms: Affect-priming and Affect-as-information principle. The Affect-priming mechanism influences the satisfaction judgment process itself through its impact on a person's attention, encoding/retrieval capability and associative processes. The Affect-as-information principle mechanism influences satisfaction judgments by acting as a short-cut to infer their evaluation of a product.

The main issue here is that affective factors are difficult to influence and external determinants of these factors, which may be unrelated to the fact of being a customer, might influence the Customer Satisfaction decision. Think of a customer evaluating a product, when he just had a conflict at work, posing him in a bad mood, potentially scoring satisfaction lower than when he would be in an opposite mood.

### 2.1.3 Summary Paragraph 2.1

Customer Satisfaction has been defined as "The part of Subjective Well-Being that is the outcome of the cognitive process of weighing up all positive and negative experiences in some way related to being a customer.". It is dependent on the assessment of a customer if perceived performance matches his expectations. However, the influence of this expectancy disconfirmation on customer satisfaction can vary, depending on whether the subject or requirement is of an "Attractive", "One-Dimensional" or "Must-be" nature. Besides being dependent on Expectancy disconfirmation, evidence exists that Customer satisfaction is also dependent on affect. This poses a difficult problem, due to the fact that affect can be influenced by factors, unrelated to being a customer.

## 2.2 IT Development

This short Paragraph will provide some insight into IT Development in general. The description of this specific context will form an input to link this context to the theory on Customer satisfaction described in the previous Paragraph. Paragraph 2.3 will merge the information from the previous and this Paragraph to understand Customer satisfaction in IT Development.

### 2.2.1 An overview of IT Development

Custom Information Systems (IS) are information systems made by either an organization's internal IS staff or by direct subcontract to a software house. Custom Information Systems are made-to-order systems and are typically built for specific users. (Sawyer, 2000) Custom Information Systems Software Development concerns the software development process for Custom Information Systems. Software that is sold (or mostly licensed for use) as a tradable product (purchased from a vendor, distributor or store) for all computer platforms including mainframes, workstations and

microcomputers is known as Packaged Software (or shrink-wrapped, commercial-off-the-shelf (COTS) or commercial software )(Sawyer, 2000).

There are a number of principal differences between the development processes of both kinds of software. Sawyer (2000) summarized some general differences in Figure 3.

Table 1 Summary table of differences between packaged software and custom IS development

|  | Packaged software | Information systems |
|---|---|---|
| Industry | Time to market pressures | Cost pressures |
|  | Success measure, profit, market share, mind share | Success measures satisfaction, user acceptance, ROI |
| Software Development | Line positions | Staff positions |
|  | User is distant and less involved | User is close and more involved |
|  | Process is immature | Process is more mature |
|  | Somewhat integrated design and development | Separated design and development |
|  | Design control via coordination | Design control via consensus-building |
| Cultural Milieu | Entrepreneurial | Bureaucratic |
|  | Individualistic | Less individualistic |
| Teams | Less likely to have matrix project structure. More likely to be self-managed | Matrix managed and project focused |
|  | Involved in entire development cycle | People assigned to multiple projects |
|  | More cohesive, motivated, jelled | Work together as needed |
|  | Opportunities for large financial rewards | Salary-based |
|  | Likelier to be small, collocated | Grow larger over time and tend to disperse |
|  | Share a vision of their product(s) | Rely on formal specifications documents |

*Figure 3: Difference between packaged and Custom IS developed software (Sawyer, 2000)*

The focus of this literature study lies on the development of Custom Information systems. The reason for this is that it is the most common form of IT development and, as can be derived from Figure 3, the difference in process and market approach between the two requires a focused approach on one of the two. Although the name suggests that this category is uniform, there is a lot of diversity contained under the name of Custom IS System development. The level of customization can vary from an adapted Software Package to a completely custom application, built from scratch.

The IT Development process consists of a process that transforms customer Needs into a product. The V-Model (www.iabg.de, 2008), a widely used Software development method illustrates this in a very clear way. (Figure 4). Another aspect we can derive from the V-Model, is that user interaction in the whole process is very high.
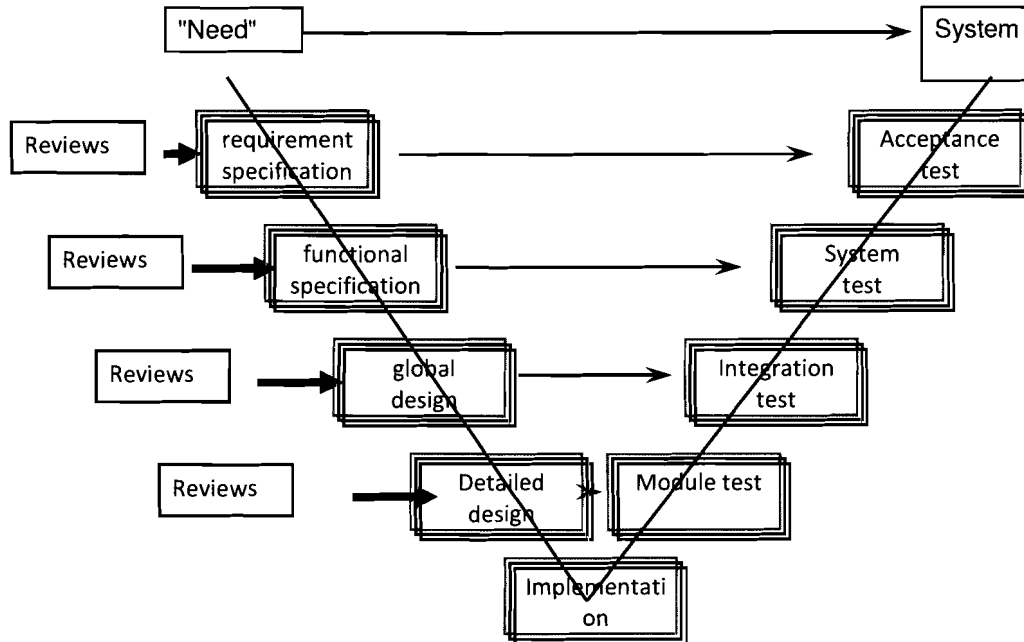
*Figure 4: V Model (Kusters, 2007)*

Especially the initial steps in which the requirements of the system are elicited and specifications are written, require a high degree of user involvement in the process and are critical in achieving success. "The goal of requirements engineering (RE) is to assure that a right and good product is defined and developed from the stakeholders' point of view" (Kujala, Kauppinen, Lehtola & Kojo, 2005).

Due to specific quality characteristics elaborated on in 2.3 of this study, it is necessary to distinguish whether an IT Development process can be characterized as a product or a service or even a combination of both. " The research literature suggests that IS project performance consists of two different dimensions: process performance and product performance" (Espinosa, DeLone & Lee, 2006, p.347). The development process itself can be characterized as a service. According to Mohr, Sengupta and Slater (2005), a service distinguishes itself from a product by two characteristics: It is intangible, meaning that it can neither be touched nor examined before making a purchase decision. When entering a development process as a customer, the product paid for, is the hiring of people who develop the product. Secondly, the production of a service (when the development people are provided) cannot be separated from the consumption of the service (when the customer actually gets the delivery of the development process). However, the basic intention of the development process is the emergence of a system. The emerging system can be characterized as a product, although the tangibility of an information system is not the same as a physical product. Production (during the development process) and consumption (use of the system after the development process) are separated.

Silvestro, Fitzgerald, Johnston & Voss (1992) divide service providers into three groups according to six classifications and customer processing speed:
"

1. **Professional Services:** Organizations with relatively few transactions, highly customized, process oriented, with relatively long contact time, with most value added in the front office, where considerable judgment is applied in meeting customer needs.
2. **Mass Services:** Organizations where there are many customer transactions, involving limited contact time and little customization. The offering is predominantly product-oriented with most value being added in the back office and little judgment applied by the front office staff.
3. **Service Shops:** A categorization which falls between professional and mass services with the levels of classification dimensions falling between the other two extremes." (Silvestro et al., 1992, p.73)
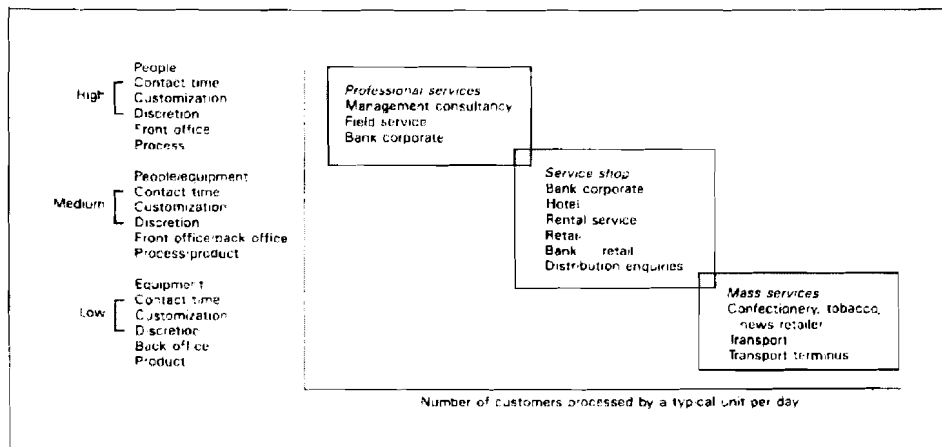


*Figure 5: Classification of services (Silvestro et al., 1992)*

According to Silvestro et al. (1992) the longer the customer processing time is, the more the emphasis on process rather than product intensifies. Due to the high level of customization with relatively long contact time, most value being added in the front office (proper requirement elicitation) and meeting customer needs as top priority, the IT Development process can be mainly categorized as a professional service. This would imply an increased focus on the process rather than the emerging product. However, Carrilat et al. (2007) tested this effect by performing an extensive meta analysis, measuring the effect of Service Quality on Overall Service Satisfaction over the three different groups and found the strongest effect of Service Quality on satisfaction in the Service Shop group, indicating the topic as subject for future research. In conclusion, it's best not to focus solely on Service Quality, but also take Product Quality into account when evaluating the total effect of quality on satisfaction in IT Development.

## 2.2.2 Summary Paragraph 2.2

Custom IS development consists of a process that transforms customer needs into a product. The requirements elicitation element in this process indicates the high level of interaction between the customer and the developers. The development process itself therefore has some critical characteristics of a service. However the outcome of the IT development process is a product. This bifold classification indicates that both elements of service quality and Product Quality will presumably play a role in overall Quality judgments.

## 2.3 The attributes of Customer Satisfaction in IT Development

After the elaboration on Customer satisfaction in general in Paragraph 2.1 and the conceptualization of IT Development in Paragraph 2.2, this chapter will merge the two themes and identify determining attributes of Customer satisfaction in IT Development.

In order to understand the drivers for Customer satisfaction in IT Development processes, we first need to understand who the customer in this context is. IT Development mostly occurs in Business-to-Business situations. In most Business-to Business situations the acquisition role and the consumption role are spread over multiple persons. Which persons' satisfaction will lead to the benefits mentioned by existing literature? Rossomme (2004) describes five roles on the customers side in the buying process in B2B situations:

1. **Influencer:** Defines specifications and provide information for providing alternatives. Examples: external consultants and technical staff
2. **Gatekeeper:** Controls the flow of information to the other members of the Decision Making Unit
3. **Decider:** exercises formal or informal power to select or approve the final supplier
4. **Buyer:** Has the formal authority to select suppliers and arrange the terms of purchase
5. **User:** Are those employees who will have experience with the product or service. Users often initiate the buying proposal and help to define the product/service specifications

Nevo & Wade (2007) report on the different expectations of stakeholders when it comes to IT systems. They identify three general groups of stakeholders on the customers' side of IT development and subsequent products: End users, IT Managers and Executives. The satisfaction of the three groups is highly interactional. Nevo & Wade (2007) report in their research that IT Managers in their sample made it clear that "until other internal stakeholders were satisfied, they themselves would not be satisfied."( Nevo & Wade, 2007, p.47). IT Managers hold both decisive and buying power (Nevo & Wade, 2007). To relate this back to the identified benefits of repurchase, this research will take this stakeholder group as primary point of focus, and taking the effect

of the perceived satisfaction of the other stakeholders as determinants of the IT managers' satisfaction.

In this Paragraph, an overview will be given of attributes influencing Customer satisfaction in IT Development identified in literature. Johnson, Gustafson, Andreassen, Lervik & Cha (2001) reviewed the evolution of some leading Customer satisfaction index models, such as the Swedish Customer Satisfaction Barometer (SCSB), American Customer Satisfaction Index (ACSI), European Customer Satisfaction Index (ECSI) and Norwegian Customer Satisfaction Barometer (NCSB). They derived a general conceptual model for developing Customer Satisfaction Index Models, incorporating general determining aspects. The model distinguishes three categories of direct determinants of Customer Satisfaction: Quality drivers, Price index and Complaint handling. These categories serve well as a framework to identify and discuss the attributes from literature. At first the quality drivers will be determined, split up in Product and Service attributes. After that, an elaboration on Price index and Complaint handling will be presented.

## 2.3.1 Quality drivers

### 2.3.1.1 IT Product Quality

Nevo & Wade (2007) identify User satisfaction, Executive satisfaction, Ease of Implementation and Reliability as direct determinants of IT Manager Satisfaction with IT Products. Ease of Implementation and Reliability of the system can be shared under the construct of System Quality, as has initially been defined by DeLone and McLean (1992). In their study, System Quality measures the technical success of the system in terms of ease-of-use, functionality, reliability, flexibility, data quality, portability, integration, and importance. Besides having an effect on IT managers, System Quality also seem to have an effect on users (DeLone &McLean, 1992, Au et al., 2002). Some aspects of System Quality might have a stronger effect on users and some might have a stronger effect on IT managers, since each will probably evaluate technical success slightly different. Therefore it's best not to merge the different aspects under the same construct when evaluating their impact on both IT manager satisfaction and User Satisfaction.

User satisfaction has been studied extensively in literature. Au et al. (2002) proposed a model incorporating factors that they derived from 20 years of end-user information system satisfaction research. They derive Information Quality, System Quality and System Support Services as the three most important components of IS Product Performance factors influencing User Satisfaction. Information and System Quality has been adopted from DeLone and Mclean (1992) and measures semantic success. System Support Services measures the quality of the support services provided (DeLone, McLean, 1992).

Three aspects of executive satisfaction with IT systems have been defined by Nevo & Wade (2007) in their exploratory research; Efficiency expectations as operational

expectations, Revenue generation as managerial expectations and Business sustainability/ Competitive advantage expectations as strategic expectations.

## 2.3.1.2 Service Quality

Grönroos (1998) elaborates on the concepts of Products and Services: "Physical goods are pre-produced in a factory, whereas services are produced in a process in which consumers interact with the production resources of the service firm. Some part of the service may be prepared before the customers enter the process, but for service quality perception the crucial part of the service process takes place in interaction with customers and in their presence" (Grönroos, 1998, p.322).

Looking at a standard IT development process, such as the V-Model (www.iabg.de, 2008), it becomes clear that user interaction and cooperation is a central theme. Since the development process itself can best be characterized as a service, perception will be largely come from the interactions between developers and the employees on the customer's side who are involved in the development process.

The most influential work in the field of Service Quality research comes from Parasuraman, Zeithaml & Berry (1988), who proposed the Gap model and the subsequent SERVQUAL framework for assessing customer quality perception. The Gap model measures service quality as the calculated difference between customer expectations and perceived performance: Expectancy disconfirmation.

The SERVQUAL framework represents five quality dimensions which will determine customers' perception of any service business (Parasuraman et al., 1988):

1. Tangibles: Physical facilities, equipment and appearance of personnel
2. Reliability of Service: the ability to perform the promised service dependably and accurately
3. Responsiveness of Organization: Willingness to help customers and provide prompt service
4. Assurance: Knowledge and courtesy of employees and their ability to inspire trust and confidence
5. Empathy: Caring, individualized attention that the firm provides its customers.

Kang & James (2004) review a different perspective on service quality, initially proposed by Grönroos (1990). Grönroos divided service Quality into Functional Quality and Technical Quality. According to Kang & James (2004), the SERVQUAL framework only focuses on Functional Quality. Grönroos view corresponds with the view that Overall Service Quality is not only dependent on the quality of the service itself, but also on the "technical" quality of the emerging product, as argued for in 2.2.1 (and the physical attributes discussed in 2.3.1.1), incorporating all relevant quality attributes into one model.

## 2.3.2 Perceived Price

Despite the fact that quality attributes are likely to be of great importance in Customer Satisfaction evaluations, an IT development process is still a commercial transaction. Therefore Price is likely to contribute to customer satisfaction. The results of Johnson et al. (2001) show that value for money is an attribute that has been included in multiple Customer Satisfaction measuring instruments. They argue however, that value for money and quality are overlapping items and therefore suggest that, instead of using value for money as indicator, it is best to isolate a perceived price index. If a customer perceives the price as positive (a positive perception means low/cheap/favorable) compared to product quality, similar products of other companies and his expectations, it is likely it will have a positive effect on the customers' satisfaction.

Martín-Consuegra, Molina & Esteban (2007) and Herrmann, Xia, Monroe & Huber (2007) offer some deeper insight into the mechanism involved of the influence of Perceived Price on Satisfaction. They evaluate on the concept of Price Fairness, in which Fairness has been defined as "a judgment of whether an outcome and/or the process to reach an outcome is reasonable, acceptable, or just " (Martín-Consuegra et al., 2007, p.460 derived Bolton et al., 2003). Martín-Consuegra et al. (2007) argue that customers evaluate the fairness of a quoted price by comparing it with other references, simultaneously taking situational circumstances into account.

Herrmann et al. (2007) divide Price Fairness into distributive fairness and procedural fairness. Distributive fairness has been defined as an individual judgment of fairness of a relationship based upon the allocations of rewards resulting from their contributions to the relationship (Herrmann et al. (2007), derived from Homans, 1961). Procedural fairness judges processes according to prevailing norms and behaviors (Herrmann et al. (2007), derived from Thibaut and Walker, 1975). The results of the research of Herrmann et al. (2007) indicated that Perceived Price directly influenced Customer satisfaction and indirectly through Price Fairness.

## 2.3.3 Complaint handling

Johnson et al. (2001) view complaint handling as a means to improve satisfaction. Although they found a marginal effect in their tests, they argue, building on previous work, that complaint handling systems at the time were only capable of neutralizing complaints.

Karande, Magnini & Tam (2007) further investigated the influence of providing the customer opportunity to complain after a service failure on post-failure satisfaction. Their results indicate that customers perceive a higher procedural justice (Procedural justice refers to the perception by the customer that the procedures, or criteria, used in making a decision are fair), which in turn results in higher overall post-failure satisfaction. It appears that the mechanism involved in this effect, resembles the mechanism of Price Fairness. This is in line with the conclusion of Herrmann et al. (2007)

that recent research in marketing and psychology has shown that fairness perceptions are positively correlated with satisfaction. Maxham & Netemeyer (2003) tested perceived distributive, procedural and interactional justice as antecedents of overall satisfaction. They found significant relationships between all three types of justice and overall satisfaction.

### 2.3.4 Summary Paragraph 2.3

IT development processes mostly occur in B2B situations. Contradictory to B2C situations, the customer exists of multiple stakeholders, each with their own roles, expectations and levels of satisfaction. The focus has been laid on the satisfaction of stakeholders who hold decisive power to engage in IT Development processes, due to the fact that the primary objective of vendors to optimize Customer Satisfaction is to create future revenue. It's important not to disregard the influence of the other stakeholders' satisfaction on the satisfaction of the decisive and buying power holding stakeholders.

The influencing attributes in literature have been categorized into Quality drivers, Perceived Price and Complaint Handling. IT product quality drivers have been categorized according to stakeholders' expectations. The direct influencing attributes on IT manager product quality satisfaction are User Satisfaction, Executive Satisfaction, Implementation expectations and Reliability expectations. Functional Service Quality has been conceptualized according to the SERVQUAL attributes. Perceived Price and Perceived Complaint handling both have an influence on customer satisfaction through the concept of Perceived Fairness.

## *2.4 Evaluating Customer Satisfaction*

The second research question posed in this research was how the identified attributes should be assessed in order to operationalize Customer satisfaction evaluation measurements. An important debate in this context is the SERVQUAL-SERVPERF debate, which concerned the measurement of Service Quality items by using either "Performance-Expectations" gaps measurements or "Performance-only" measurements, elaborated on hereafter.

Cronin & Taylor (1992) challenged the measuring method of Parasuraman et al. (1988)'s SERVQUAL framework by developing the SERVPERF framework. They used the same quality attributes used by Parasuraman et al. (1988) but they adjusted the measurement scale, by only measuring perceived performance instead of calculating gaps between performance and expectations. The reason they address for the improvement, was the lack of empirical evidence at the time that supported the relevance for the expectations-performance gap as basis for measuring service quality and the evidence support in marketing literature for simple performance based measures for measuring service quality. What followed was a debate that is still lasting on today on whether

Performance-Expectations gaps or Performance-Only measures are the way to go when measuring service quality.

Carrilat et al.(2007) elaborate on seventeen years of debate, studies and conflicting findings on whether SERVQUAL or SERVPERF is better as an indicator of overall service quality. They conclude that overall both measures perform adequately in predicting overall service quality. They regard SERVQUAL as more valuable, since it provides more information. However, their study also indicates that SERVQUAL's predictive validity is highly influenced by contextual factors, contrary to SERVPERF. This implies that when using SERVQUAL, a lot of time will have to be spent adapting the measurement items and scales to the context in which the instrument is being used. The Pro's and Con's of Performance-Expectations gap analysis (SERVQUAL) vs. Performance-Only analysis (SERVPERF) can be summarized as follows:

*Table 1: Pro's and Con's of using Performance-Expectations Gap analyses and Performance Only analyses*

| | Performance-Expectations Gap analysis | Performance Only |
|---|---|---|
| Pro's | • Provides background information, due to comparison expectations. | • Relatively unaffected predictive validity by contextual factors → Easier to implement. |
| Con's | • Predictive validity highly influenced by contextual factors → Measurement items and scales need to be adapted to specific context <br> • Can be time-consuming to fill out. | • Limited background information |

Either of the two methodologies presents a way for a reflective evaluation of the identified attributes. As the theory of Attractive Quality (Kano et al., 1984) indicated, the relationship between these evaluations and Customer Satisfaction can be of multiple forms. A simple linear weight might not represent an adequate indicator of the strength of the relationship between Attribute N and Overall Satisfaction, since there is a possibility of non-linear relationships. Kano et al. (1984) developed a classification method to identify the relationships between attributes and Overall satisfaction, by labeling them according to one of the identified quality dimensions ("Attractive", "One-dimensional", "Must-Be", "Reverse" or "Indifferent"). Each of these classifications represents a specific type of relation as has been described above (Figure 2).

Lofgren & Witell (2008) identify several themes in the field of Attractive quality research:

**Quality dimensions and wording:** Several authors drop the number of quality dimensions from five to three by removing the Indifferent and Reverse category. Another adaption is the change of names of the quality dimensions (e.g. "Basic needs", "satisfiers" and "delighters" (Emery & Tian, 2002)). The methodology used for classification of attributes to classifications originally consists of two questions: One asking the respondent for his feelings in case of a functional form of the attribute, and the second one in case of a dysfunctional form of the question. The answer scale consists of five options: "I like it that way", "I'm expecting it to be that way", "I'm neutral", "I can live with it that way", "I dislike it that way". Kano (2001) suggested that this scale could be adapted into a three point scale consisting of "satisfied", "neutral" and "dissatisfied". It would facilitate the completion of the questionnaires. Witell & Lofgren (2007) compared the five and three level classification and concluded that the three level classification yielded in a different classification of eight of the total of nine attributes tested. They argue an explanation is that the three level classification yields in more linear relationships, while the five level classification also identifies non-linear relationships.

**Classifications of quality attributes using pairs of customer requirement.** The attributes are classified through the use of a classification table. Witell & Lofgren(2007) report on several authors modifying the classification table. They tested three variants and concluded that the overall classification of quality attributes was not sensitive to using different evaluation tables.

**Alternative approaches to the classification of quality attributes.** Alternatives have been used for the original Kano methodology. Emery & Tian (2004) use a direct approach by asking respondents (teachers) to categorize aspects of student projects as being "basic needs", "satisfiers" and "delighters". Another approach is the use of the Importance classification. Witell & Lofgren (2007) tested the original classification next to these two alternatives. They concluded that neither the importance scale nor the direct question scale resembled the original method.

**Relationship to other methods.** The Kano methodology has often been combined with other methods such as Quality Function Deployment (Matzler & Hinterhuber, 1998, Tan et al., 1999, Tan & Shen, 2000) and SERVQUAL (Tan & Pawitra, 2001, Pawitra & Tan, 2003, Yang, 2003, Bhattacharyya & Rahman, 2004).

**The life cycle of quality attributes.** A couple of authors have argued for the existence of a lifecycle of quality attributes. As customers experience an attribute it might shift towards a different classification. Kano (2001) demonstrated the shift of classification of remote controllers in a longitudinal study over 15 years. Nilsson-Witell & Fundin (2005) demonstrated that an e-service was perceived as indifferent before having experienced it and as attractive after the first experience.

Lofgren & Witell (2008) argue in their literature review of two decades of Kano theory, that despite the fact many studies have applied and modified the theory of attractive quality, its methodological foundation has been marginally discussed. Several authors have used methodologies for measurement differing from the original methodology used by Kano. These methodologies result in significant different results from the Kano

methodology but lack a sound argumentation if and why the particular modified methodology is more reliable and valid than the original one. Lofgren & Witell (2008) argue to use the original methodology until future research addresses more soundly backs up alternative methodologies.

## 2.5 Conclusion and Discussion Literature Study

To conclude the literature study, we'll first come to an answer to the first posed research question: *What is Customer Satisfaction, and what are the most important attributes that determine Customer Satisfaction in the context of IT Development Processes?* The first part of the question can be answered through the literature study: Customer Satisfaction has been defined as "The part of Subjective Well-Being that is the outcome of the cognitive process of weighing up all positive and negative experiences in some way related to being a customer.". A mechanism that influences Customer Satisfaction is Expectancy disconfirmation. The effect of expectancy disconfirmation on overall satisfaction can be characterized by the type of requirement as has initially been conceptualized by Kano et al. (1984). Arguments have been given that affect might influence the satisfaction evaluation besides being dependent on Expectancy disconfirmation alone.

The second part of the first research question has only partly been answered in the literature study. IT Development contextual attributes derived from literature include IT product quality drivers, Service quality drivers, Perceived Price and Complaint Handling. IT product quality drivers have been categorized according to stakeholders' expectations. The direct influencing factors on IT manager product quality satisfaction are User Satisfaction, Executive Satisfaction, Implementation expectations and Reliability expectations. Service Quality has been conceptualized according to the SERVQUAL attributes. Perceived Price and Complaint handling both have an influence on customer satisfaction through the concept of Perceived Fairness. In order to determine which of these attributes are more important than others, it is suggested to further investigate the relative contribution to satisfaction of these attributes in IT development processes. To what extent does each attribute contribute to customer satisfaction in the context of IT Development? As has already been argued by Carillat et al. (2007) there are mixed results on whether Product or Service quality aspects are of greater influence on Overall satisfaction of decisive and buying power holding stakeholders. During the performance of this literature study, no efforts of researching the relative impact of product versus service attributes have been found in an IT development context. It might be interesting to see which attributes play a more critical role over others.

This analysis subsequently raises the question whether there are influencing conditions that influence the relative impact of these attributes. Customer Experience with IT Development processes might be a possible influencing variable. Oh and Parks(1997) already stated that prior experience, the relationship or history that a customer has with

a business, moderates the customer's quality judgment and level of satisfaction. The Expectancy Disconfirmation paradigm states that Customer Satisfaction is dependent on the discrepancy between Performance and Expectations. Expectations are formed through previous experiences, discussions with other people and suppliers' marketing activities. (Jobber & Fahy, 2003). Learning involves changes in an individual's behavior that arise from experience (Kotler, 2000). Goering (1985) tested the effect of product trials on quality expectations. Her results show that when the quality of purchased goods is perceived to be higher than expected, expectations are raised about the quality of future purchases.

Besides this direct effect on the expectations of customers, experience is also likely to have an effect on the proportion of requirement types, subsequently moderating the relationship between expectancy disconfirmation and satisfaction. The experienced customers know what to expect from an IT Development process. Experiences they had in the past had a learning effect on them and they will try to cope with these experiences in their stated requirements. For example, a customer who was positively surprised by the quick throughput time of development process is likely to demand the same performance in the future. However the same performance in the future won't come as an attractive requirement to that customer since he already experienced it once. The positive effect on customer satisfaction will therefore be smaller than the first time he experienced it. This effect has been described by Kano (2001) as the theory of quality attributes lifecycles. He argued that attractive quality migrates to one-dimensional quality and subsequently to must-be quality as the customer gets more experienced. He supported this theory by providing empirical evidence through a longitudinal study of perceived quality of television remote controls. In 1983 customers perceived a remote control for television as an attractive option. In 1989 the majority of customers perceived this as a one-dimensional requirement. The same study in 1998 yielded in the majority of customers perceiving a remote control as a must-be requirement. Vargo, Nagao, He and Morgan (2007) argue in their study into that there might be a potential effect of satisfiers becoming dissatisfiers: " If satisfiers are tied to the meeting of what is valued and desired, they may become dissatisfiers as desires become expected." (Vargo, Nagao, He and Morgan, 2007, p. 15). This is essentially the same effect as has been described by Kano (2001). It would be interesting to see how these quality attribute lifecycles occur in IT development. According to Kano (2001) the most common quality attribute lifecycle is "Indifferent Quality → Attractive quality → One-dimensional quality → Must-be quality". However, Kano (2001) also argues for the possibility of some attributes following different lifecycles.

The final part to answer this first research question, is to provide insight into the influence of Affective State on Customer Satisfaction. The literature study identified potential evidence of a relationship between affective state and customer satisfaction (Westbrook, 1987, Oliver, 1993, Soderlund & Rosengren, 2004, Ladhari, 2007).

The second research question posed was *"How should the identified determining attributes be assessed in practice?"* As the literature study has shown, there is a debate going on whether Expectancy-Performance Gap analyses or Performance-only analyses are more suitable for attribute evaluations. A comparison of both analysis types in Service Quality measurements showed that, in general, both represent adequate predictive validity. However, Gap analyses have been shown to be sensitive to contextual factors, causing fluctuating predictive validity. Therefore, when using Gap analyses, adaption of items and scales to the specific situation is necessary. In order to find out the predictive validity of both analyses, using the identified attributes in an IT Development context, a comparison should be made between the two to find out which represents the highest predictive validity in this context.

Secondly, the Kano methodology aims for classification of attributes according to the relationship they have with Overall satisfaction. Lofgren & Witell (2008) argued that the diagram representing the form of the relationships of the individual quality dimensions (Figure 2) has no mathematical significance (yet). They advocate future research in their article into the correspondence of the Kano classification and the actual relationship between attributes and Overall Satisfaction. Previous research has failed to provide accurate insight into this correspondence, since the inclusion of possible non-linear coefficients has been absent. In order to find out whether the Kano methodology is accurately representing the actual relationship between quality attributes and Overall Satisfaction (making it a valuable instrument for providing information on the behavior of the relationship that particular attributes have with Customer Satisfaction), a comparison has to be made between a Kano classification of the previously identified attributes and the relationships found between the attribute evaluations and Overall Satisfaction, including non-linear coefficients.

## 2.6 Practical Relevance: Capgemini's OTACE

OTACE (On-Time and Above Customer Expectation) is the existing customer satisfaction evaluation tool for Capgemini company-wide. The implications of this research will be translated to this customer satisfaction evaluation tool. OTACE consists of a process in which customers are asked prior to the service offering to indicate five criteria on which they want to evaluate the service offerings brought by Capgemini. A specific description of the process can be found in 6.2. The customer can define his own criteria but Capgemini proposes a non-restrictive list of 18 criteria that the customer can include in his criteria. In summary, every service offering is evaluated on its own unique criteria. As Capgemini acts in a very customer focused way, this is an appropriate way to find out specific customer needs and to trace back reasons of dissatisfaction with the specific service offering. This method however, inhibits the possibility to measure Key Performance Indicators (KPI's) that are constant across service offerings. There are two measures in OTACE that are constant across projects: an indication of overall satisfaction with the service offering and a measure if the project was completed on time. The outcomes of this research might provide additional constant measures to

include in OTACE, if significant effects are found between the identified attributes and Overall satisfaction. Secondly, the outcome of this research will indicate the most appropriate measuring method to evaluate these measurements.

# 3 Hypotheses Development

Resulting from the previous Literature study, a research design can be formulated to address the points mentioned in the discussion section. In order to answer the first research question, the relative importance of the identified attributes will have to be determined. In order to determine this, it will be assumed that the identified attributes will be positively related to Overall satisfaction. Therefore:

*H1:* *Positive evaluations of IT Product Quality attributes, Service Quality Attributes, Perceived Price and Perceived Complaint Handling will be positively related to the Overall Satisfaction with the IT Development process.*

As has been argued in the literature study, experience influences expectations. Customers adapt their expectations based on previous experiences, which had a learning effect on them (Goering, 1985, Kotler, 2000, Jobber & Fahy, 2003). The longitudinal research of Goering (1985) indicated that customers, who experienced a trial product and perceived a higher quality than expected, will expect higher quality in future purchases. It is therefore likely that a significant difference will exist between expectations of experienced and inexperienced customers in IT Development. Due to the fact that there are no insights into the form of the effect of experience on expectations in an IT development context, initial research will first have to answer whether there is a significant difference between expectations of experienced and inexperienced customers. The analysis will additionally provide insight into the direction of the relationship. Therefore:

*H2:* *A difference exists between performance expectations of experienced customers and inexperienced customers.*

To gain more insight into the relationship between the identified attributes and customer satisfaction, the attributes have to be classified according to the Kano et al. (1984) classification methodology. Kano et al. (1984) characterizes the relationship between expectancy disconfirmation and satisfaction by identifying five requirement types. Research indicates that the effect of expectancy disconfirmation on customer satisfaction is variable and can be of a non-linear nature (Nilsson-Witell & Fundin, 2005). By evaluating the attributes according to Kano's methodology, the attributes can be categorized into Kano's requirement types, and possible non-linearity issues can be explained.

Kano (2001) argued for the existence of quality attribute lifecycles. His research on the classification of remote controllers showed that customers classify quality attributes

different over time. Inexperienced customers are likely to classify attributes differently than experienced customers. Therefore the second effect of Experience will be on the Kano classification:

*H3:* *A difference in Kano classifications of attributes exists between experienced and inexperienced customers.*

The literature study identified potential evidence of a relationship between affective state and customer satisfaction (Westbrook, 1987, Oliver, 1993, Soderlund & Rosengren, 2004, Ladhari, 2007). Therefore:

*H4a:* *Positive affective state will be positively related to Overall Satisfaction with the IT Development process.*

*H4b:* *Negative affective state will be negatively related to Overall Satisfaction with the IT Development process.*

In order to find out how the identified attributes are optimally assessed, two questions need to be addressed: "Should Performance-Expectations or Performance-Only evaluations be used when evaluating the attributes?" and "Will a Kano classification accurately represent the relationship between the identified attributes and Overall Satisfaction?"

The SERVQUAL-SERVPERF debate concerns the choice between Performance-Expectations evaluations of quality attributes vs. Performance-Only evaluations. As has been argued by Carrilat (2007), both methods perform adequately in the context of SERVQUAL/SERVPERF attributes. However the Performance-Expectations evaluations show higher predictive validity if they are adapted to the specific situation in which they are used. In either case, it's likely that both evaluation types will yield in a different predictive validity of Overall satisfaction.

*H5:* *Performance-Only evaluations of the identified attributes will have a different predictive validity of Overall Satisfaction with the IT Development process than Performance-Expectations evaluations.*

By classifying the attributes according to the Kano classification method, an idea can be formed on the relationship the specific attributes have with Overall satisfaction. Each classification represents a particular relationship type. Although Lofgren & Witell (2008) state that the diagram representing the form of the relationships of the individual quality dimensions (Figure 2) has no mathematical significance, the initial assumption will be that a classification by the Kano classification method does accurately represent the form of the relationship between the attributes and Overall satisfaction. Therefore:

*H6:*     *The Kano classification method will classify the identified attributes according to the form of the relationships between the particular attributes and Overall Satisfaction with the IT Development process.*

# 4 Research Design

This chapter will describe the research conducted in order to test the hypotheses identified in Chapter 3. It will start of by identifying the appropriate method and the sample characteristics. Subsequently, the construction of the measuring instrument will be discussed in detail and the pretests results presented. The chapter will conclude with a description of the data analysis.

## 4.1 Method

In order to test the identified hypotheses, a choice will have to be made which research design would be the most appropriate considering the context. A cross-sectional design involves administering a survey once to a sample, yielding data on the measured characteristics as they exist at the time of the survey (Graziano & Raulin, 2004). A longitudinal design is a within-subjects survey research design in which the same group is successively surveyed at different times (Graziano & Raulin, 2004). A longitudinal design would provide more insight into the within-subject changes over time. The ideal setting for this research would be longitudinal; Changes within subjects could be monitored by measuring the identified items on different moments throughout the development process. This would enable the researcher to draw more rigid conclusions on causality. However, a longitudinal design would take more time to conduct and time is limited in this research. Although a cross-sectional design inhibits the possibility to draw firm conclusions on causality, it will offer insight into relationships between evaluations of the items.

## 4.2 Sample

As has been stated above, the research focuses on IT manager satisfaction. Therefore IT managers will be the target group to include in the sample. The operationalization of the research will be done through an online questionnaire as main measuring instrument. All items will be translated into Dutch. The respondents will be approached via email. The following characteristics will be gathered for descriptive statistics: Function, Age, Sex, Industry, Company size. The participants will be asked to visualize a recently delivered IT realization. Characteristics measured of this IT realization will be whether it is Custom software or Packaged software.

## 4.3 The Questionnaire in detail

**Measuring Experience.** Experience is measured by asking the respondent to indicate the number of times he has been involved in software realization and implementation projects, how long he has been working in his function, how many times the IT supplier has performed similar projects before and how long the company has already been cooperating with this IT supplier.

**Measuring Overall Customer Satisfaction.** Overall satisfaction will be measured using three items adapted from Karande, Magnini & Tam (2007). They measured overall satisfaction of Customers of Hotels and Airlines and report an Alpha of 0.96, indicating a high internal consistency and therefore a reliable operationalization of the construct of Overall customer satisfaction. The three items all contain the same question with different extremes at the answering scales. An example item is: "Characterize your overall satisfaction with the IT Supplier:" with a 5 point scale ranging from "Dissatisfied (1)" to "Satisfied (5)". Another one ranges in answering scale from "Unhappy (1)" to "Happy (5)".

**Measuring Affective State.** Affective state will be measured by dividing it in both Positive affective state and Negative affective state. The items are derived from Carter (2004) who derived them from Watson, Clark & Tellegen(1988). The 10 items measuring positive affective state have been scoring Alpha's between 0.89 and 0.91 over 5 tests. The 10 Items measuring negative affective state between 0.78 and 0.88. an example question is: "To what extent do you feel alert?" with a five point scale ranging from "Not at all (1)" to "Extremely (5)".

**Measuring Functional Service Quality.** Functional service quality has been operationalized using the five SERVQUAL attributes and the underlying 20 items initially defined by Parasuraman et al (1988) and adapted and tested by Landrum & Prybutok (2004). Internal consistency for measurement with Performance- expectations has been tested as follows: Tangibles (4 Items, Alpha 0.78) Reliability of Service (5 items, Alpha 0.88) Responsiveness (4 Items, Alpha 0.84) Assurance (3 items, Alpha 0.84) and Empathy (4 Items, Alpha 0.87). Expectations regarding Functional service quality have been measured using "should" statements and performance using "is" statements, following the original instrument by Parasuraman (1988). (five point scale ranging from "Disagree (1)" to "Agree (5)" ). In order to classify the SERVQUAL attributes according to Kano's categories, each item has been coded into a question asking for feelings in case of a functional and a dysfunctional form (e.g. functional: "How do you feel when the IT supplier handles questions in a fast way?" dysfunctional: "How do you feel when the IT supplier doesn't handle questions in a fast way?"). The respondent can answer these questions on a five point nominal scale identified by Kano et al. (1984): "I like it that way", "I'm expecting it to be that way", "I'm neutral", "I can live with it that way" and "I dislike it that way".

**Measuring Product Quality.** Product Quality items measured are Perceived User Satisfaction, Perceived Executive Satisfaction and IT managerial expectations. Perceived User satisfaction is measured by four items derived from the DeLone & McLean model of IS Success (2003). Bach (2007) identified a faceted measurement of Satisfaction as the measurement approach with the largest proportion of variance explained, indicating that a faceted measurement ("I'm satisfied with Facet (1-n)) provides the best insight into satisfaction. The four identified items represent User satisfaction both with Information Quality and System Quality items. Performance and Expectations. Seddon & Kiew (1996) tested the model for users of IT systems using 10 items for measuring Information Quality (Alpha 0.91) and 10 items for measuring System Quality (Alpha 0.96). The two strongest loading items per category have been chosen as facets of User

satisfaction. For Information Quality these were "Does the system provide the precise information you need?" and "Does the information content meet your needs?". For System Quality these were "The application is easy to use" and "The application is user friendly". Casting these into facets of User satisfaction, they will form statements like "How satisfied are users with the information content of the system?". To identify the expected and actual perceived user satisfaction of IT managers on these items , the items will then be recast into similar Performance and Expectations statements as the 20 SERVQUAL items. (e.g. Expectations: "Users should be satisfied with the extent to which the system provides them the information they need". Performance: "Users are satisfied with the extent to which the system provides them the information they need". (five point scale ranging from "Disagree (1)" to "Agree (5)" )). The same strategy is used for identifying items to measure Perceived Executive Satisfaction. Nevo and Wade (2007) report on three different general expectations of executives with IT systems. These three have been operationalized in the same way as the Perceived User satisfaction items (e.g. Expectations: "Executives should be satisfied with the extent to which the system contributes to ". Performance: "Users are satisfied with the extent to which the system provides them the information they need". (five point scale ranging from "Disagree (1)" to "Agree (5)" )). IT managerial expectations have been operationalized by the two managerial expectations defined by Nevo & Wade (2007). They have also been casted into Performance, Expectations and Functional/Dysfunctional statements.

**Measuring Price Perception.** Price perception will be measured by Price offer fairness and Pricing procedure fairness. Hermann, Xia, Monroe & Huber (2007) tested a four item construct in of Price offer fairness and reported an Alpha of 0.95. One item was left out in this research due to the fact that it was a specific question for the car industry. Two items measured Price procedure fairness. Hermann et al. (2007) reported an Alpha of 0.85. Again the items have been casted into Performance, Expectations and Functional/Dysfunctional statements.

**Measuring Perceived Complaint Handling.** Perceived complaint handling will be measured by assessing Procedural, Interactional and Distributive justice, as has been operationalized by Maxham & Netemeyer (2003). Distributive justice was measured using a four-item construct. Maxham & Netemeyer (2003) report an Alpha of 0.90. Procedural Justice was operationalized with a four-item construct, tested with an Alpha of 0.91. Interactional justice was also tested using a four item construct with a reported Alpha of 0.83. Again the items have been casted into Performance, Expectations and Functional/Dysfunctional statements.

## 4.4 Questionnaire pretests

The identified questionnaire has been pretested through the use of interviews and tests of indicating question relevance and clarity. Exploratory interviews with both IT managers and IT consultants were used to get a feeling for IT Development projects in real life and the way they were evaluated. This resulted in the expansion of the subjects covered in the literature study. After the determination of the subjects to cover, the

initial questionnaire was constructed which only consisted of a performance evaluation of the identified attributes. This questionnaire was evaluated by 10 customers of an IT Service provider. They were asked to evaluate the relevance of the subjects covered. All attributes were considered relevant. The next step was to construct the next version of the questionnaire. This was done by recasting the identified attributes into four questions: Performance(1) and expectation(2) evaluation of a recently delivered IT product and an evaluation of feelings in case of a functional form (3) and a dysfunctional form (4) of the attribute. Along with an evaluation of Overall satisfaction, Affective State and the identified characteristics for descriptive statistics, the questionnaire was put online for two weeks of evaluation. The questionnaire has been evaluated by 29 persons varying from IT managers to IT Consultants to Students. The goal was to identify issues in the understanding of the question statements and possible missing questions. Each question in the questionnaire contained a comment field. The results yielded in an adaption of the introduction, question statements and the appendix of a strategic importance measure. This appendix resulted from several independent comments that Executive satisfaction is likely to become more important as Strategic Importance of the application increases.

## 4.5 Data analysis

In order to assess the six identified hypotheses, using the data gathered from the questionnaire responses, a number of tests will have to be conducted. For starters, the gathered data will have to be assessed for its psychometric properties. Once these analyses assessed the extent to which the developed measuring instrument is representing unidimensional, reliable and valid measures, specific analyses can be conducted to test the hypotheses.

### 4.5.1 Questionnaire Response

A link to the online questionnaire was sent to 336 IT managers, CIO's, Department Managers or IT strategy coordinators via email. The respondents were asked to visualize a recently delivered IT application and answer the questions from the perspective of being a customer of IT development companies. Participation was anonymous. Each respondent who completed the full questionnaire received a tool which contained some guidelines for construction of measurement instruments for evaluating IT suppliers. Basically this was a short summary of the literature study preceding this research. A total of 114 (33,9%) responses were received after sending two reminders, from which 92 were full responses. Responses with a total number of missing values being higher than 50% were immediately dropped. The missing values of the remaining responses were analyzed for non-randomness and replaced by the calculated means. This resulted in N=107 valid responses.

The majority of the respondents were IT Managers (62,7%) followed by Department Managers(15,9%) and CIO's (10,3%). IT Strategy coordinators (7,5%), COO's (1,9%) and CTO's (1,9%) are the other categories in the sample. They represent mostly large

companies (>1000 employees, 70,1%). The highest represented sectors were the Financial Sector (15%), Travel & Transport Sector (12,1%) , High Tech sector, Consumer products and Energy & Utilities (all three 7,5%).

36,4% of the evaluated applications represented Custom Software packages, whereas the remaining 63,6% represents Packaged Software Implementations. 86% of the realization trajects were conducted by External IT suppliers; 14% were conducted by Internal IT Suppliers. 89,7% of the respondents were male.

## 4.5.2 Psychometric analysis

Measurement has been defined as the assignment of numerals to objects or events according to some rule (Stevens, 1946). In order to assess the measurement instrument and its summated scales developed for this research, three aspects will empirically be evaluated: Unidimensionality, Reliability and Validity of the measures.

Unidimensionality is defined as "a strong association of items with each other and representation of a single concept."(Hair et al., 2006, p.160). Validity is "the extent to which a scale or set of measures accurately represents the concept of interest "(Hair et al., 2006, p.161). This is partly covered by the preceding literature study, which formed the basis of the derivation of items (Nomological validity). Hair et al. (2006) describe two forms of empirical Validity:

- Convergent validity, defined as the degree to which two measures of the same concept are correlated. A high correlation indicates that the scale is measuring its intended concept.
- Divergent validity, defined as the degree to which two conceptually similar concepts are distinct. A low correlation indicates that the scale is sufficiently different from the other similar concept.

Both Dimensionality and (Convergent and Divergent) validity can be assessed by performing factor analyses, confirming that the identified items load highly on a single factor and low on other factors.

The factor analysis has been split up into multiple analyses, partly due to the fact that a minimum of 5 observations per items are required during factor analysis and partly due to the fact that the separate items need slightly different factor analysis approaches.

Principal Axis factoring has been used for the known scales, as has been recommended by Hair et al. (2006) in order to attempt to replicate previous results: The SERVQUAL/SERVPERF items, Overall Product satisfaction and the Positive/Negative Affective State scales have all been tested in the same form in previous research. An OBLIMIN rotation was used since it is very likely for them to be correlated to certain latent factors (e.g. SERVQUAL/SERVPERF to Service Quality, Overall Product Satisfaction

to Overall Human Satisfaction and Positive/Negative Affective State to Affective State). Finally in order to replicate the original constructs, an A Priori criterion was used to determine the number of factors to be extracted. Although the majority of the other scales have a theoretical foundation, some have been slightly adapted to fit the performance-expectations measurement methodology. Therefore these scales have been factor-analyzed using Principal Component Analysis, to identify the underlying latent factor structure (Hair et al, 2006). The latent root criterion has been used in order to initially determine the optimal number of factors. An OBLIMIN rotation has been used since it is, again, very likely for latent factors to be present.

First, the factor analyses results for the scales which replicate previous research will be discussed. The factor analyses for the SERVQUAL/SERVPERF dimensions present an accurate fit of the items into the five dimensions, with only one Empathy item loading strongly on two factors in the Performance-Only (or SERVPERF) case and one item Assurance item loading strongly onto the Responsiveness Factor in the Performance-Expectations (or SERVQUAL) case. The assessment of Expectations alone showed one item of Responsiveness loading on the Assurance factor and another item of the Assurance dimension loading on the Responsiveness factor. The items of Overall satisfaction and both Affective States loaded correctly onto their intended factors. Next, the factor analysis results for the slightly adapted scales will be discussed. The four Experience items loaded onto two factors. It was easy to identify two items representing Personal Experience and two items representing Experience with the particular Supplier. The items measuring Product Quality loaded onto three factors representing respectively their intended factors: User satisfaction, Executive Satisfaction and IT Managerial items. Conclusively, the items representing Perceived Price and Perceived Complaint handling loaded on two factors: One consisting of all Perceived Price items and one consisting of all Perceived Complaint handling Items. The more detailed results can be found in 8.2

Summarizing the factor analysis results, it can be concluded that the measurement instrument is adequately measuring its intended concepts. In order to determine whether it's measuring these concepts consistent across measurements, an assessment needs to be made of reliability. Reliability has been defined by Hair et al. (2006) as "an assessment of the degree of consistency between multiple measurements of a variable. (p.161)". The next step was to identify reliability scores for the items representing the factors that resulted from the factor analysis. This has been done by assessing the Intercorrelation in case of a two-item measurement and Cronbach's Alpha in case of more items. The cutoff value for Intercorrelation is 0,30 (Hair et al., 2006) and 0,6 for Cronbach's Alpha (Baarda & De Goede ,2006). The reliability scores are presented in Table 2. Despite the fact that the Tangibles' Performance Only, P-E and Expectations items and the Assurance Expectations items score below the threshold of 0,6, they are kept in the analysis since they have been tested as exhibiting adequate reliability scores in previous research (e.g. Parasuraman et al., 1988, Cronin & TayLor, 1992, Landrum & Prybutok, 2004).

*Table 2: Reliability Scores of the measuring scales*

| Measurement | Cronbach Alpha |
| --- | --- |
| Overall satisfaction (3 items) | 0,87 |
| Supplier Experience (2 Items) | Intercorrelation: 0,77 |
| Personal Experience (2 Items) | Intercorrelation: 0,68 |
| Positive Affective State (4 Items) | 0,83 |
| Negative Affective State (3 Items) | 0,70 |
| | |
| *Performance Only scores* | |
| Tangibles – Performance (4 Items) | 0,52 |
| Reliability – Performance (5 Items) | 0,79 |
| Responsiveness – Performance (4 Items) | 0,88 |
| Assurance – Performance (3 Items) | 0,85 |
| Empathy – Performance (4 Items) | 0,87 |
| User Satisfaction – Performance (4 Items) | 0,83 |
| Executive Satisfaction – Performance (3 Items) | 0,73 |
| IT Managerial items – Performance (2 Items) | Intercorrelation: 0,58 |
| Complaint Handling – Performance (6 Items) | 0,89 |
| Price – Performance (5 Items) | 0,83 |
| | |
| *Performance-Expectations scores* | |
| Tangibles – Performance-Expectations (4 Items) | 0,56 |
| Reliability – Performance-Expectations (5 Items) | 0,81 |
| Responsiveness – Performance-Expectations (4 Items) | 0,83 |
| Assurance – Performance-Expectations (3 Items) | 0,81 |
| Empathy – Performance-Expectations (4 Items) | 0,84 |
| User Satisfaction – Performance-Expectations (4 Items) | 0,79 |
| Executive Satisfaction – Performance-Expectations (3 Items) | 0,67 |
| IT Managerial items – Performance-Expectations (2 Items) | Intercorrelation: 0,59 |
| Complaint Handling – Performance-Expectations (6 Items) | 0,86 |
| Price – Performance-Expectations (5 Items) | 0,78 |
| | |
| *Expectation scores* | |
| Tangibles – Expectations (4 Items) | 0,47 |
| Reliability – Expectations (5 Items) | 0,71 |
| Responsiveness – Expectations (4 Items) | 0,69 |
| Assurance – Expectations (3 Items) | 0,45 |
| Empathy – Expectations (4 Items) | 0,90 |
| User Satisfaction – Expectations (4 Items) | 0,84 |
| Executive Satisfaction – Expectations (3 Items) | 0,70 |
| IT Managerial items – Expectations (2 Items) | Intercorrelation: 0,47 |
| Complaint Handling – Expectations (6 Items) | 0,75 |
| Price – Expectations (5 Items) | 0,69 |

## 4.6 Results

### 4.6.1 Test Descriptions

This section will describe the tests to be executed in order to evaluate the defined hypotheses. Multiple regression, MANOVA and Discriminant analysis are the analysis techniques used.

Multiple regression would be an appropriate technique to test the dependence between Overall satisfaction and the identified attributes (Hypothesis1) since it can be used to analyze the relationship between a single metric dependent variable (Overall satisfaction) and multiple metric independent variables (Hair et al., 2006). Besides testing Hypothesis 1, Multiple Regression can also be used to test the dependence between Affective States and Overall satisfaction (Hypothesis 4) and whether Performance Only evaluations of the attributes or Performance-Expectation scores are better predictors of Overall satisfaction (Hypothesis 5) by assessing the amount of variance explained ($R^2$).

Hypothesis 2 needs to be investigated by analyzing whether there are significantly different means of expectations across different experience levels. MANOVA would be the best suited analysis technique for this purpose. Multiple metric dependent variables (in this case the Expectation scores of the various attributes) are analyzed for population mean variance across levels of "factors", the independent variables (in this case both Supplier Experience and Personal Experience). It is difficult to predict the form or direction of the relationship between Experience and Expectations. MANOVA can give an indication whether a relationship exists between the two, while a regression analysis requires some prior insight into the form of the relationship. If MANOVA results are positive, an additional regression analysis can provide insight into the form of the relationships.

Discriminant analysis can be used to predict group membership on the basis of one or multiple quantitative predictors. Hair et al. (2006) prescribe Logistic regression and Discriminant analysis as two techniques to perform analyses with nonmetric dependent variables. However, logistic regression is only suitable in case of a two-group, dichotomous dependent variable. Since there are five categories of Kano classifications, Discriminant analysis will be the method to predict the Kano classification for each attribute on the basis of Experience and therefore suited to test Hypothesis 3.

### 4.6.2 Testing H1, H4 and H5

H1, H4 and H5 can be tested simultaneously by performing two regression analyses. Analysis 1 will have Overall satisfaction as dependent variable. The independent variables will consist of both Affective States and the Performance scores of the identified attributes. Analysis 2 will also have Overall satisfaction as dependent variable and both Affective states as independent variables. However, the identified attributes

will be scored according to the Performance-Expectation scores in this analysis. After these two analyses have been performed, it will become clear whether Performance-Only or Performance-Expectation scores better predict Overall satisfaction by examining the adjusted $R^2$ values. These values express the level of prediction accuracy of the respective regression analysis. The analysis with the highest $R^2$ value represents the best predicting model. The simultaneous assessment of the relationships between the independent variables and the dependent variable determines the relative importance of each independent variable, both the identified attributes and affective state, by assessing the beta coefficients.

Hair et al. (2006) describe linearity between the dependent and independent variables as a critical assumption for regression analyses. However, as the research of Kano (1984) and Nilsson-Witell & Fundin (2005) shows, this is not always the case in the relationship between attributes and satisfaction. As it is very likely that nonlinear effects will occur, they have to be coped for in the regression analysis. To investigate whether the identified attributes are significantly non-linearly related to Overall Satisfaction, an assessment will be made if a squared score will contribute significantly to the explanatory power of the model, as has been suggested by Hair et al. (2006). On top of that, an assessment will be made whether the corresponding beta coefficient is significant to gain insight into the form of the relationship: A negative significant beta coefficient of the squared score will indicate a ∩-shaped relationship, a positive significant beta coefficient of the squared score will indicate a U-shaped relationship. All scores have been standardized prior to analysis which enables a direct comparison to the relative effect of each independent variable on the dependent variable (Hair et al. 2006)

In order to examine the statistical significance of the overall model, the F-ratio will be calculated, which will indicate if the $R^2$ value is significantly greater than zero. The significance and direction of the regression coefficients will result from the Beta values and the corresponding t-test significance values. To test the hypotheses, a forced entry approach has been chosen in which all independent variables are included in the regression analyses. This enables a fair comparison between both scoring methods. Before analysis, all scores were standardized in order to reduce multicollinearity between the predictors (especially caused by the quadratic terms) and enable an assessment of relative importance of the coefficients. The results are presented in Table 3

*Table 3: Regression analyses between Overall Satisfaction (Dependent Variable), Affective State and identified attributes (attributes scored by using both a Performance-Only evaluation and a Performance-Expectations evaluation). N=107.*

|  | Outcomes – Unstandardized B coefficients | |
|---|---|---|
|  | Performance Only | Performance-Expectations |
| **Affective State** | | |
| Positive Affective State | .100 | .094 |
| Negative Affective State | -.075 | -.258* |
| | | |
| **Attributes** | | |
| Tangibles | .098* | .058 |
| Reliability | .366 | -.035 |
| Responsiveness | .141 | -.027 |
| Assurance | -.075 | -.074 |
| Empathy | .046 | .042 |
| User Satisfaction | -.090 | .214 |
| Executive Satisfaction | .151 | -.400* |
| IT Managerial items | .055 | .268 |
| Complaint Handling | .076 | .435 |
| Price | .006 | -.379 |
| | | |
| **Squared Attributes** | | |
| $(Tangibles)^2$ | .108** | .134 |
| $(Reliability)^2$ | .367 | -.382 |
| $(Responsiveness)^2$ | .132 | .020 |
| $(Assurance)^2$ | -109 | -.097 |
| $(Empathy)^2$ | .050 | -.150 |
| $(User Satisfaction)^2$ | -.102 | .096 |
| $(Executive Satisfaction)^2$ | .160 | -.401* |
| $(IT Managerial items)^2$ | .044 | .045 |
| $(Complaint Handling)^2$ | .193 | .266 |
| $(Price)^2$ | -.018 | -.309 |
| | | |
| **Full Model** | $R^2 = .598$ <br> $F(22, 84) = 5.67$ <br> $p = .000$ <br> Adjusted $R^2 = .492$ | $R^2 = .541$ <br> $F(22, 84) = 4,498$ <br> $p = .000$ <br> Adjusted $R^2 = .421$ |

*Note.* * $p < .05$ (two-tailed)   ** $p < .01$ (two-tailed)

A comparison between Adjusted $R^2$ values of both regression models indicate that the Performance Only scores yield in higher predictive accuracy than the Performance-Expectations scores. An additional test of $R^2$ change when comparing both measurement methods yielded in a significant difference at the .05 level. Both however present a significant predictive validity, since the F test indicates that $R^2$ is significantly different from zero. Before the Beta coefficients can be assessed, an analysis will have to be made of correlation among the independent variables, or multicollinearity. Hair et

al. (2006) describe that multicollinearity is harmful because of the confound estimation of the regression coefficients and the negative influence on the statistical significance tests of the coefficients. Hair et al. (2006) describe the Variance Inflation Factor as assessment tool for collinearity. A high VIF indicates high multicollinearity and Hair et al. (2006) indicate a commonly used cutoff value of 10. However, they suggest to lower this cutoff value in the case of smaller samples, due to the fact that standard errors increase due to multicollinearity. A VIF higher than 5.3 or tolerance values below .19 would indicate a correlation of more than .90 (Hair et al., 2006). An analysis of VIF/tolerance values indicated that 18 out of 22 variables in both analyses indicated VIF values >5.3 or Tolerance values <.19. This was partly expectable since it would be logical for the squared coefficients to be correlated with their non-squared counterparts. As a high degree of multicollinearity inhibits the possibility to interpret the regression coefficients directly (Hair et al., 2006), these results lead to an adaption of analysis strategy:

- The significance of the non-linear coefficients will be assessed by assessing significant $R^2$ increase after inclusion in the regression equation (Hair et al., 2006).
- A correlation analysis has been used to interpret the significance and direction of the relations, as prescribed by Hair et al. (2006).

In order to test the significance of the non-linear coefficients the following procedure was used. The baseline regression model included all linear coefficients of the attributes and affective state. Next each non-linear coefficient has been sequentially added to the regression equation and the $R^2$ change evaluated. The assessment of the $R^2$ increase by including the non-linear coefficients is presented in
Table 4.

*Table 4: $R^2$ increase after inclusion of each non-linear coefficient in the regression equation between Overall satisfaction (Dependent Variable) and the linear coefficients of the attributes and Affective State.*

| | $R^2$ increase non-linear coefficients | |
| --- | --- | --- |
| | Performance Only | Performance-Expectations |
| Squared Attributes | | |
| (Tangibles)$^2$ | .001 | .002 |
| (Reliability)$^2$ | .019* | .019* |
| (Responsiveness)$^2$ | .046** | .014 |
| (Assurance)$^2$ | .033** | .018* |
| (Empathy)$^2$ | .006 | .004 |
| (User Satisfaction)$^2$ | .006 | .003 |
| (Executive Satisfaction)$^2$ | .004 | .017 |
| (IT Managerial items)$^2$ | .000 | .003 |
| (Complaint Handling)$^2$ | .003 | .003 |
| (Price)$^2$ | .010 | .010 |

*Note.* * $p < .05$    ** $p < .01$

As can be derived from this analysis, inclusion of the non-linear coefficients of Reliability and Assurance represent a significant $R^2$ increase using both Performance-Only scores as well as Performance-Expectation scores. The non-linear coefficient of Responsiveness only yielded in significant $R^2$ increase when using Performance-Only scores. Finally in order to understand the direction and significance of the coefficients, the correlation tables for both scoring methods will be presented in *Table 6* on page 45. The linear components all seem to be positively related to Overall Satisfaction in both analyses. Two attributes have been tested as having a significant negative non-linear effect on Overall Satisfaction in the correlation analysis using the Performance-Expectation scores: Reliability and Assurance. When relating this back to Kano's classification, these can be interpreted in general as Must-Be requirements as they represent a negative curve in the Performance-Expectation graph (Figure 2). Customers seem to value these attributes as basic premises of the IT Development process: fulfillment of these attributes will contribute relatively less to delightness than non-fulfillment to dissatisfaction. Figure 6 and Figure 7 illustrate these non linear effects by plotting P-E scores against Overall Satisfaction. When using Performance-Only scores three significant non-linear effects have been found: Reliability, Responsiveness and Assurance. What is interesting to see is that, contrary to the Performance-Expectations scores analysis, both coefficients are positive. The reason for this is the different range of the scale: The absolute lowest value on a performance scale is 0, the Performance-Expectations scale ranges from negative values to positive values. A negative sign is necessary in case of Performance-Expectations scoring, otherwise a negative P-E score would contribute positively to Customer Satisfaction, due to the squaring of the score.
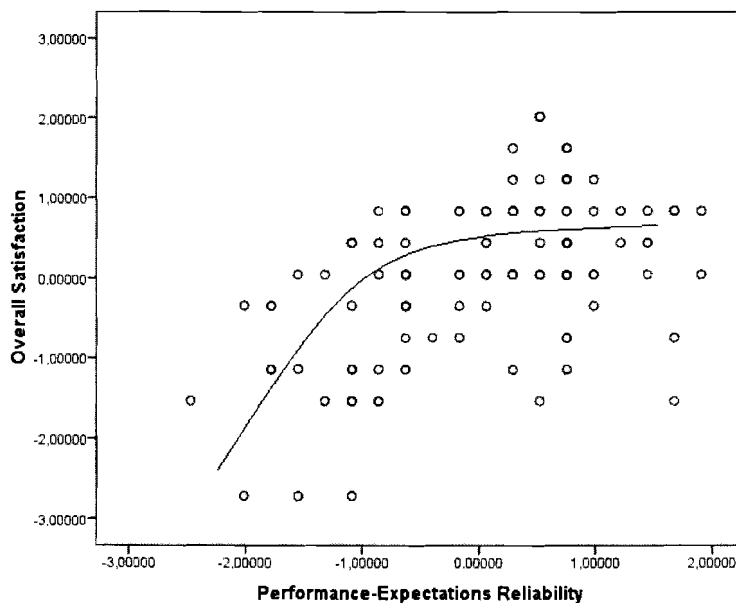


*Figure 6: Plots of P-E scores of Reliability versus Overall Satisfaction*
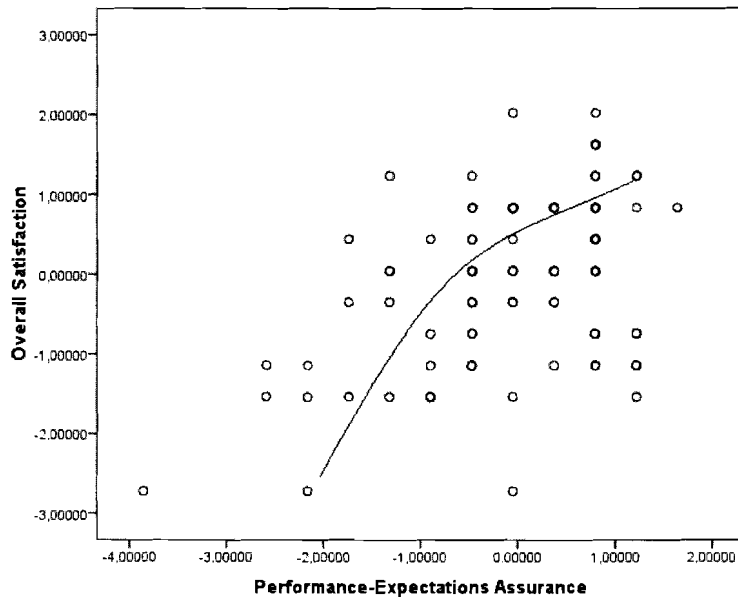
*Figure 7: Plots of P-E scores of Assurance versus Overall Satisfaction*

Using the correlation scores of the standardized scores, which enable an analysis of relative importance, both analyses show the Service Quality attributes as having the highest correlation coefficients, indicating high importance. Reliability, Assurance and partly Responsiveness scores indicate significant non-linear relationships with Overall satisfaction, which resemble the Must-Be requirements elaborated on by Kano et al. (1984). Both the Tangibles Dimension as the Executive Satisfaction dimension did not show to be significantly correlated to Overall Satisfaction when using Performance-Only scores. However apart from these and the Non-linear coefficients, both scoring methods indicated positive linear effects between the identified attributes and Overall Satisfaction, partly supporting H1.

The previous regression analyses may have suffered from high multicollinearity, their $R^2$ values can be interpreted. As was obvious, both $R^2$ and adjusted $R^2$ values were higher in the case of the Performance-Only analysis, indicating predictive difference between the two scoring methods. This result supports H5.

The correlational analyses indicate no significant correlation between both affective states and Overall Satisfaction. This result is backed up when performing a separate regression analysis between both affective states and Overall satisfaction. This separate analysis does not suffer from high multicollinearity (no VIF values > 5.3), which enables direct interpretation of the regression coefficients. Results are shown in Table 5. In conclusion, this data offers no support for H4a and H4b

*Table 5: Regression analysis between Overall satisfaction (Dependent variable) and Positive and Negative Affective State. N=107*

| | Outcomes – Unstandardized B coefficients |
|---|---|
| Affective State | |
| Positive Affective State | .13 |
| Negative Affective State | .11 |
| Full Model | $R^2 = .028$ <br> $F(2, 104) = 1.5$ <br> $p = .228$ <br> Adjusted $R^2 = .009$ |
| *Note.*    * $p < .05$ (two-tailed)    ** $p < .01$ (two-tailed) | |

*Table 6: I Pearson correlations: Standardized Performance-Only Measures. Mean and Standard Deviation of the unstandardized scores*

| Measure | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Overall satisfaction | 3.29 | .84 | 1.00 | | | | | | | | | | | | | | | |
| 2. Positive Affect | 3.71 | .61 | .13 | 1.00 | | | | | | | | | | | | | | |
| 3. Negative Affect | 1.33 | .35 | .10 | -.07 | 1.00 | | | | | | | | | | | | | |
| 4. Tangibles | 3.51 | .50 | .37** | .10 | .07 | 1.00 | | | | | | | | | | | | |
| 5. Reliability | 3.00 | .77 | .60** | -.03 | -.00 | .38** | 1.00 | | | | | | | | | | | |
| 6. Responsiveness | 3.71 | .73 | .52** | .05 | .04 | .36** | .67** | 1.00 | | | | | | | | | | |
| 7. Assurance | 4.11 | .79 | .46** | .21* | -.09 | .45** | .57** | .75** | 1.00 | | | | | | | | | |
| 8. Empathy | 3.79 | .77 | .48** | .13 | -.15 | .34** | .58** | .65** | .66** | 1.00 | | | | | | | | |
| 9. User Satisfaction | 3.69 | .75 | .24* | .07 | -.27** | .18 | .33** | .43** | .38** | .57** | 1.00 | | | | | | | |
| 10. Executive Satisfaction | 3.58 | .60 | .36** | .23* | -.01 | .27** | .29** | .21* | .30** | .49** | .45** | 1.00 | | | | | | |
| 11. IT Managerial items | 3.92 | .75 | .36** | .04 | -.17 | .13 | .47** | .50** | .36** | .50** | .60** | .31** | 1.00 | | | | | |
| 12. Complaint Handling | 3.67 | .58 | .49** | .14 | -.02 | .36** | .46** | .62** | .61** | .54** | .30** | .31** | .42** | 1.00 | | | | |
| 13. Price | 3.58 | .74 | .22* | .11 | -.26** | .09 | .25** | .32** | .35** | .55** | .40** | .36** | .30** | .28** | 1.00 | | | |
| 14. (Reliability)² | 2.86 | 2.85 | .57** | .02 | -.04 | .37** | .99** | .65** | .55** | .58** | .36** | .31** | .46** | .43** | .26** | 1.00 | | |
| 15. (Responsiveness)² | 1.30 | 2.12 | .50** | .08 | .00 | .35** | .67** | .99** | .72** | .66** | .43** | .21* | .51** | .62** | .34** | .66** | 1.00 | |
| 16. (Assurance)² | 1.01 | 1.92 | .43** | .26** | .10 | .43** | .57** | .73** | .99** | .66** | .35** | .31 | .34** | .61** | .35** | .56** | .72** | 1.00 |

*II Pearson correlations: Standardized Performance-Expectation Measures. Mean and Standard Deviation of the unstandardized scores*

| Measure | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Overall satisfaction | 3.29 | .84 | 1.00 | | | | | | | | | | | | | | |
| 2. Positive Affect | 3.71 | .61 | .13 | 1.00 | | | | | | | | | | | | | |
| 3. Negative Affect | 1.33 | .35 | .10 | -.07 | 1.00 | | | | | | | | | | | | |
| 4. Tangibles | -.04 | .60 | .12 | -.09 | -.15 | 1.00 | | | | | | | | | | | |
| 5. Reliability | -1.41 | .87 | .53** | -.08 | -.04 | .13 | 1.00 | | | | | | | | | | |
| 6. Responsiveness | -.79 | .83 | .44** | -.09 | .21* | .29** | .61** | 1.00 | | | | | | | | | |
| 7. Assurance | -.63 | .78 | .48** | .12 | -.09 | .29** | .58** | .65** | 1.00 | | | | | | | | |
| 8. Empathy | -.75 | .81 | .43** | .01 | -.13 | .34** | .52** | .39** | .48** | 1.00 | | | | | | | |
| 9. User Satisfaction | -.81 | .80 | .28** | .02 | -.26** | .18 | .25** | .27** | .30** | .34** | 1.00 | | | | | | |
| 10. Executive Satisfaction | -.54 | .60 | .15 | .14 | .05 | -.06 | .19 | .10 | .17 | .11 | .13 | 1.00 | | | | | |
| 11. IT Managerial items | -.85 | .81 | .39** | -.07 | -.23* | .21* | .45** | .39** | .39** | .53** | .47** | .21* | 1.00 | | | | |
| 12. Complaint Handling | -.76 | .65 | .43** | .03 | -.05 | .31** | .34** | .31** | .49** | .43** | .21* | .20* | .37** | 1.00 | | | |
| 13. Price | -.65 | .81 | .24* | -.15 | -.15 | .32** | .36** | .58** | .45** | .61** | .22* | -.10 | .36** | .38** | 1.00 | | |
| 14. (Reliability)² | 2.86 | 2.85 | -.58** | .08 | -.06 | -.15 | -.96** | -.63** | -.61** | -.51** | -.20* | -.21 | -.41** | -.41** | -.37** | 1.00 | |
| 15. (Assurance)² | 1.30 | 2.12 | -.51** | .02 | .05 | -.37** | -.52** | -.60** | -.88** | -.50** | -.26* | -.11 | -.38** | -.49** | -.43** | .58** | 1.00 |

*Note. * p < .05 (two tailed) ** p < .01 (two-tailed)*

### 4.6.3 Testing H2

In order to test Hypothesis 2 a one-way MANOVA analysis was conducted to determine the effect of Personal and Supplier Experience on Expectations of Tangibles, Reliability, Responsiveness, Assurance, Empathy, User Satisfaction, Executive Satisfaction, IT Managerial Items, Complaint Handling and Price. No significant differences were found among different levels of either Personal Experience or Supplier experience on the dependent measures: Wilks's Lambda (Figure 8) was tested as non-significant in either case, indicating that the hypothesis that the population means on the dependent variables are the same for the two Experience Types cannot be rejected. Therefore the data does not support Hypothesis 2.

**Multivariate Tests[c]**

| Effect | | Value | F | Hypothesis df | Error df | Sig | Partial Eta Squared |
|---|---|---|---|---|---|---|---|
| Intercept | Pillai's Trace | ,995 | 1,268E3 | 9,000 | 55,000 | ,000 | ,995 |
| | Wilks' Lambda | ,005 | 1,268E3 | 9,000 | 55,000 | ,000 | ,995 |
| | Hotelling's Trace | 207,428 | 1,268E3 | 9,000 | 55,000 | ,000 | ,995 |
| | Roy's Largest Root | 207,428 | 1,268E3 | 9,000 | 55,000 | ,000 | ,995 |
| SCOREEXPERIENCECompany | Pillai's Trace | 1,033 | 1,021 | 72,000 | 496,000 | ,436 | ,129 |
| | Wilks' Lambda | ,311 | 1,005 | 72,000 | 342,131 | ,473 | ,136 |
| | Hotelling's Trace | 1,331 | ,985 | 72,000 | 426,000 | ,517 | ,143 |
| | Roy's Largest Root | ,435 | 2,998[b] | 9,000 | 62,000 | ,005 | ,303 |
| SCOREEXPERIENCEPerson | Pillai's Trace | ,867 | 1,126 | 54,000 | 360,000 | ,263 | ,145 |
| | Wilks' Lambda | ,376 | 1,117 | 54,000 | 285,040 | ,281 | ,151 |
| | Hotelling's Trace | 1,114 | 1,101 | 54,000 | 320,000 | ,303 | ,157 |
| | Roy's Largest Root | ,435 | 2,902[b] | 9,000 | 60,000 | ,006 | ,303 |
| SCOREEXPERIENCECompany * SCOREEXPERIENCEPerson | Pillai's Trace | 2,984 | 1,077 | 261,000 | 567,000 | ,236 | ,332 |
| | Wilks' Lambda | ,019 | 1,099 | 261,000 | 495,358 | ,187 | ,354 |
| | Hotelling's Trace | 5,483 | 1,118 | 261,000 | 479,000 | ,149 | ,379 |
| | Roy's Largest Root | 1,517 | 3,295[b] | 29,000 | 63,000 | ,000 | ,603 |

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance level.

c. Design: Intercept + SCOREEXPERIENCECompany + SCOREEXPERIENCEPerson + SCOREEXPERIENCECompany * SCOREEXPERIENCEPerson

*Figure 8: MANOVA Output with Expectations as dependent variable and both Supplier and Personal Experience as "factors".*

### 4.6.4 Testing H3

A discriminant analysis was conducted to determine whether Personal experience with IT Development processes and/or Experience with the Supplier could predict a Kano classification of the identified attributes. The classifications used in this analysis were "Attractive", "One-Dimensional", "Must-Be" and "Indifferent" as these are the classifications argued for in Kano's theory of Attribute Lifecycles.

The overall and residual Wilks's Lambda's are displayed in Table 7. As can be derived from this table, significant Overall Wilks's Lambda's were present in the Tangibles and Assurance case, indicating that overall the predictors differentiated among the classifications. The residual Wilks's Lambda was not significant in either case, indicating that the predictors did not differentiate significantly across the classifications after partialling out the effects of the first discriminant function. Therefore only the first discriminant function was interpreted in both cases.

*Table 7: Discriminant Analyses with attribute Kano classifications as dependent variables and both personal and Supplier Experience as predictors*

| Dependent Classification | Kano | Overall Lambda | Wilks's | Residual Lambda | Wilks's |
|---|---|---|---|---|---|
| Tangibles | | .91* | | .98 | |
| Reliability | | .94 | | .99 | |
| Responsiveness | | .93 | | .99 | |
| Assurance | | .80** | | .95 | |
| Empathy | | .92 | | .99 | |
| User satisfaction | | .96 | | .99 | |
| Executive Satisfaction | | .93 | | .99 | |
| IT Managerial Items | | .91 | | .99 | |
| Complaint Handling | | .98 | | 1.00 | |
| Price | | .98 | | .99 | |

*Note.* * p < .05    ** p < .01

The correlation coefficients and standardized coefficients functions of both the Tangibles' and Assurance's first discriminant function are displayed in Table 8. As can be derived from this table, the first discriminant function of the Tangibles classification represents Experience with the Supplier, as both the correlation and standardized coefficient score extremely high in comparison to a fairly low score of Personal Experience. The discriminant function of Assurance shows a main representation of Personal Experience.

*Table 8: Standardized Coefficients and Correlations of Predictor Variables of both the first discriminant function of Tangibles and Assurance*

| Predictor | Correlation coefficients with first Discriminant Function | | Standardized coefficients with first Discriminant Function | |
|---|---|---|---|---|
| | Tangibles | Assurance | Tangibles | Assurance |
| Experience with Supplier | .99 | .29 | .99 | .40 |
| Personal Experience | .04 | .92 | .19 | .95 |

The group centroids of the first Tangibles discriminant function are displayed in Figure 9. Group centroids represent the mean values for the classifications on the discriminant function. The group centroids indicate the sequence of the Tangibles Classification Lifecycle. The lowest mean, represents the classification in case of the lowest level of Supplier Experience. In this case, Tangibles are likely to be classified as Must-Be in case of the lowest Supplier Experience. Subsequently they tend to follow a lifecycle (from low Supplier experience to high Supplier experience) of Attractive → Indifferent → One-Dimensional.

**Functions at Group Centroids**

| Tangibles Classification | Function 1 |
|---|---|
| Attractive | -,159 |
| One Dimensional | ,831 |
| Must Be | -,353 |
| Indifferent | ,095 |

Unstandardized canonical discriminant functions evaluated at group means

*Figure 9: Function at group centroids Tangibles.*

The group centroids of the first Assurance discriminant function are displayed in Figure 10. These results also indicate a lifecycle of classification. A person with the lowest level of Personal experience with IT Development processes is likely to classify the Assurance dimension as Indifferent. Subsequently the lifecycle tends to follow (from low Personal Experience to High Personal Experience) Attractive → Must-Be →One Dimensional.

**Functions at Group Centroids**

| Assurance Classification | Function 1 |
|---|---|
| Attractive | -,639 |
| One-Dimensional | ,504 |
| Must-Be | -,112 |
| Indifferent | -1,399 |

Unstandardized canonical discriminant functions evaluated at group means

*Figure 10: Function at group centroids Assurance*

In conclusion the data partially supports H3, in that possible lifecycles were supported for only two attributes.

## 4.6.5 Testing H6

The final hypothesis states that a Kano classification accurately represents the actual relation between the attributes and Overall satisfaction. When comparing the modi (mostly used classification) to the form of the relationships resulting from the tests, there are some differences. Table 9 shows the classification modi compared to the tested relationships in the preceding correlation and regression analyses. As can be derived from this table, no classification corresponds to a single type of relationship, which leads to the conclusion that the data do not support H6.

*Table 9: Kano classification modi vs tested relationships*

| Attribute | Characterization relation using | | Classification modus |
|---|---|---|---|
| | Performance Only scores | Performance-Expectation scores | |
| Tangibles | Linear | No sign. relation | Indifferent |
| Reliability | Positive Quadratic | Negative Quadratic | Must-Be |
| Responsiveness | Positive Quadratic | Linear | Must-Be |
| Assurance | Positive Quadratic | Negative Quadratic | Must-Be |
| Empathy | Linear | Linear | Must-Be |
| UserSatisfaction | Linear | Linear | One-Dimensional |
| ExecutiveSatisfaction | Linear | No sign. relation | Must-Be |
| ITManagerial | Linear | Linear | Must-Be |
| ComplaintHandling | Linear | Linear | Must-Be |
| Price | Linear | Linear | Must-Be |

# 5 Conclusion

This chapter will summarize the results from the research, discuss them according to their theoretical and practical implications and will end with limitations and suggestions for future research.

## 5.1 Results summary

The analyses indicated that there were significant positive linear correlations between Overall satisfaction and IT product quality attributes, as stated in the first hypothesis: User satisfaction (significant in both Performance-Expectations and Performance Only scoring), Executive Satisfaction (significant only when using Performance-Only scoring) and IT Managerial Items (significant in both scoring methods). Positive linear correlations were also found between Service Quality attributes and Overall satisfaction: Tangibles (significant only when using Performance-Only scoring), Responsiveness (significant positive linear relation when using Performance-Expectations scores, significant non-linear relation when using Performance-Only scores) and Empathy (significant in both scoring methods). Both Perceived Price and Complaint Handling are also significantly positively related to Overall satisfaction in both scoring methods.

The non-linear components are likely to be of great influence on Overall satisfaction : Both Reliability of the Service and Assurance have been tested being significantly non-linearly related to Overall satisfaction in both scoring methods. Responsiveness has also been tested as being significantly non-linearly related to Overall satisfaction in one of two scoring

methods. If we compare the form of the relationships with the form of the relations that represent the classifications used by Kano (Figure 2) we can derive that they resemble the Must-Be classification: When using performance-Expectation scoring, as the original figure, it appears that they follow a ∩-shaped curve compared to Overall Satisfaction. This would indicate that these three can be viewed as basic needs for any IT Development context.

The rest of the importance of the attributes can be assessed by comparing correlation coefficients. Since standardized scores were used in the correlation analysis, these correlation coefficients can be interpreted as relative importance scores. A ranking of a combination of both analyses shows that Complaint Handling and Empathy are the highest scoring linearly related attributes, followed by (in order of importance) IT Managerial items, Tangibles, User and Executive Satisfaction and Price.

The analysis of the influence of experience has brought some interesting insights. No significant group difference between expectations of experience versus inexperienced customers could be tested. Therefore no support can be offered through this study for Hypothesis 2. However, partial support was found for Hypothesis 3, which states that there is a significant difference in Kano classification between experienced and inexperienced customers: Evidence has been found for a classification lifecycle of both the Tangibles attribute and the Assurance attribute.

It appears that if a customer has very little experience with the particular supplier, he tends to classify the Tangibles as "Must-Be". When supplier experience increases, the results show a lifecycle of classification following Attractive → Indifferent → One-Dimensional. It appears that the tangible aspects of the IT Development process tend to lose importance as experience with the supplier increases. However, when customers have a very high level of experience with the particular supplier, the tangible aspects are rated as being One-Dimensional. When customers have low personal experience with IT development processes, they tend to classify the Assurance dimension as Indifferent. Subsequently the lifecycle tends to follow (from low Personal Experience to High Personal Experience) Attractive → Must-Be → One Dimensional.

The influence of Affective State appears to be limited according to the outcomes. Both correlation and regression analysis results indicated no significant relationship between Affective States and Overall satisfaction.

As the regression analyses results showed, both Performance Only scoring and Performance-Expectations scoring have different predictive validity of Overall satisfaction. Both $R^2$ and adjusted $R^2$ values were higher in the case of the Performance-Only analysis, indicating higher predictive validity. Therefore the data supports Hypothesis 5, which stated that the two show different predictive validities.

The final analysis showed that there are discrepancies between the Kano classification and a consistently matching form of the tested relationships. This results shows that the data does not support Hypothesis 6.

## 5.2 Theoretical Implications

The relative importance of the identified attributes shows that the Service Quality attributes exhibit the largest influence on Overall Satisfaction in IT Development contexts. This result supports the findings of Silvestro et al. (1992) that service quality aspects are of larger influence on Overall satisfaction than product related aspects in a Professional Service environment. Second of all, the Tangibles dimension did not exhibit a significant correlation with Overall satisfaction when using Performance-Expectation scores. In spite of the fact that this finding is in line with previous research efforts, indicating this dimension as being the least important and advocating removal of this dimension from the SERVQUAL framework (Kettinger & Lee, 1997, Landrum & Prybutok, 2004), the Performance Only scoring method did show a significant correlation between the Tangibles dimension and Overall satisfaction. One should note however that reliability scores of the measurement were fairly low on this dimension, which might also have caused these non-significant results.

This research provides evidence for the existence of curvilinear relationships between quality attributes and Overall satisfaction. The theory of Kano et al. (1984) already argued for the existence of these relationships, but identified these using a classification method, not backing up this method with actual analyses of relationships between the two. In this sense the results of this research contributes valuably to the research on Kano's theory of attractive quality. Lofgren & Witell (2008) advocated future research in their article into the correspondence of the classification to the actual relationship between quality attributes and Overall satisfaction. The results show that Kano's classification method does not consequently correspond to a certain form of relationship (e.g. negative non-linear, positive-non linear, no significant relation or linear).

Although the Kano classification method does not correspond to a certain form of relationship, evidence has been found for classification lifecycles as has been argued for by Kano (2001). Both the Tangibles dimension and the Assurance dimension show signs of different classification when experience increases. The indication of a different sequence of classifications also corresponds to Kano's argument that multiple lifecycle forms exist.

The absence of a significant effect between Affective States and Overall satisfaction is contrary to the findings of Westbrook (1987), Oliver (1993) and Ladhari (2007) but in line with the proposed definition of Customer Satisfaction, which indicates a satisfaction evaluation as the outcome of a cognitive process. A reason for the difference in findings may lie in the research setting used. For instance, Ladhari (2007) assessed moviegoers for both Affective State and Satisfaction as they exited the movie theatre. The findings of an effect between the two might be logical. Watching a movie might be inherently linked to affecting your Affective State (You watch a movie to affect your affective state). Hence, if your Affective state has been positively influenced, you're likely to be satisfied.

As the regression analyses showed, the Performance Only measurement resulted in the highest explained variance, over the Performance-Expectation measurement. Performance-only based measurements have been tested as having greater variance-explanatory value (Landrum & Prybutok, 2004) and provide a more condense way of measurement. The meta-analytic results of Carrilat et al.(2007) show that although there is no significant difference

between the two measurement methods across industries, the SERVQUAL scale tends to achieve higher predictive validity when it is specifically adjusted for the particular context. In other words, Performance-expectation analyses might prove to offer greater explanatory value when measuring Project-specific attributes. The attributes discussed in this research are generally applicable across IT projects.

## 5.3 Practical Implications

The intention of conducting this study was to identify the most important aspects that contribute to Customer satisfaction in IT Development contexts, in order for IT Suppliers to lay their focus on the appropriate points of interest. As we now can answer the first research question, this goal has been achieved. The results show the largest influence on Customer Satisfaction coming from Service Quality attributes and Complaint Handling. Especially Reliability, Assurance and Responsiveness have shown to be negatively curvilinear related to satisfaction, indicating that these are basic premises in IT Development Contexts. An IT Supplier needs to make sure that he is able to offer a dependable and accurate service, is showing willingness to help customers and employs knowledgeable and courteous employees. Non-fulfillment of these aspects forms the most important source of dissatisfaction among customers.

The second goal of this research was to identify how to assess the identified attributes in practice. As has been showed, the Performance-Only scoring method yields in a higher predictive validity in case of evaluation of the identified attributes in this research. The attributes identified in this study are generally applicable to IT Development processes. These might serve as attributes that can be measured across all Development projects of a supplier, as they offer a good means of providing cross project KPI's. The measurement scale used would be a Performance Only scale.

Companies who use the Kano classification are advised not to relate a classification to the form of presented relationships in the famous Kano diagram (Figure 2). This empirically backs up the recommendations given by Lofgren & Witell (2008). Another important result is the evidence for the existence of quality attribute lifecycles for the Tangibles and Assurance dimension. This result indicates that customer experience might influence a customers' evaluation of what he thinks is important. However, as the results also have shown that a Kano classification does not correspond to the actual tested relationship, the results of the actual lifecycles need to be interpreted with care. It is important however for IT suppliers to account for the level of previous experience a customer has had in IT Development projects.

Although this research did not find any significant relations between Experience and Expectations, arguments have been given that expectations tend to change during the project (Johnson & Mathews, 1997, Kotonya & Sommerville, 2003, Kujala & Kauppinen, 2005). Therefore, it is important to monitor and manage changes in these expectations.

## 5.4 Limitations

Although the research yielded in some significant results there are some limitations. For starters, the sample size is limited and questions about generalizability of the results may rise. Due to the fact that the majority of respondents evaluated an IT Development project

delivered by external suppliers, its difficult to elaborate on the difference projects delivered by internal versus external suppliers. However, respondent analysis shows a wide diversity of companies/industries involved. Secondly, respondents approached did not represent a customer base of one particular IT supplier therefore widening diversity in IT suppliers evaluated. As a possible result of the limited sample size, a high degree of multicollinearity did not allow for interpretation of regression coefficients for some analyses.

The second limitation is the Cross-Sectional nature of this research. A longitudinal design would allow monitoring within-subject changes over time, which would better explain causality. Especially in the case of the influence of experience on expectations or the occurrence of quality attribute lifecycles a longitudinal design would prove to be more effective and potentially indicate more significant relations.

The third limitation is the reliance on self-report data, especially in the case of Affective State, which can raise questions about common-method effects (Hart, 1999). Although no significant correlations have been found, it does not imply that Affective State should be disregarded.

The fourth limitation is the low reliability scores of all Tangibles measurements and Expectation measurements of Assurance. Especially the fairly high number of non-significance tests of Tangibles measures might be partially accounted for by these reliability scores. Although tested as non-significant, the results

## 5.5  Future research

The limited outcome from the analyses regarding experience vs. expectations might be related to the fact that changes in expectations occur during the course of the project. A longitudinal design, analyzing expectations on various moments in the process would be more appropriate to investigate this effect. This research evaluated the post-delivery satisfaction combined with an evaluation of total Experience of the respondents. Therefore future research would have to longitudinally assess expectations within the development process.

Despite the fact that Performance-Only measurements have been tested as having higher explanatory value than Performance-Expectation measurements, the latter have been argued by Carrilat et al. (2007) to yield in additional benefits by providing more information. The findings of Carrilat et al. (2007) also indicate that variance explanatory values of P-E scores tend to be higher when the measuring items are adapted to the specific contexts in which they are used. Future research would have to address the usefulness of P-E measurements. Perhaps it is best to use the Expectation and Performance measurements each for separate goals; Expectation measurements to gain better insights into the wishes of the customer and Performance measurements to evaluate Customer Satisfaction. This method would provide the benefits mentioned by Carrilat et al. (2007) but would not suffer from the troubled explanatory value of using the difference scores as Customer satisfaction evaluations.

As has been argued above, the Kano classification does not always correspond to a specific form of relationship between Overall satisfaction and the respective attribute. Research is

needed to investigate the value and validity of the classification method. Changes in either the classification table or the measuring items might be needed to achieve a better matching between a classification and the actual relationship. Further research also needs to address the quality attribute lifecycles in order to discover whether certain attributes are consequently classified differently by customers depending on their previous experience. This research indicated two possible lifecycles regarding the Tangibles and Assurance attribute. Future longitudinal research would have to investigate if these results accurately represent actual lifecycles. Results of this research can be valuable input for IT suppliers for example to adapt their service offerings across various levels of customer experience.

Conclusively, the analysis of the influence of Affective State on Customer satisfaction did not show any significant results. As this result conflicts with some previous results (Westbrook, 1987, Oliver, 1993 and Ladhari, 2007) it is advisable to investigate whether the influence of Affective State on Customer satisfaction is depending on the setting and the product evaluated. Another direction for future research into other determinants of customer satisfaction might lie in the investigation of the influence of personal characteristics, daily hassles and uplifts in both work and non-work domains on Customer satisfaction evaluations. Hart (1999) already investigated these characteristics in the context of Job Satisfaction and Life Satisfaction indicating some significant effects.

# 6 OTACE Improvement Proposal

In order to illustrate the practical implications discussed in 5.3, a review of the OTACE tool used by Capgemini will be presented in this section. First outcomes of the preceding research will be translated to Design Principles using CIMO logic (Denyer, Tranfield & Van Aken, 2007). The CIMO logic forms a structured approach to translate scientific findings into practical recommendations. These design principles are practical derivatives from collected knowledge. They consist of a description of the  Context to use them, the Intervention prescribed, the Mechanism it triggers and the Outcome it will produce. Secondly a description of OTACE will be given. Thirdly, the design principles will be translated to propositions for the OTACE tool. Although there might exist other directions for OTACE redesign, this review will only discuss the implications resulting from the previously discussed research.

## 6.1 Design principles

By using CIMO logic, the findings of the preceding study can be translated to practical guidelines for designing customer satisfaction evaluation tools. This section will identify these design principles. As has been described, the Service-related quality aspects "Reliability", "Responsiveness", and "Assurance" tend to be non-linearly associated to Overall satisfaction in IT Development contexts. In contrast, the Product-related quality aspects seem to be linearly related to Overall satisfaction. This indicates that Service-related quality aspects tend to contribute proportionally stronger to Overall Satisfaction than Product-related aspects, which is in line with the arguments of Silvestro et al.(1992) that customers of Professional Services tend to value Service-related quality as more important than Product-related quality aspects. As these three Service-related aspects tend to describe a relationship similar to what has been described by Kano et al. (1984) as Must-Be requirements, it is critical to fulfill them in order to achieve satisfaction. Therefore, when

measuring aspects of IT Development in order to explain Overall satisfaction, it is vital to include these three in the measurement list as means to explain dissatisfaction. Therefore:

<u>Design Principle 1</u>: **When designing customer satisfaction evaluation tools for IT development contexts (C), always include measures of Reliability of Service, Responsiveness, and Assurance (I), as they will provide insight into the performance on the critical Must-Be criteria (M), through which the main reasons for dissatisfaction can be understood (O).**

As the analysis of Performance-Expectations vs. Performance-only ratings showed, the latter method has a higher explanatory value of Overall Satisfaction when rating general quality attributes, including the identified Must-Be criteria. Therefore:

<u>Design Principle 2</u>: **When designing customer satisfaction evaluation tools for IT development contexts (C), use Performance-only based measurements (Performance aspect x) to measure general attributes usable across projects to explain Overall Satisfaction (I), as these hold a higher explanatory value than Performance-Expectation scores (M), which lowers the gap between calculated Overall satisfaction and actual Overall Satisfaction(O).**

These design principles form input for the OTACE review in Paragraph 6.3. The next Paragraph will offer a brief description of OTACE in general.

## 6.2 OTACE Description

The following definition of OTACE exists within Capgemini: "The objective of OTACE (On Time and Above Customer Expectation) is to identify how well we serve our customers on contracted work. OTACE reporting captures the On-Time and Customer Satisfaction status of Engagements (..) providing an indicator of strengths and areas for improvements. (The Blue Book.)". Its functionality is intended to provide Capgemini with:

• Setting and managing customer expectations at the beginning and throughout an engagement
• Capturing the customer's level of satisfaction with the engagement performance periodically through the engagement to help identify areas of strength in the engagement delivery, areas for improvement and potential sales opportunities. (Capgemini Quality Principles, QP01 V1)

The OTACE method consists of a five step process (QMS, DEL-R Customer Satisfaction Evaluation, 1-5-2008):

1. **Setting criteria:** Before the start of the engagement the satisfaction criteria and weighing factors, on basis of which customer satisfaction measuring will take place, are defined with the customer.

   The customer will be informed concerning the quality policy of Capgemini and the role which the customer satisfaction evaluation fulfils in this (Use the QMS OTACE Folder). The importance of the customer satisfaction evaluation for the execution of

the engagement will be explained to the customer. The customer will be asked if he is prepared to cooperate in the customer satisfaction research. If this is not the case then this is recorded in the Delivery File, a copy is filed in the Engagement File and Customer File. A copy of the written declaration of the customer is issued to the Sector Quality Manager.

The form is filled out in duplicate, one for Capgemini and one for the customer. Together with the customer the OTACE criteria are decided, the customer sets the criteria (the 18 criteria on the OTACE Form can be used as an example). The criteria are no substitute or extension of the agreement or contract. Criteria are clearly described and decisively. The team has influence on the result of the criteria.

It is not allowed to leave the form at or send it to the customer with the request to fill in and send back without having explained OTACE and discussed criteria. Per criterion a weighing factor is set, these vary between 5 (highest priority) and 1 (of subordinate importance).

2.  **Evaluation during execution (every 12 months):** All assignments with a lead time longer than 12 months need an interim evaluation. Together with the customer the criteria on the OTACE form, filled in previously, are evaluated against the execution of the assignment so far (in duplicate again). The customer can give a score varying from 5 (high) to 1 (low). The separate criterion "What would be your overall score for the engagement?" so far is also evaluated and must be appreciated apart from the remaining criteria. Special attention is given to the follow-up: how can satisfaction be improved for this assignment or future assignments. If appropriate, new OTACE criteria are set.

3.  **Evaluation at engagement run down:** The customer satisfaction evaluation has to be carried out within 1 month after the end of the engagement. Together with the customer the criteria on the OTACE form, filled in previously, are evaluated against the execution of the assignment (in duplicate again). The customer can give a score varying from 5 (high) to 1 (low). The separate criteria "What would be your overall score on the engagement?" and "Capgemini delivers on time Yes/No" are also evaluated. The first one must be appreciated apart from the remaining criteria. Ask the customer if he is willing to serve as a reference for Capgemini. Special attention is now given to the follow-up: how can satisfaction be improved for future assignments.

4.  **Archiving the OTACE forms:** OTACE forms are filed in the Delivery File, a copy is filed in the Engagement File and Customer File. A copy is also sent to the Sector Quality Manager for the Sector OTACE file.

5.  **Reporting on OTACE results:** The Sector Quality Manager is responsible for monthly reporting on OTACE results within the sector and to the Country Quality Manager. The Country Quality Manager reports at Global level.

As has been described in step one of the OTACE process, a set of 18 criteria has been defined for customers to consider including in their OTACE evaluation (DEL-F-Customer satisfaction evaluation UK):

**1. Quality of deliverables:** Quality of deliverables, either on content and presentation sides (documents, software, hardware, solutions and services).

**2. Solution effectiveness:** Fulfillment of customer needs, optimized and effective solution, appropriate to the business requirements.

**3. Cross team cooperation:** Cross team cooperation including cooperation between Capgemini teams, customer teams, team spirit and solidarity.

**4. Linkage to your strategic stakes:** Understanding and taking into account business and financial stakes. The project contributes to fulfill these strategic goals.

**5. Value-added insights and Thought Leadership:** Providing innovative and value-add ideas. Ability to lead and mobilize ideas.

**6. Customer focused attitude:** Understanding and taking into account customer expectations, customer needs, customer constraints and priorities, showing a service attitude and seeking for user's satisfaction.

**7. Achievement of commitments:** Actions achieved and implementation decisions made within committed timeframe and according to commitments.

**8. Duty to advise:** Spontaneous proposition of actions or solutions to improve project management, quality of deliverables and speed of delivery; appropriate Information System to fit business issues. Ability to alert the right level of actor on issues impacting project or organization.

**9. Responsiveness:** Quickly taking into account unpredictable events, ability to propose and implement the right solution within a timeframe compatible with proper project management.

**10. Ability to anticipate:** Ability to identify hidden needs, events that may occur and to analyze them, to get ready to treat them and to inform the customer. Ability to be organized to face-up upcoming milestones.

**11. Attention given to capability development:** Attention given, through the project organization and processes, to enable capability development and to share skills and leading practices.

**12. How we work with your people:** Develop a high quality of relationship with customer team members; promote mobilization and participation of everyone to the project success. (Collaborative Business Experience)

**13. Appropriate skill:** Team demonstrates technical, functional and business skills appropriate to the project needs. Capability to quickly gain new abilities; listening, analysis and communication skills.

**14. Engagement and budget management:** Control the reach of project objectives, share engagement visibility with customer. Monitoring organizations, scheduling, reporting. Mobilize teams on objectives and on budget.

**15. Professionalism of Capgemini staff:** Implementation of a method adapted to project needs, rigor, sense of responsibility, professional and personal ethics.

**16. Cross organizational integration:** Capability to overcome inter-functional barriers to reach common targets, capability to install cooperation between different entities.

**17. Delivering results:** Capability to deliver quantifiable results and to organize teams' actions to reach this goal. Capability to monitor changes needed to achieve results.

**18. Adaptive ability:** Capability to adapt the project organization and method to answer changes within project environment.

A complete version of the OTACE form can be found in 6.4.

## 6.3 OTACE review

OTACE identifies 18 criteria for customers to consider in selecting OTACE criteria. This section will review this list by comparing it with quality attributes identified in research literature. 13 determining attributes of Customer Satisfaction in IT Development contexts were identified. This list of attributes consists of IT Product Quality attributes, Service Quality attributes, Price Perception and Complaint Handling attributes. Table 10 displays the similarities between the two lists. Each marker represents a matching between criteria definitions and attribute definitions. As can be derived from this table, the three attributes which are covered the most by the 18 OTACE criteria are Responsiveness, Assurance and Empathy. These three attributes originate from the SERVQUAL framework (Parasuraman et al., 1988), a framework representing Service Quality. This indicates that the critical items identified in Design Principle 1 (Paragraph 6.1) are partly covered in the suggested list. The Reliability dimension has only been covered once in the list and therefore the least covered of the critical items identified in Design Principle 1. Another point of attention is the assessment of complaint handling. As has been argued by several authors (e.g. Johnson, Andreasson, Lervik & Cha, 2001, Hermann, 2007) and confirmed in this research, Complaint handling has a direct influence on satisfaction. No explicit measures of perceived complaint handling have been included in OTACE.

| | Product Quality | | | Service Quality | | | | | Price | Complaint handling | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | User satisfaction | Executive satisfaction | IT Managerial satisfaction | Tangibles | Reliability | Responsiveness | Assurance | Empathy | | | |
| 1. Quality of deliverable | X | x | X | | | | | | | | 3 |
| 2. Solution effectiveness | X | x | X | | | | | | | | 3 |
| 3. Cross team cooperation | | | | | | x | x | | | | 2 |
| 4. Linkage to your strategic stakes | | x | | | | | | | | | 1 |
| 5. Value-added insights and Thought Leadership | | | | | | | x | x | | | 2 |
| 6. Customer focused attitude | | | | | | | | x | | | 1 |
| 7. Achievement of commitments | | | | | x | | | | | | 1 |
| 8. Duty to advise | | | | | | x | x | | | | 2 |
| 9. Responsiveness | | | | | | x | | | | | 1 |
| 10. Ability to anticipate | | | | | | x | | | | | 1 |
| 11. Attention given to capability development | | | | | | | x | | | | 1 |
| 12. How we work with your people | | | | | | | x | | | | 1 |
| 13. Appropriate skill | | | | | | | x | | | | 1 |
| 14. Engagement and budget management | | | | | | | | | x | | 2 |
| 15. Professionalism of Capgemini staff | | | | | | | x | | | | 1 |
| 16. Cross organisational integration | | | | | | | x | | | | 1 |
| 17. Delivering results | | | | | | | x | | | | 1 |
| 18. Adaptive ability | | | | | | x | | | | | 1 |
| TOTAL | 2 | 3 | 2 | 0 | 1 | 4 | 7 | 5 | 1 | 0 | |

*Table 10: OTACE vs. Quality criteria*

The "On Time yes/no" measure represents a measure that will have to be evaluated by all customers. There is a considerable overlap between this measure and number 7 (Achievement of commitments) and number 9 (Responsiveness) of the OTACE criteria list.

The difference between the On Time yes/no" measure and the other two however, is that the OTACE criterion firstly enables the customer to choose whether to evaluate this criterion or not, and secondly to give a weight to this aspect. This implicitly demonstrates another issue: Which criteria should be evaluated by all customers and which should be optional to evaluate? The criteria evaluated by all customers ensure a stable continuous measurement, which is ideally suitable for Performance Measures on a higher cross-project management level: Each project would be measured on the same indicators enabling for example a trend analysis of the indicators over projects/time. However, it would not necessarily suffice for Performance Measures on a project level. Each project might require unique aspects that customers would like to include in their performance evaluation. Giving customers freedom to define the criteria they want to use for evaluation purposes, as OTACE does, includes elements for a project specific evaluation. A certain balance will have to be found between rigid measures and project specific measures. As has been argued for in Design Principle 1, measures of Reliability of Service, Responsiveness, and Assurance are necessary in customer satisfaction evaluation tools in IT Development contexts as they provide insight into the main reasons of dissatisfaction. These are adequate candidates for rigid measurements across all projects. A second advantage of taking these three as overall measurements, is that they represent Service Quality aspects, which makes them applicable to all service offerings of Capgemini. (An example redesign of the OTACE form can be found in 6.5 in which these three dimensions are incorporated as rigid measurements)

Design Principle 2 states that the Performance-only measurement method is preferable over Performance-Expectations scores when measuring general criteria across projects. Therefore the rigid measurements are best evaluated using Performance-Only measurements.

A question to pose in OTACE measurement is the meaning of the Importance Weight. Landrum & Prybutok (2004), concluded from their research that there is a significant difference between expectation measures and importance measures. Hence, it would be appropriate to ask for an importance evaluation next to an Performance Only/ Performance-Expectations measure. However, what is the meaning of this importance measure? OTACE uses this evaluation as a weight for Performance Only in evaluating the ACE score (Above Customer Expectations). This method uses the importance measure as a coefficient in a linear relationship between each criterion and the ACE score:

$$ACE = \sum_{n=1}^{n} \left( \frac{\text{Performance rating criterion n} * \text{Importance weight n)}}{\text{Total Importance weights}} \right.$$

The ACE score is complemented by an overall OTACE score (Appendix 1). If the two differ, a choice can be made which score will be included in the OTACE reporting. An obvious reason for this difference might lie in the fact that Overall satisfaction might result from attributes outside the list of the five OTACE criteria. A second, less obvious, reason for this difference might lie in the nature of using Importance scores as weights. Kano et al. (1984) already argued for the existence of non-linear relationships between Quality attribute performance and satisfaction. This research indicates the existence of non-linearity between quality attribute performance and overall satisfaction. This would imply that the use of importance as a coefficient, implicitly assuming all relations between attributes and overall satisfaction

to be linear, would be inappropriate. The element of non-linearity can cause this measurement method to give a false indication of satisfaction. If the Importance criterion represents value to Capgemini, this limitation should be kept in mind when using it for calculation purposes.

### 6.4 Appendix 1 Improvement Proposal: OTACE Evaluation form

# Client satisfaction evaluation      Capgemini
CONSULTING TECHNOLOGY OUTSOURCING

| Satisfaction criteria (if not selected from standard list, provide a short definition) | Weight | Score |
|---|---|---|
| | | |

What would be your overall score for the engagement?

Capgemini delivers on time      yes / no

**Client**

Company name

Contact name

Date of criteria specification

Agrees to be a reference for Capgemini?      yes / no

Signature

**Capgemini**

Project name.

Contact name

Engagement number

Date of evaluation

Date(s) of next evaluation(s)

# Let us know...

To support your business goals as effectively as possible Capgemini needs your help. Our objective is to satisfy your expectations. Therefore we ask you to tell us what you consider to be the most important criteria that our services must fulfil. When it is time to follow up the engagement, we will ask you to evaluate to what degree we have met your expectations. Through systematic evaluation we aim to improve the quality of our services to better meet your expectations.

| Importance order | Appreciation scores |
|---|---|
| 5 highest priority | 5 excellent |
| 4 very important | 4 good |
| 3 important | 3 satisfactory |
| 2 less important | 2 disappointing |
| 1 of minor importance | 1 poor |

## Examples of satisfaction criteria:

1. *Quality of deliverables:* Quality of deliverables, either on content and presentation sides (documents, software, hardware, solutions and services).
2. *Solution effectiveness:* Fulfillment of client needs, optimised and effective solution, appropriate to the business requirements.
3. *Cross team cooperation:* Cross team cooperation including cooperation between Capgemini teams, client teams, team spirit and solidarity.
4. *Linkage to your strategic stakes:* Understanding and taking into account business and financial stakes. The project contributes to fulfill these strategic goals.
5. *Value-added insights and Thought Leadership:* Providing innovative and value-add ideas. Ability to lead and mobilise on those ideas.
6. *Customer focused attitude:* Understanding and taking into account client expectations, client needs, client constraints and priorities, showing a service attitude and seeking for users satisfaction.
7. *Achievement of commitments:* Actions achieved and implementation decisions made within committed timeframe and according to commitments.
8. *Duty to advise:* Spontaneous proposition of actions or solutions to improve projectmanagement, quality of deliverables and speed of delivery; appropiate Information System to fit business issues. Ability to alert the right level of actor on issues impacting project or organisation.
9. *Responsiveness:* Quickly taking into account unpredictable events, ability to propose and implement the right solution within a timeframe compatible with proper projectmanagement.
10. *Ability to anticipate:* Ability to identify hidden needs, events that may occur and to analyse them, to get ready to treat them and to inform the client. Ability to be organised to face-up upcoming milestones.
11. *Attention given to capability development:* Attention given, through the project organisation and processes, to enable capability development and to share skills and leading practices.
12. *How we work with your people:* Develop a high quality of relationship with client team members; promote mobilisation and participation of everyone to the project success. (Collaborative Business Experience)
13. *Appropriate skill:* Team demonstrates technical, functional and business skills appropriate to the project needs. Capability to quickly gain new abilities; listening, analysis and communication skills.
14. *Engagement and budget management:* Control the reach of project objectives, share engagement visibility with client. Monitoring organisations, scheduling, reporting. Mobilise teams on objectives and on budget.
15. *Professionalism of Capgemini staff:* Implementation of a method adapted to project needs, rigor, sense of responsibility, professional and personal ethics.
16. *Cross organisational integration:* Capability to overcome inter-functional barriers to reach common targets, capability to install cooperation between different entities.
17. *Delivering results:* Capability to deliver quantifiable results and to organise teams' actions to reach this goal. Capability to monitor changes needed to achieve results.
18. *Adaptive ability:* Capability to adapt the project organisation and method to answer changes within project environment.

## 6.5 Appendix 2 Improvement proposal: Adjusted OTACE

# Client satisfaction evaluation

**Capgemini**

| Satisfaction criteria *(if not selected from standard list, provide a short definition)* | Weight | Score |
|---|---|---|
| | | |

What would be your overall score for the engagement?

Capgemini performed the promised services dependably     Disagree 1 2 3 4 5 Agree

Capgemini delivers on time     Disagree 1 2 3 4 5 Agree

Capgemini employees add value through their knowledge     Disagree 1 2 3 4 5 Agree

**Client**

Company name

Contact name

Date of criteria specification

Agrees to be a reference for Capgemini?     yes / no

Signature

**Capgemini**

Project name

Contact name

Engagement number

Date of evaluation

Date(s) of next evaluation(s)

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# 8 Appendices

## 8.1 Appendix 1: The Questionnaire

**TU/e** Technische Universiteit
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University of Technology

### v6.0 Klanttevredenheid in IT ontwikkelprocessen

Geachte heer/mevrouw,

Mijn naam is Maarten Colen en deze vragenlijst maakt deel uit van mijn afstudeerthesis aan de Technische Universiteit Eindhoven. Het onderzoek is bedoeld om een beeld te krijgen van bepaalde factoren voor tevredenheid van de IT manager met opgeleverde IT applicaties. Bovendien onderzoekt de studie een aantal omgevingsfactoren die mogelijk invloed hebben op tevredenheidsbeoordelingen: Gevoelsstaat en Ervaring.

Voor dit onderzoek wil ik U vragen een recent geïmplementeerde IT applicatie en de betreffende hoofdleverancier (hoofdleverancier: De leverancier die verantwoordelijk was voor het realisatieproces) voor ogen te nemen om de vragen te beantwoorden. Het is dus de bedoeling dat U zich in de rol van klant positioneert.

**Als dank voor uw medewerking, krijgt U aan het einde van het onderzoek een tool waarmee U de prestaties van uw eigen diensten kunt meten. Deze tool stelt een aantal Key Performance Indicators (KPI's) en bijbehorende vragen om deze te meten. Deze zijn gebaseerd op academische literatuur. De tool kan bovendien worden gebruikt om uw eigen hoofdleveranciers te evalueren (een actueel onderwerp in de complexe klant-leverancier ketens van tegenwoordig en een vereiste in de meeste kwaliteitssystemen zoals ISO 9001).**

Het totale onderzoek duurt ongeveer **10 minuten**. Het onderzoek bestaat uit 6 gedeeltes:

- Algemene Vragen
- Ervaring
- Gevoelsstaat
- Kwaliteit van het ontwikkelproces
- Kwaliteit van de geleverde applicatie
- Prijs en Klachtafhandeling

Ik wil u vragen om de lijst op tempo door te lopen: Sta niet te lang stil bij een vraag en vul bij twijfel een intuïtief antwoord in. De gegevens worden anoniem verwerkt.

[Afbreken en antwoorden verwijderen]    **Laad onvoltooide vragenlijst**    **Volgende >>**

TU/e Technische Universiteit Eindhoven University of Technology

**v6.0 Klanttevredenheid in IT ontwikkelprocessen**

0% [          ] 100%

**Algemene Vragen**
Dit gedeelte bestaat uit een aantal algemene vragen

---

Emailadres (optioneel)

test@neprecord.nl

❓ Uw emailadres wordt gebruikt om U de uitkomsten van het onderzoek toe te zenden. Dit hoeft U alleen in te vullen wanneer U hier interesse in heeft.

\* Uw leeftijd in jaren

12

in dit veld kunnen alleen cijfers worden ingevoerd

\* Geslacht

Man ▾

Karakteriseer uw functie.

CIO ▾

\* Karakteriseer de sector waar uw bedrijf deel van uit maakt

Offshore ▾

---

Hoeveel werknemers telt uw bedrijf?

51-100 werknemers ▾

---

De rest van de vragen in de vragenlijst worden gesteld over een specifiek geleverde IT applicatie. Daarom wil ik U vragen een recent geïmplementeerde IT applicatie en de bijbehorende hoofdleverancier (de leverancier die hoofdverantwoordelijk was voor de realisatie van de applicatie) voor ogen te nemen en alle vragen vanuit deze situatie te beantwoorden.

\* Karakteriseer de geïmplementeerde IT applicatie

Een bestaand software pakket ▾

\* Was de hoofdleverancier een interne of een externe partij?
Choose one of the following answers

Een externe partij ▾

\* Geef aan of U het oneens of eens bent met de volgende stellingen

|  | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Het gebruik van deze applicatie zorgt ervoor dat onze organisatie een voordeel heeft ten opzichte van onze concurrentie | ● | | | | |
| Deze applicatie is van strategisch belang voor onze organisatie | ● | | | | |
| Deze applicatie is één van onze top IT onderwerpen | ● | | | | |

\* Over het algemeen kan mijn tevredenheid met deze software realisatie worden gekarakteriseerd als

|  | 1 | 2 | 3 | 4 | 5 |  |
|---|---|---|---|---|---|---|
| Ontevreden | | ● | | | | Tevreden |
| Ik ben niet blij met hoe het gegaan is | | ● | | | | Ik ben blij met hoe het gegaan is |
| De hoofdleverancier heeft zijn werk slecht gedaan | | ● | | | | De hoofdleverancier heeft zijn werk goed gedaan |

Sla uw antwoorden op en ga verder    Resume Later    << Vorige    Volgende >>

71

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v6.0 Klanttevredenheid in IT ontwikkelprocessen

0% ▓▓▓▓▓▓ 100%
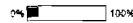
Ervaring
Deze vragen gaan over uw persoonlijke ervaring en ervaring met de hoofdleverancier van de geleverde applicatie

*Hoeveel software realisatie trajecten heeft U al meegemaakt in uw carrière?

2 - 5 ▾

*Hoeveel software realisatie trajecten heeft deze hoofdleverancier al eerder binnen uw bedrijf uitgevoerd? (in de rol van hoofdleverancier)

1 - 3 ▾

*

Hoe lang werkt uw bedrijf al samen met de betreffende hoofdleverancier?

6 maanden - 1 Jaar ▾

*Hoeveel jaren en maanden bent U werkzaam in uw huidige functie?

In dit veld kunnen alleen cijfers
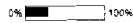worden ingevoerd
Jaren 12
Maanden 1

Resume Later     << Vorige     Volgende >>

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v6.0 Klanttevredenheid in IT ontwikkelprocessen

0% ▓▓▓▓ 100%

Huidige Gevoelsstaat

*Deze studie onderzoekt ook of gevoelsstaat invloed heeft op tevredenheidsbeoordelingen. Daarvoor is het nodig inzicht te krijgen in uw huidige gevoelsstaat. De volgende stellingen bevatten enkele aspecten van gevoelsstaat. Geef aan in hoeverre deze stellingen op U OP DIT MOMENT van toepassing zijn (1=Helemaal niet, 5=in hoge mate)

| | Helemaal niet | | | | In hoge mate |
|---|---|---|---|---|---|
| Ik voel me op dit moment nerveus | ○ | | | | |
| Ik voel me op dit moment oplettend | ○ | | | | |
| Ik voel me op dit moment alert | ○ | | | | |
| Ik schaam me op dit moment | ○ | | | | |
| Ik voel me op dit moment actief | ○ | | | | |
| Ik voel me op dit moment bang | ○ | | | | |
| Ik voel me op dit moment zenuwachtig | ○ | | | | |
| Ik voel vijandigheid op dit moment | ○ | | | | |
| Ik voel me op dit moment angstig | ○ | | | | |
| Ik voel me op dit moment trots | ○ | | | | |
| Ik voel me op dit moment geïnteresseerd | ○ | | | | |
| Ik voel me op dit moment schuldig | ○ | | | | |
| Ik voel me op dit moment bezorgd | ○ | | | | |
| Ik voel me op dit moment geïrriteerd | ○ | | | | |
| Ik voel me op dit moment enthousiast | ○ | | | | |
| Ik voel me op dit moment vastberaden | ○ | | | | |
| Ik ben aandachtig op dit moment | ○ | | | | |
| Ik voel me sterk op dit moment | ○ | | | | |
| Ik voel me op dit moment geïnspireerd | ○ | | | | |

Resume Later     << Vorige     Volgende >>

72

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**Kwaliteit van het ontwikkelproces**
Deze vragen betreffen enkele kwaliteitsaspecten van het ontwikkelproces

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitsaspecten van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Het personeel van de hoofdleverancier moet voorzien zijn van moderne apparatuur | | | | | |
| De kantooromgeving van de hoofdleverancier moet over het visueel aantrekkelijk zijn | | | | | |
| De medewerkers van de hoofdleverancier moeten representatief gekleed zijn | | | | | |
| Documenten van het realisatieproces moeten visueel aantrekkelijk zijn. | | | | | |

De volgende stellingen hebben betrekking op de uiteindelijke uitvoering van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Het personeel van de hoofdleverancier was voorzien van moderne apparatuur | | | | | |
| De kantooromgeving van de hoofdleverancier was visueel aantrekkelijk | | | | | |
| De medewerkers van de hoofdleverancier waren representatief gekleed | | | | | |
| De documenten van het realisatieproces waren visueel aantrekkelijk. | | | | | |

*Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden").

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als het personeel van de hoofdleverancier voorzien is van moderne apparatuur? | | | | | |
| Hoe voelt U zich als de faciliteiten van de hoofdleverancier visueel aantrekkelijk zijn? | | | | | |
| Hoe voelt U zich als de medewerkers van de hoofdleverancier representatief gekleed zijn? | | | | | |
| Hoe voelt U zich als presentaties, rapportages en documenten van het realisatie/implementatieproces zouden visueel aantrekkelijk zijn? | | | | | |

*Deze stellingen zijn bedoeld om een indruk te krijgen de belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden").

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als het personeel van de hoofdleverancier NIET voorzien is van moderne apparatuur? | | | | | |
| Hoe voelt U zich als de faciliteiten van de hoofdleverancier visueel ONaantrekkelijk zijn? | | | | | |
| Hoe voelt U zich als de medewerkers van de hoofdleverancier NIET representatief gekleed zijn? | | | | | |
| Hoe voelt U zich als presentaties, rapportages en documenten van het realisatie/implementatieproces visueel ONaantrekkelijk zouden zijn? | | | | | |

73

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitsaspecten van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De hoofdleverancier moet zich aan de afspraken houden | | | | | |
| De uitvoering van het realisatieproces moet van hoge kwaliteit zijn | | | | | |
| Het realisatieproces moet meteen de eerste keer goed worden uitgevoerd | | | | | |
| Het realisatieproces moet zijn afgerond binnen de afgesproken tijd | | | | | |
| Er moet een foutloze documentatie worden bijgehouden | | | | | |

De volgende stellingen hebben betrekking op de uiteindelijke uitvoering van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De hoofdleverancier heeft zich aan de afspraken gehouden | | | | | |
| De uitvoering van het realisatieproces was van hoge kwaliteit | | | | | |
| Het realisatieproces werd de eerste keer meteen goed uitgevoerd | | | | | |
| Het realisatieproces was afgerond binnen de afgesproken tijd | | | | | |
| Er werd een foutloze documentatie bijgehouden | | | | | |

Deze stellingen zijn bedoeld om indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelstaat geeft.

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de hoofdleverancier zich aan de afspraken houdt? | | | | | |
| Hoe voelt U zich als uitvoering van het realisatie/implementatieproces van hoge kwaliteit? | | | | | |
| Hoe voelt U zich als het realisatie/implementatieproces meteen de eerste keer goed wordt uitgevoerd? | | | | | |
| Hoe voelt U zich als het realisatie/implementatieproces kan worden afgerond op de afgesproken tijd? | | | | | |
| Hoe voelt U zich als de hoofdleverancier foutloze documentatie bijhoudt? | | | | | |

Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U zijn een beoordeling van gevoelstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de hoofdleverancier zich NIET aan de afspraken houdt? | | | | | |
| Hoe voelt U zich als uitvoering van het realisatie/implementatieproces van MATIGE kwaliteit is? | | | | | |
| Hoe voelt U zich als realisatie/implementatieproces NIET meteen goed wordt uitgevoerd? | | | | | |
| Hoe voelt U zich als het realisatie/implementatieproces NIET kan worden afgerond binnen de afgesproken termijn? | | | | | |
| Hoe voelt U zich als de hoofdleverancier een SLECHTE documentatie bijhoudt? | | | | | |

Resume Later          << Vorige          Volgende >>

74

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Kwaliteit van het ontwikkelproces

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitsaspecten van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De hoofdleverancier moet haar klanten goed op de hoogte houden van de ontwikkelingen in het realisatieproces | ● | | | | |
| Klantvragen moeten op een snelle manier verwerkt worden | ● | | | | |
| De medewerkers van de hoofdleverancier moeten gemotiveerd zijn om klanten te helpen | ● | | | | |
| De hoofdleverancier moet stipt reageren op klantvragen | ● | | | | |

De volgende stellingen hebben betrekking op de uiteindelijke uitvoering van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De hoofdleverancier heeft ons goed op de hoogte gehouden van de ontwikkelingen in het realisatieproces | ● | | | | |
| Klantvragen werden op een snelle manier verwerkt | ● | | | | |
| De medewerkers van de hoofdleverancier waren gemotiveerd om klanten te helpen | ● | | | | |
| De hoofdleverancier reageerde stipt op klantvragen | ● | | | | |

*Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U te een beoordeling van gevoelsstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn" "Ik voel me onverschillig" "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de hoofdleverancier haar klanten goed op de hoogte houdt van de ontwikkelingen in het realisatie/implementatieproces? | ● | | | | |
| Hoe voelt U zich als de hoofdleverancier klantvragen op een snelle manier verwerkt? | ● | | | | |
| Hoe voelt U zich als de medewerkers van de hoofdleverancier gemotiveerd zijn om klanten te helpen? | ● | | | | |
| Hoe voelt U zich als de hoofdleverancier stipt reageert op klantvragen? | ● | | | | |

*Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U te een beoordeling van gevoelsstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn" "Ik voel me onverschillig" "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de hoofdleverancier naar klanten NIET goed op de hoogte houdt van de ontwikkelingen in het realisatie/implementatieproces? | ● | | | | |
| Hoe voelt U zich als de hoofdleverancier klantvragen op een TRAGE manier verwerkt? | ● | | | | |
| Hoe voelt U zich als de medewerkers van de hoofdleverancier NIET gemotiveerd zijn om klanten te helpen? | ● | | | | |
| Hoe voelt U zich als de hoofdleverancier TRAAG reageert op klantvragen? | ● | | | | |

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitsaspecten van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Medewerkers van de hoofdleverancier moeten kennis van zaken hebben | ● | | | | |
| Medewerkers van hoofdleveranciers moeten vertrouwen opwekken | ● | | | | |
| Hoofdleveranciers moeten discreet met klanten om gaan | ● | | | | |

De volgende stellingen hebben betrekking op de uiteindelijke uitvoering van het realisatieproces zelf. Geef aan in hoevens U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De medewerkers van de hoofdleverancier hadden kennis van zaken | ● | | | | |
| De medewerkers van hoofdleverancier wekten vertrouwen op | ● | | | | |
| De hoofdleverancier gaat discreet met klanten om | ● | | | | |

*Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U te een beoordeling van gevoelsstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn" "Ik voel me onverschillig" "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de medewerkers van de hoofdleverancier een hoge mate van kennis van zaken hebben? | ● | | | | |
| Hoe voelt U zich als de medewerkers van de hoofdleverancier vertrouwen opwekken? | ● | | | | |
| Hoe voelt U zich als de hoofdleverancier discreet met hun klanten omgaan? | ● | | | | |

# TU/e
Technische Universiteit
**Eindhoven**
University of Technology

## Capgemini
CONSULTING . TECHNOLOGY . OUTSOURCING

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft.

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden").

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de medewerkers van de hoofdleverancier WEINIG kennis van zaken hebben? | | | | | |
| Hoe voelt U zich als de medewerkers van de hoofdleverancier GEEN vertrouwen opwekken? | | | | | |
| Hoe voelt U zich als de hoofdleverancier NIET discreet met hun klanten omgaat? | | | | | |

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitsaspecten van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen.

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Hoofdleveranciers moeten klant-gefocust zijn | | | | | |
| Hoofdleveranciers moeten betrokken zijn bij hun klanten | | | | | |
| Hoofdleveranciers moeten de behoeftes van hun klanten goed begrijpen | | | | | |
| Hoofdleveranciers moeten het beste met hun klant voor hebben | | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft.

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden").

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de hoofdleverancier haar klanten GEEN focus geeft? | | | | | |
| Hoe voelt U zich als de hoofdleverancier NIET betrokken met haar klanten omgaat? | | | | | |
| Hoe voelt U zich als de hoofdleverancier de behoeftes van de klant NIET goed begrijpt? | | | | | |
| Hoe voelt U zich als de hoofdleverancier NIET beste met de klant voor heeft? | | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft.

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden").

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als de hoofdleverancier haar klanten focus geeft? | | | | | |
| Hoe voelt U zich als de hoofdleverancier op een betrokken manier met haar klanten omgaat? | | | | | |
| Hoe voelt U zich als de hoofdleverancier de behoeftes van de klant goed begrijpt? | | | | | |
| Hoe voelt U zich als de hoofdleverancier het beste met de klant voor heeft? | | | | | |

De volgende stellingen hebben betrekking op de uiteindelijke uitvoering van het realisatieproces zelf. Geef aan in hoeverre U het eens bent met de onderstaande stellingen.

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De hoofdleverancier was gefocust op ons | | | | | |
| De hoofdleverancier was betrokken bij ons | | | | | |
| De hoofdleverancier begreep onze behoeftes goed | | | | | |
| De hoofdleverancier had het beste met ons voor | | | | | |

[ Resume Later ]   << Vorige   Volgende >>

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Kwaliteit van de geleverde applicatie
Deze vragen gaan over de kwaliteit van de geleverde applicatie zelf

**Voorlaatste pagina**

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitsaspecten van de geleverde applicatie. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Gebruikers moeten tevreden zijn met de betrouwbaarheid van het systeem | | | | | |
| Gebruikers moeten tevreden zijn met de responstijd van het systeem | | | | | |
| Gebruikers moeten tevreden zijn met het gebruiksgemak van het systeem | | | | | |
| Gebruikers moeten tevreden zijn met de bruikbaarheid van het systeem voor hun werk | | | | | |

De volgende stellingen hebben betrekking op de prestaties van de geleverde applicatie. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Gebruikers zijn tevreden met de betrouwbaarheid van het systeem | | | | | |
| Gebruikers zijn tevreden met de responstijd van het systeem | | | | | |
| Gebruikers zijn tevreden met het gebruiksgemak van het systeem | | | | | |
| Gebruikers zijn tevreden met de bruikbaarheid van het systeem voor hun werk | | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn" "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de gebruikers tevreden zijn met de betrouwbaarheid van het systeem? | | | | | |
| Hoe voelt u zich als de gebruikers tevreden zijn met de responstijd van het systeem? | | | | | |
| Hoe voelt u zich als de gebruikers tevreden zijn met het gebruikersgemak van het systeem? | | | | | |
| Hoe voelt u zich als de gebruikers tevreden zijn met de bruikbaarheid van het systeem voor hun werk? | | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelstaat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie "Ik zou het fijn vinden" "Het moet zo zijn" "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de gebruikers NIET tevreden zijn met de betrouwbaarheid van het systeem? | | | | | |
| Hoe voelt u zich als de gebruikers NIET tevreden zijn met de responstijd van het systeem? | | | | | |
| Hoe voelt u zich als de gebruikers NIET tevreden zijn met het gebruikersgemak van het systeem? | | | | | |
| Hoe voelt u zich als de gebruikers NIET tevreden zijn met de bruikbaarheid van het systeem voor hun werk? | | | | | |

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitaspecten van de geleverde applicatie. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De directie moet tevreden zijn met de verhoogde efficientie veroorzaakt door het werken met het systeem | | | | | |
| De directie moet tevreden zijn met de verhoogde winstverwachting gegenereerd door het gebruiken van het systeem | | | | | |
| De directie moet tevreden zijn met de bijdrage van het systeem aan strategische doelstellingen (continuiteit, voordeel tov de concurrent) | | | | | |

De volgende stellingen hebben betrekking op de prestaties van de geleverde applicatie. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De directie is tevreden met de verhoogde efficientie veroorzaakt door het werken met het systeem | | | | | |
| De directie is tevreden met de verhoogde winstverwachting gegenereerd door het gebruiken van het systeem | | | | | |
| De directie is tevreden met de bijdrage van het systeem aan strategische doelstellingen (continuiteit voordeel tov de concurrent) | | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoels staat geeft

Geef per item aan wat het beste Uw gevoel karakteriseerd in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die fijn | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de directie tevreden is met de efficiëntieverhoging door het werken met het systeem? | ● | | | | |
| Hoe voelt u zich als de directie tevreden is met de verhoogde winst gegenereerd door het gebruiken van het systeem? | ● | | | | |
| Hoe voelt u zich als de directie tevreden is met de bijdrage aan strategische doelstellingen (continuiteit, voordeel t.o.v. de concurrent) van het systeem? | ● | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoels staat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die fijn | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de directie NIET tevreden is met de efficiëntieverhoging door het werken met het systeem? | ● | | | | |
| Hoe voelt u zich als de directie NIET tevreden is met de verhoogde winst gegenereerd door het gebruiken van het systeem? | ● | | | | |
| Hoe voelt u zich als de directie NIET tevreden is met de bijdrage aan strategische doelstellingen (continuiteit, voordeel t.o.v. de concurrent) van het systeem? | ● | | | | |

De volgende stellingen hebben betrekking op uw verwachting betreffende bepaalde kwaliteitsaspecten van de geleverde applicatie. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Geleverde applicaties moeten betrouwbaar zijn | ● | | | | |
| Geleverde applicaties moeten probleemloos samenwerken met de bestaande IT omgeving | ● | | | | |

De volgende stellingen hebben betrekking op de prestaties van de geleverde applicatie. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De geleverde applicatie is betrouwbaar | ● | | | | |
| De geleverde applicatie werkt probleemloos samen met de bestaande IT omgeving | ● | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoels staat geeft

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die fijn | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de geleverde applicatie betrouwbaar is? | ● | | | | |
| Hoe voelt u zich als de geleverde applicatie makkelijk te implementeren is? | ● | | | | |

"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoels staat geeft.

Geef per item aan wat het beste Uw gevoel karakteriseert in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die fijn | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de geleverde applicatie NIET betrouwbaar is? | ● | | | | |
| Hoe voelt u zich als het implementeren van de geleverde applicatie MOEILIJK is? | ● | | | | |

Resume Later    << Vorige    Volgende >>

78

**TU/e** Technische Universiteit
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**Capgemini**
CONSULTING TECHNOLOGY OUTSOURCING

**TU/e** Technische Universiteit
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University of Technology

v6.0 Klanttevredenheid in IT ontwikkelprocessen

0% ▬▬▬▬ 100%

Prijs en Klachtenafhandeling
Deze laatste vragen gaan over de prijs en klachtenafhandeling

De volgende stellingen hebben betrekking op uw verwachting betreffende de prijs en de vorming daarvan. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De prijs van het contract moet helder opgebouwd zijn | | | | | |
| Klanten moeten gelijk behandeld worden bij het opstellen van de prijs | | | | | |
| De prijs van het contract moet op kosten gebaseerd zijn | | | | | |
| Prijsvoorwaarden moeten eerlijk zijn | | | | | |
| De prijs moet op een transparante manier samengesteld zijn | | | | | |

De volgende stellingen hebben betrekking op de uiteindelijke prijs en de vorming daarvan. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| De prijs van het contract was helder opgebouwd | | | | | |
| De hoofdleverancier behandelde de klanten als gelijk bij het opstellen van de prijs | | | | | |
| De prijs van het contract was op kosten gebaseerd | | | | | |
| De prijsvoorwaarden waren eerlijk | | | | | |
| De prijs was transparant samengesteld | | | | | |

Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft. Geef per item aan hoe U zich voelt in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de prijs van het contract helder opgebouwd is? | | | | | |
| Hoe voelt u zich als alle klanten van de hoofdleverancier een gelijke behandeling krijgen qua prijsafspraken? | | | | | |
| Hoe voelt U zich als de afgesproken prijs duidelijk op kosten gebaseerd is? | | | | | |
| Hoe voelt u zich als de prijsvoorwaarden eerlijk zijn? | | | | | |
| Hoe voelt U zich als de prijs transparant is samengesteld? | | | | | |

Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft. Geef per item aan hoe U zich voelt in de aangegeven situatie ("Ik zou het fijn vinden", "Het moet zo zijn", "Ik voel me onverschillig", "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt u zich als de prijs van het contract niet helder opgebouwd is? | | | | | |
| Hoe voelt u zich als de klanten van de hoofdleverancier GEEN gelijke behandeling krijgen qua prijsafspraken? | | | | | |
| Hoe voelt U zich als de afgesproken prijs NIET duidelijk op kosten gebaseerd is? | | | | | |
| Hoe voelt u zich als de prijsvoorwaarden NIET eerlijk zijn? | | | | | |
| Hoe voelt U zich als de prijs NIET eerlijk samengesteld is? | | | | | |

De volgende stellingen hebben betrekking op uw verwachting betreffende de afhandeling de Klachten. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Het behandelen van een klacht moet resulteren in een positieve uitkomst | | | | | |
| Het behandelen van een klacht moet resulteren in een eerlijke uitkomst | | | | | |
| Een hoofdleverancier moet ondanks eventuele problemen toch adequaat reageren op een klacht | | | | | |
| De hoofdleverancier moet een goede policy hebben om klachten op te lossen | | | | | |
| Medewerkers van hoofdleveranciers moeten hun best doen klachten op een goede manier af te handelen | | | | | |
| Medewerkers van hoofdleveranciers moeten de klanten met een klacht op een nette manier behandelen | | | | | |

De volgende stellingen hebben betrekking op de afhandeling van uw klachten door de hoofdleverancier. Geef aan in hoeverre U het eens bent met de onderstaande stellingen

| | Zeer Oneens | Tamelijk Oneens | Neutraal | Tamelijk Eens | Zeer Eens |
|---|---|---|---|---|---|
| Het behandelen van een klacht resulteerde over het algemeen in een positieve uitkomst | | | | | |
| Het behandelen van een klacht resulteerde over het algemeen in een eerlijke uitkomst | | | | | |
| De hoofdleverancier reageerde ondanks eventuele problemen toch adequaat op klachten | | | | | |
| De hoofdleverancier had een goede policy om klachten op te lossen | | | | | |
| Medewerkers van hoofdleveranciers deden hun best om klachten op een goede manier af te handelen | | | | | |
| Medewerkers van hoofdleveranciers behandelden klanten met een klacht op een nette manier | | | | | |

*"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft. Geef per item aan hoe U zich voelt in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn" "Ik voel me onverschillig" "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")*

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als U een positieve uitkomst krijgt na het behandelen van een klacht? | | | | | |
| Hoe voelt U zich als U een eerlijke uitkomst krijgt na het behandelen van een klacht? | | | | | |
| Hoe voelt U zich als een hoofdleverancier adequaal reageert op een klacht? | | | | | |
| Hoe voelt u zich als er een goede policy aan de leverancierskant is om klachten op te lossen? | | | | | |
| Hoe voelt U zich als medewerkers hun best doen om klachten op een goede manier af te handelen? | | | | | |
| Hoe voelt U zich als medewerkers klanten met een klacht op een nette manier behandelen? | | | | | |

*"Deze stellingen zijn bedoeld om een indruk te krijgen hoe belangrijk de hiervoor genoemde items voor U zijn doordat U ze een beoordeling van gevoelsstaat geeft. Geef per item aan hoe U zich voelt in de aangegeven situatie ("Ik zou het fijn vinden" "Het moet zo zijn" "Ik voel me onverschillig" "Ik kan ermee leven op die manier" of "Ik zou het niet fijn vinden")*

| | Ik zou het fijn vinden | Zo moet het zijn | Ik voel me neutraal | Ik kan ermee leven op die manier | Ik zou het niet fijn vinden |
|---|---|---|---|---|---|
| Hoe voelt U zich als het behandelen van een klacht NIET resulteert in een positieve uitkomst? | | | | | |
| Hoe voelt U zich als het behandelen van een klacht NIET resulteert in een eerlijke uitkomst? | | | | | |
| Hoe voelt U zich als een hoofdleverancier NIET adequaal reageert op een klacht? | | | | | |
| Hoe voelt u zich als er geen goede policy aan de leverancierskant is om klachten op te lossen? | | | | | |
| Hoe voelt U zich als medewerkers NIET hun best doen om klachten op een goede manier af te handelen? | | | | | |
| Hoe voelt U zich als medewerkers klanten met een klacht op een SLECHTE manier behandelen? | | | | | |

EINDE VRAGENLIJST. HARTELIJK DANK VOOR UW MEDEWERKING!!!! De beloofde tool opent automatisch na het klikken op "Verzenden"

Resume Later          << Vorige     Versturen

## 8.2 Appendix 2: Factor Analyses

Values lower than .40 were formatted as blank in order to create a better over view of the results.

## Factor Analysis Positive/Negative affective State + Overall satisfaction

```
FACTOR
  /VARIABLES AffNeg1 AffNeg2 AffNeg3 AffNeg4 AffNeg5 AffNeg6 AffNeg7
AffNeg8 AffNeg9 AffPos1 AffPos2 AffPos3 AffPos4 AffPos5 AffPos6
    AffPos7 AffPos8 AffPos9 AffPos10 Overall1 Overall2 Overall3
  /MISSING LISTWISE
  /ANALYSIS AffNeg1 AffNeg2 AffNeg3 AffNeg4 AffNeg5 AffNeg6 AffNeg7 A
ffNeg8 AffNeg9 AffPos1 AffPos2 AffPos3 AffPos4 AffPos5 AffPos6
    AffPos7 AffPos8 AffPos9 AffPos10 Overall1 Overall2 Overall3
  /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO INV REPR AIC EXTR
ACTION ROTATION FSCORE
  /FORMAT BLANK(.50)
  /CRITERIA FACTORS(3) ITERATE(50)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 5,547 | 25,212 | 25,212 | 5,094 | 23,154 | 23,154 | 5,040 |
| 2 | 3,486 | 15,847 | 41,059 | 2,913 | 13,241 | 36,395 | 2,717 |
| 3 | 2,527 | 11,487 | 52,546 | 2,083 | 9,469 | 45,863 | 2,510 |
| 4 | 1,866 | 8,481 | 61,027 | | | | |
| 5 | 1,545 | 7,021 | 68,048 | | | | |
| 6 | 1,126 | 5,120 | 73,168 | | | | |
| 7 | ,941 | 4,277 | 77,446 | | | | |
| 8 | ,861 | 3,915 | 81,360 | | | | |
| 9 | ,661 | 3,004 | 84,364 | | | | |
| 10 | ,581 | 2,639 | 87,004 | | | | |
| 11 | ,483 | 2,197 | 89,201 | | | | |
| 12 | ,367 | 1,669 | 90,869 | | | | |
| 13 | ,347 | 1,577 | 92,447 | | | | |
| 14 | ,312 | 1,418 | 93,865 | | | | |
| 15 | ,276 | 1,253 | 95,118 | | | | |
| 16 | ,251 | 1,143 | 96,261 | | | | |
| 17 | ,221 | 1,007 | 97,267 | | | | |
| 18 | ,187 | ,852 | 98,120 | | | | |
| 19 | ,145 | ,659 | 98,778 | | | | |
| 20 | ,125 | ,566 | 99,345 | | | | |
| 21 | ,105 | ,477 | 99,822 | | | | |
| 22 | ,039 | ,178 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance

**Pattern Matrix**[a]

| | Factor | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| G1 - Ik voel me op dit moment nerveus. | | | |
| G1 - Ik schaam me op dit moment. | | | |
| G1 - Ik voel me op dit moment bang. | | | |
| G1 - Ik voel me op dit moment zenuwachtig. | | | |
| G1 - Ik voel vijandigheid op dit moment. | | ,741 | |
| G1 - Ik voel me op dit moment angstig. | | ,516 | |
| G1 - Ik voel me op dit moment schuldig. | | ,517 | |
| G1 - Ik voel me op dit moment bezorgd. | | ,576 | |
| G1 - Ik voel me op dit moment geirriteerd. | | ,719 | |
| G1 - Ik voel me op dit moment oplettend. | ,624 | | |
| G1 - Ik voel me op dit moment alert. | ,680 | | |
| G1 - Ik voel me op dit moment actief. | ,655 | | |
| G1 - Ik voel me op dit moment trots. | | | |
| G1 - Ik voel me op dit moment geinteresseerd. | ,764 | | |
| G1 - Ik voel me op dit moment enthousiast. | ,657 | | |
| G1 - Ik voel me op dit moment vastberaden. | ,799 | | |
| G1 - Ik ben aandachtig op dit moment. | ,710 | | |
| G1 - Ik voel me sterk op dit moment. | ,809 | | |
| G1 - Ik voel me op dit moment geinspireerd. | ,772 | | |
| A11 - Ontevreden\|Tevreden | | | -,820 |
| A11 - Ik ben niet blij met hoe het gegaan is\|Ik ben blij met hoe het gegaan is | | | -,801 |
| A11 - De hoofdleverancier heeft zijn werk slecht gedaan\|De hoofdleverancier heeft zijn werk goed gedaan | | | -,783 |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 15 iterations.

# Factor Analysis Experience

```
FACTOR
    /VARIABLES Experience1 Experience4C Experience2 Experience3
    /MISSING LISTWISE
    /ANALYSIS Experience1 Experience4C Experience2 Experience3
    /PRINT INITIAL EXTRACTION ROTATION
    /FORMAT BLANK(.40)
    /CRITERIA MINEIGEN(1) ITERATE(25)
    /EXTRACTION PC
    /CRITERIA ITERATE(25) DELTA(0)
    /ROTATION OBLIMIN
    /SAVE REG(ALL)
    /METHOD=CORRELATION.
```

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 1,692 | 42,309 | 42,309 | 1,692 | 42,309 | 42,309 | 1,671 |
| 2 | 1,031 | 25,767 | 68,076 | 1,031 | 25,767 | 68,076 | 1,095 |
| 3 | ,945 | 23,631 | 91,707 | | | | |
| 4 | ,332 | 8,293 | 100,000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| Hoeveel software realisatie trajecten heeft U al meegemaakt in uw carriere? | | ,583 |
| Personal Experience Maanden | | ,854 |
| Hoeveel software realisatie trajecten heeft deze hoofdleverancier al eerder binnen uw bedrijf uitgevoerd? (in de rol van hoofdleverancier) | ,907 | |
| Hoe lang werkt uw bedrijf al samen met de betreffende hoofdleverancier? | ,868 | |

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

## Factor Analysis Service Quality Performance Only ("SERVPERF"): Tangibles and Reliability

```
FACTOR
  /VARIABLES TangiblesPerf1 TangiblesPerf2 TangiblesPerf3 TangiblesPe
rf4 ReliabilityPerf1 ReliabilityPerf2 ReliabilityPerf3 Reliabil
   ityPerf4 ReliabilityPerf5
  /MISSING LISTWISE
  /ANALYSIS TangiblesPerf1 TangiblesPerf2 TangiblesPerf3 TangiblesPer
f4 ReliabilityPerf1 ReliabilityPerf2 ReliabilityPerf3 Reliabili
   tyPerf4 ReliabilityPerf5
  /PRINT INITIAL EXTRACTION ROTATION
  /FORMAT BLANK(.40)
  /CRITERIA FACTORS(2) ITERATE(25)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

83

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 3,343 | 37,148 | 37,148 | 2,902 | 32,241 | 32,241 | 2,869 |
| 2 | 1,346 | 14,952 | 52,100 | ,746 | 8,284 | 40,525 | 1,238 |
| 3 | 1,071 | 11,903 | 64,003 | | | | |
| 4 | ,951 | 10,565 | 74,568 | | | | |
| 5 | ,769 | 8,542 | 83,110 | | | | |
| 6 | ,560 | 6,224 | 89,334 | | | | |
| 7 | ,453 | 5,033 | 94,366 | | | | |
| 8 | ,275 | 3,051 | 97,418 | | | | |
| 9 | ,232 | 2,582 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Factor | |
|---|---|---|
| | 1 | 2 |
| FQP1 - Het personeel van de hoofdleverancier was voorzien van moderne apparatuur. | | |
| FQP1 - De kantooromgeving van de hoofdleverancier was visueel aantrekkelijk. | | |
| FQP1 - De medewerkers van de hoofdleverancier waren representatief gekleed. | | ,753 |
| FQP1 - De documenten van het realisatieproces waren visueel aantrekkelijk. | | |
| FQP2 - De hoofdleverancier heeft zich aan de afspraken gehouden. | ,819 | |
| FQP2 - De uitvoering van het realisatieproces was van hoge kwaliteit. | ,881 | |
| FQP2 - Het realisatieproces werd de eerste keer meteen goed uitgevoerd. | ,872 | |
| FQP2 - Het realisatieproces was afgerond binnen de afgesproken tijd. | | |
| FQP2 - Er werd een foutloze documentatie bijgehouden. | ,542 | |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 5 iterations.

## Factor Analysis Service Quality Performance Only ("SERVPERF"): Responsiveness, Assurance and Empathy

```
FACTOR
  /VARIABLES ResponsivenessPerf1 ResponsivenessPerf2 ResponsivenessPe
rf3 ResponsivenessPerf4 AssurancePerf1 AssurancePerf2 Assurance
  Perf3 EmpathyPerf1 EmpathyPerf2 EmpathyPerf3 EmpathyPerf4
  /MISSING LISTWISE
  /ANALYSIS ResponsivenessPerf1 ResponsivenessPerf2 ResponsivenessPer
f3 ResponsivenessPerf4 AssurancePerf1 AssurancePerf2 AssuranceP
  erf3 EmpathyPerf1 EmpathyPerf2 EmpathyPerf3 EmpathyPerf4
  /PRINT INITIAL EXTRACTION ROTATION
  /FORMAT BLANK(.40)
  /CRITERIA FACTORS(3) ITERATE(25)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 6,585 | 59,866 | 59,866 | 6,273 | 57,032 | 57,032 | 5,512 |
| 2 | 1,003 | 9,116 | 68,982 | ,723 | 6,569 | 63,601 | 4,040 |
| 3 | ,808 | 7,348 | 76,330 | ,493 | 4,480 | 68,081 | 4,534 |
| 4 | ,537 | 4,881 | 81,211 | | | | |
| 5 | ,502 | 4,567 | 85,778 | | | | |
| 6 | ,359 | 3,263 | 89,041 | | | | |
| 7 | ,338 | 3,076 | 92,116 | | | | |
| 8 | ,294 | 2,671 | 94,787 | | | | |
| 9 | ,226 | 2,051 | 96,838 | | | | |
| 10 | ,190 | 1,730 | 98,568 | | | | |
| 11 | ,157 | 1,432 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Factor | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| FQP3 - De hoofdleverancier heeft ons goed op de hoogte gehouden van de ontwikkelingen in het realisatieproces. | | -,490 | |
| FQP3 - Klantvragen werden op een snelle manier verwerkt. | | -,919 | |
| FQP3 - De medewerkers van de hoofdleverancier waren gemotiveerd om klanten te helpen. | | | |
| FQP3 - De hoofdleverancier reageerde stipt op klantvragen. | | -,466 | |
| FQP4 - De medewerkers van de hoofdleverancier hadden kennis van zaken. | ,821 | | |
| FQP4 - De medewerkers van hoofdleverancier wekten vertrouwen op. | ,678 | | |
| FQP4 - De hoofdleverancier gaat discreet met klanten om. | ,739 | | |
| FQP5 - De hoofdleverancier was gefocust op ons. | | | ,497 |
| FQP5 - De hoofdleverancier was betrokken bij ons. | | | ,826 |
| FQP5 - De hoofdleverancier begreep onze behoeftes goed. | | | ,774 |
| FQP5 - De hoofdleverancier had het beste met ons voor. | ,537 | | ,435 |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 14 iterations.

## Factor Analysis product Quality performance Only: User Satisfaction, Executive Satisfaction and IT Managerial Satisfaction

```
FACTOR
  /VARIABLES UserSatPerf1 UserSatPerf2 UserSatPerf3 UserSatPerf4 Exec
SatPerf1 ExecSatPerf2 ExecSatPerf3 ITManagPerf1 ITManagPerf2
  /MISSING LISTWISE
  /ANALYSIS UserSatPerf1 UserSatPerf2 UserSatPerf3 UserSatPerf4 ExecS
atPerf1 ExecSatPerf2 ExecSatPerf3 ITManagPerf1 ITManagPerf2
  /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO INV REPR AIC EXTR
ACTION ROTATION FSCORE
  /FORMAT BLANK(.50)
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 4,161 | 46,232 | 46,232 | 4,161 | 46,232 | 46,232 | 3,600 |
| 2 | 1,581 | 17,571 | 63,804 | 1,581 | 17,571 | 63,804 | 2,071 |
| 3 | ,886 | 9,845 | 73,648 | ,886 | 9,845 | 73,648 | 2,523 |
| 4 | ,763 | 8,479 | 82,127 | | | | |
| 5 | ,445 | 4,941 | 87,068 | | | | |
| 6 | ,392 | 4,359 | 91,427 | | | | |
| 7 | ,353 | 3,917 | 95,344 | | | | |
| 8 | ,307 | 3,415 | 98,759 | | | | |
| 9 | ,112 | 1,241 | 100,000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| SQP1 - Gebruikers zijn tevreden met de betrouwbaarheid van het systeem. | ,724 | | |
| SQP1 - Gebruikers zijn tevreden met de responstijd van het systeem. | ,840 | | |
| SQP1 - Gebruikers zijn tevreden met het gebruiksgemak van het systeem. | ,707 | | |
| SQP1 - Gebruikers zijn tevreden met de bruikbaarheid van het systeem voor hun werk. | ,612 | | |
| SQP2 - De directie is tevreden met de verhoogde efficientie veroorzaakt door het werken met het systeem. | | ,801 | |
| SQP2 - De directie is tevreden met de verhoogde winstverwachting gegenereerd door het gebruiken van het systeem. | | ,871 | |
| SQP2 - De directie is tevreden met de bijdrage van het systeem aan strategische doelstellingen (continuiteit, voordeel tov de concurrent). | ,713 | | |
| SQP3 - De geleverde applicatie is betrouwbaar. | | | ,816 |
| SQP3 - De geleverde applicatie werkt probleemloos samen met de bestaande IT omgeving. | | | ,856 |

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 7 iterations.

## Factor Analysis Performance Only Perceived Price and Complaint Handling

```
FACTOR
   /VARIABLES ComplaintDisPerf1 ComplaintDisPerf2 ComplaintProcPerf1 C
omplaintProcPerf2 ComplaintIntPerf1 ComplaintIntPerf2 PriceDisP
     erf1 PriceDisPerf2 PriceDisPerf3 PriceProcPerf1 PriceProcPerf2
   /MISSING LISTWISE
   /ANALYSIS ComplaintDisPerf1 ComplaintDisPerf2 ComplaintProcPerf1 Co
mplaintProcPerf2 ComplaintIntPerf1 ComplaintIntPerf2 PriceDisPe
     rf1 PriceDisPerf2 PriceDisPerf3 PriceProcPerf1 PriceProcPerf2
   /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO INV REPR AIC EXTR
ACTION ROTATION FSCORE
   /FORMAT BLANK(.40)
   /CRITERIA MINEIGEN(1) ITERATE(25)
   /EXTRACTION PAF
   /CRITERIA ITERATE(25) DELTA(0)
   /ROTATION OBLIMIN
   /METHOD=CORRELATION.
```

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 4,619 | 41,987 | 41,987 | 4,228 | 38,438 | 38,438 | 3,705 |
| 2 | 2,528 | 22,979 | 64,966 | 2,153 | 19,571 | 58,010 | 3,302 |
| 3 | ,935 | 8,500 | 73,466 | | | | |
| 4 | ,656 | 5,964 | 79,430 | | | | |
| 5 | ,603 | 5,479 | 84,908 | | | | |
| 6 | ,462 | 4,199 | 89,107 | | | | |
| 7 | ,401 | 3,648 | 92,755 | | | | |
| 8 | ,264 | 2,401 | 95,155 | | | | |
| 9 | ,228 | 2,071 | 97,226 | | | | |
| 10 | ,172 | 1,565 | 98,791 | | | | |
| 11 | ,133 | 1,209 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Factor | |
|---|---|---|
| | 1 | 2 |
| PCP - Het behandelen van een klacht resulteerde over het algemeen in een positieve uitkomst | ,788 | |
| PCP - Het behandelen van een klacht resulteerde over het algemeen in een eerlijke uitkomst | ,664 | |
| PCP - De hoofdleverancier reageerde ondanks eventuele problemen toch adequaat op klachten. | ,830 | |
| PCP - De hoofdleverancier had een goede policy om klachten op te lossen. | ,756 | |
| PCP - Medewerkers van hoofdleveranciers deden hun best om klachten op een goede manier af te handelen. | ,753 | |
| PCP - Medewerkers van hoofdleveranciers behandelden klanten met een klacht op een nette manier. | ,701 | |
| PPP - De prijs van het contract was helder opgebouwd. | | ,786 |
| PPP - De hoofdleverancier behandelde klanten als gelijk bij het opstellen van de prijs. | | ,421 |
| PPP - De prijs van het contract was op kosten gebaseerd. | | ,757 |
| PPP - De prijsvoorwaarden waren eerlijk. | | ,888 |
| PPP - De prijs was transparant samengesteld. | | ,867 |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

## Factor Analysis Performance-Expectations Service Quality ("SERVQUAL"): Tangibles and Reliability

```
FACTOR
  /VARIABLES      DISCONTangibles1      DISCONTangibles2      DISCONTangibles3
DISCONTangibles4 DISCONReliability1 DISCONReliability2 DISCONReliabi
    lity3 DISCONReliability4 DISCONReliability5
  /MISSING LISTWISE
  /ANALYSIS       DISCONTangibles1      DISCONTangibles2      DISCONTangibles3
DISCONTangibles4 DISCONReliability1 DISCONReliability2 DISCONReliabil
    ity3 DISCONReliability4 DISCONReliability5
  /PRINT INITIAL EXTRACTION ROTATION
  /FORMAT BLANK(.40)
  /PLOT EIGEN
  /CRITERIA FACTORS(2) ITERATE(25)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| Factor | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 3,024 | 33,603 | 33,603 | 2,584 | 28,706 | 28,706 | 2,544 |
| 2 | 1,756 | 19,507 | 53,109 | 1,126 | 12,514 | 41,221 | 1,279 |
| 3 | 1,168 | 12,978 | 66,087 | | | | |
| 4 | ,956 | 10,620 | 76,708 | | | | |
| 5 | ,566 | 6,290 | 82,998 | | | | |
| 6 | ,497 | 5,526 | 88,524 | | | | |
| 7 | ,481 | 5,349 | 93,872 | | | | |
| 8 | ,313 | 3,483 | 97,355 | | | | |
| 9 | ,238 | 2,645 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Factor | |
|---|---|---|
| | 1 | 2 |
| Disconfirmation (P-E) Tangibles 1 | | ,662 |
| Disconfirmation (P-E) Tangibles 2 | | ,654 |
| Disconfirmation (P-E) Tangibles 3 | | ,464 |
| Disconfirmation (P-E) Tangibles 4 | | |
| Disconfirmation (P-E) Reliability 1 | ,799 | |
| Disconfirmation (P-E) Reliability 2 | ,865 | |
| Disconfirmation (P-E) Reliability 3 | ,740 | |
| Disconfirmation (P-E) Reliability 4 | ,461 | |
| Disconfirmation (P-E) Reliability 5 | ,552 | |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

## Factor Analysis Performance-Expectations Service Quality ("SERVQUAL"): Responsiveness, Assurance and Empathy

```
FACTOR
    /VARIABLES              DISCONResponsiveness1           DISCONResponsiveness2
DISCONResponsiveness3 DISCONResponsiveness4 DISCONAssurance1 DISCONAssuranc
    e2    DISCONAssurance3    DISCONEmpathy1    DISCONEmpathy2    DISCONEmpathy3
DISCONEmpathy4
    /MISSING LISTWISE
    /ANALYSIS              DISCONResponsiveness1           DISCONResponsiveness2
DISCONResponsiveness3 DISCONResponsiveness4 DISCONAssurance1 DISCONAssurance
    2    DISCONAssurance3    DISCONEmpathy1    DISCONEmpathy2    DISCONEmpathy3
DISCONEmpathy4
    /PRINT INITIAL EXTRACTION ROTATION
    /FORMAT BLANK(.40)
    /CRITERIA FACTORS(3) ITERATE(25)
    /EXTRACTION PAF
    /CRITERIA ITERATE(25) DELTA(0)
    /ROTATION OBLIMIN
    /METHOD=CORRELATION.
```

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 5,074 | 46,125 | 46,125 | 4,712 | 42,841 | 42,841 | 3,744 |
| 2 | 1,811 | 16,460 | 62,585 | 1,438 | 13,075 | 55,915 | 3,251 |
| 3 | 1,005 | 9,133 | 71,718 | ,717 | 6,522 | 62,437 | 2,292 |
| 4 | ,671 | 6,099 | 77,817 | | | | |
| 5 | ,480 | 4,368 | 82,185 | | | | |
| 6 | ,466 | 4,238 | 86,423 | | | | |
| 7 | ,418 | 3,803 | 90,225 | | | | |
| 8 | ,373 | 3,394 | 93,619 | | | | |
| 9 | ,272 | 2,469 | 96,088 | | | | |
| 10 | ,249 | 2,263 | 98,351 | | | | |
| 11 | ,181 | 1,649 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Factor | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| Disconfirmation (P-E) Responsiveness 1 | ,491 | | |
| Disconfirmation (P-E) Responsiveness 2 | ,867 | | |
| Disconfirmation (P-E) Responsiveness 3 | ,672 | | |
| Disconfirmation (P-E) Responsiveness 4 | ,842 | | |
| Disconfirmation (P-E) Assurance 1 | | | -,661 |
| Disconfirmation (P-E) Assurance 2 | | | -,721 |
| Disconfirmation (P-E) Assurance 3 | ,573 | | |
| Disconfirmation (P-E) Empathy 1 | | ,669 | |
| Disconfirmation (P-E) Empathy 2 | | ,798 | |
| Disconfirmation (P-E) Empathy 3 | | ,751 | |
| Disconfirmation (P-E) Empathy 4 | | ,756 | |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 10 iterations.

# Factor Analysis Performance-Expectations Product Quality: User satisfaction, Executive Satisfaction and IT Managerial satisfaction

```
FACTOR
    /VARIABLES DISCONUserSat1 DISCONUserSat2 DISCONUserSat3 DISCONUserS
at4 DISCONExecSat1 DISCONExecSat2 DISCONExecSat3 DISCONITManage
    r1 DISCONITManager2
    /MISSING LISTWISE
    /ANALYSIS DISCONUserSat1 DISCONUserSat2 DISCONUserSat3 DISCONUserSa
t4 DISCONExecSat1 DISCONExecSat2 DISCONExecSat3 DISCONITManager
    1 DISCONITManager2
    /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO INV REPR AIC EXTR
ACTION ROTATION FSCORE
    /FORMAT BLANK(.40)
    /CRITERIA MINEIGEN(1) ITERATE(25)
    /EXTRACTION PC
    /CRITERIA ITERATE(25) DELTA(0)
    /ROTATION OBLIMIN
    /METHOD=CORRELATION.
```

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 3,241 | 36,011 | 36,011 | 3,241 | 36,011 | 36,011 | 2,741 |
| 2 | 1,770 | 19,669 | 55,679 | 1,770 | 19,669 | 55,679 | 1,926 |
| 3 | 1,103 | 12,256 | 67,935 | 1,103 | 12,256 | 67,935 | 2,233 |
| 4 | ,942 | 10,467 | 78,402 | | | | |
| 5 | ,614 | 6,822 | 85,224 | | | | |
| 6 | ,509 | 5,658 | 90,882 | | | | |
| 7 | ,360 | 3,998 | 94,880 | | | | |
| 8 | ,292 | 3,248 | 98,127 | | | | |
| 9 | ,169 | 1,873 | 100,000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| Disconfirmation (P-E) User Satisfaction 1 | ,525 | | -,435 |
| Disconfirmation (P-E) User Satisfaction 2 | ,714 | | |
| Disconfirmation (P-E) User Satisfaction 3 | ,888 | | |
| Disconfirmation (P-E) User Satisfaction 4 | ,803 | | |
| Disconfirmation (P-E) Executive Satisfaction 1 | | ,873 | |
| Disconfirmation (P-E) Executive Satisfaction 2 | | ,744 | |
| Disconfirmation (P-E) Executive Satisfaction 3 | | ,703 | |
| Disconfirmation (P-E) IT Managerial 1 | | | -,938 |
| Disconfirmation (P-E) IT Managerial 1 | | | -,746 |

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 6 iterations.

## Factor Analysis Performance-Expectations Price and Complaint Handling

```
FACTOR
  /VARIABLES DISCONComplaintDis1 DISCONComplaintDis2 DISCONComplaintP
roc1 DISCONComplaintProc2 DISCONComplaintInt1 DISCONComplaintIn
    t2 DISCONPriceDis1 DISCONPriceDis2 DISCONPriceDis3 DISCONPriceProc
1 DISCONPriceProc2
  /MISSING LISTWISE
  /ANALYSIS DISCONComplaintDis1 DISCONComplaintDis2 DISCONComplaintPr
oc1 DISCONComplaintProc2 DISCONComplaintInt1 DISCONComplaintInt
    2 DISCONPriceDis1 DISCONPriceDis2 DISCONPriceDis3 DISCONPriceProc1
DISCONPriceProc2
  /PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO INV REPR AIC EXTR
ACTION ROTATION FSCORE
  /FORMAT BLANK(.40)
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 4,173 | 37,939 | 37,939 | 4,173 | 37,939 | 37,939 | 3,742 |
| 2 | 2,011 | 18,284 | 56,223 | 2,011 | 18,284 | 56,223 | 3,029 |
| 3 | ,966 | 11,513 | 67,736 | | | | |
| 4 | ,809 | 7,355 | 75,090 | | | | |
| 5 | ,701 | 6,376 | 81,467 | | | | |
| 6 | ,522 | 4,742 | 86,208 | | | | |
| 7 | ,461 | 4,191 | 90,399 | | | | |
| 8 | ,381 | 3,468 | 93,867 | | | | |
| 9 | ,261 | 2,374 | 96,241 | | | | |
| 10 | ,242 | 2,199 | 98,440 | | | | |
| 11 | ,172 | 1,560 | 100,000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

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**Pattern Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| Disconfirmation (P-E) Complaint Distributive 1 | ,636 | |
| Disconfirmation (P-E) Complaint Distributive 2 | ,497 | |
| Disconfirmation (P-E) Complaint Procedural 1 | ,809 | |
| Disconfirmation (P-E) Complaint Procedural 2 | ,817 | |
| Disconfirmation (P-E) Complaint Interactional 1 | ,798 | |
| Disconfirmation (P-E) Complaint Interactional 2 | ,791 | |
| Disconfirmation (P-E) Price Distributive 1 | | ,753 |
| Disconfirmation (P-E) Price Distributive 2 | | |
| Disconfirmation (P-E) Price Distributive 3 | | ,641 |
| Disconfirmation (P-E) Price Procedural 1 | | ,766 |
| Disconfirmation (P-E) Price Procedural 2 | | ,943 |

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 6 iterations.

# Factor Analysis Expectations Service Quality: Tangibles and Reliability.

```
FACTOR
  /VARIABLES TangiblesExpl TangiblesExp2 TangiblesExp3 TangiblesExp4
ReliabilityExpl ReliabilityExp2 ReliabilityExp3 ReliabilityExp4
    ReliabilityExp5
  /MISSING LISTWISE
  /ANALYSIS TangiblesExpl TangiblesExp2 TangiblesExp3 TangiblesExp4 R
eliabilityExpl ReliabilityExp2 ReliabilityExp3 ReliabilityExp4
    ReliabilityExp5
  /PRINT INITIAL EXTRACTION ROTATION
  /FORMAT BLANK(.40)
  /CRITERIA FACTORS(2) ITERATE(25)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 2,638 | 29,315 | 29,315 | 2,044 | 22,707 | 22,707 | 2,026 |
| 2 | 1,530 | 16,998 | 46,313 | ,809 | 8,990 | 31,697 | ,930 |
| 3 | 1,086 | 12,063 | 58,376 | | | | |
| 4 | ,964 | 10,715 | 69,092 | | | | |
| 5 | ,830 | 9,218 | 78,309 | | | | |
| 6 | ,666 | 7,403 | 85,713 | | | | |
| 7 | ,588 | 6,537 | 92,250 | | | | |
| 8 | ,434 | 4,824 | 97,074 | | | | |
| 9 | ,263 | 2,926 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

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**Pattern Matrix<sup>a</sup>**

| | Factor | |
|---|---|---|
| | 1 | 2 |
| FQE1 - Het personeel van de hoofdleverancier moet voorzien zijn van moderne apparatuur. | | |
| FQE1 - De kantooromgeving van de hoofdleverancier moet over het visueel aantrekkelijk zijn. | | ,541 |
| FQE1 - De medewerkers van de hoofdleverancier moeten representatief gekleed zijn. | | ,447 |
| FQE1 - Documenten van het realisatieproces moeten visueel aantrekkelijk zijn. | | ,526 |
| FQE2 - De hoofdleverancier moet zich aan de afspraken houden. | ,497 | |
| FQE2 - De uitvoering van het realisatieproces moet van hoge kwaliteit zijn. | ,726 | |
| FQE2 - Het realisatieproces moet meteen de eerste keer goed worden uitgevoerd. | ,509 | |
| FQE2 - Het realisatieproces moet zijn afgerond binnen de afgesproken tijd. | ,601 | |
| FQE2 - Er moet een foutloze documentatie worden bijgehouden. | ,738 | |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

## Factor Analysis Expectations Service Quality: Responsiveness, Assurance and Empathy.

```
FACTOR
  /VARIABLES    ResponsivenessExp1    ResponsivenessExp2    ResponsivenessExp3
ResponsivenessExp4 AssuranceExp1 AssuranceExp2 AssuranceExp3 E
    mpathyExp1 EmpathyExp2 EmpathyExp3 EmpathyExp4
  /MISSING LISTWISE
  /ANALYSIS    ResponsivenessExp1    ResponsivenessExp2    ResponsivenessExp3
ResponsivenessExp4 AssuranceExp1 AssuranceExp2 AssuranceExp3 Em
    pathyExp1 EmpathyExp2 EmpathyExp3 EmpathyExp4
  /PRINT INITIAL EXTRACTION ROTATION
  /FORMAT BLANK(.30)
  /CRITERIA FACTORS(3) ITERATE(25)
  /EXTRACTION PAF
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 4,036 | 36,690 | 36,690 | 3,646 | 33,145 | 33,145 | 3,184 |
| 2 | 1,971 | 17,922 | 54,612 | 1,604 | 14,581 | 47,726 | 2,300 |
| 3 | 1,059 | 9,624 | 64,236 | ,515 | 4,678 | 52,403 | 2,165 |
| 4 | ,920 | 8,366 | 72,602 | | | | |
| 5 | ,780 | 7,091 | 79,693 | | | | |
| 6 | ,705 | 6,405 | 86,098 | | | | |
| 7 | ,537 | 4,882 | 90,980 | | | | |
| 8 | ,350 | 3,178 | 94,158 | | | | |
| 9 | ,278 | 2,530 | 96,689 | | | | |
| 10 | ,208 | 1,893 | 98,581 | | | | |
| 11 | ,156 | 1,419 | 100,000 | | | | |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Factor | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| FQE3 - De hoofdleverancier moet haar klanten goed op de hoogte houden van de ontwikkelingen in het realisatieproces. | | | ,499 |
| FQE3 - Klantvragen moeten op een snelle manier verwerkt worden. | | ,970 | |
| FQE3 - De medewerkers van de hoofdleverancier moeten gemotiveerd zijn om klanten te helpen. | | ,395 | |
| FQE3 - De hoofdleverancier moet stipt reageren op klantvragen. | | ,698 | |
| FQE4 - Medewerkers van de hoofdleverancier moeten kennis van zaken hebben. | | | ,587 |
| FQE4 - Medewerkers van hoofdleveranciers moeten vertrouwen opwekken. | | | ,473 |
| FQE4 - Hoofdleveranciers moeten discreet met klanten om gaan. | | ,407 | |
| FQE5 - Hoofdleveranciers moeten klant-gefocust zijn. | ,701 | | |
| FQE5 - Hoofdleveranciers moeten betrokken zijn bij hun klanten. | ,912 | | |
| FQE5 - Hoofdleveranciers moeten de behoeftes van hun klanten goed begrijpen. | ,888 | | |
| FQE5 - Hoofdleveranciers moeten het beste met hun klant voor hebben. | ,740 | | |

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 6 iterations.

# Factor Analysis Expectations Product Quality: User satisfaction, Executive Satisfaction and IT Managerial satisfaction

```
FACTOR
  /VARIABLES  UserSatExp1  UserSatExp2  UserSatExp3  UserSatExp4  ExecSatExp1
ExecSatExp2 ExecSatExp3 ITManagExp1 ITManagExp2
  /MISSING LISTWISE
  /ANALYSIS  UserSatExp1  UserSatExp2  UserSatExp3  UserSatExp4  ExecSatExp1
ExecSatExp2 ExecSatExp3 ITManagExp1 ITManagExp2
  /PRINT INITIAL EXTRACTION ROTATION
  /FORMAT BLANK(.40)
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 3,237 | 35,968 | 35,968 | 3,237 | 35,968 | 35,968 | 2,925 |
| 2 | 1,759 | 19,543 | 55,512 | 1,759 | 19,543 | 55,512 | 1,936 |
| 3 | 1,250 | 13,889 | 69,401 | 1,250 | 13,889 | 69,401 | 1,910 |
| 4 | ,624 | 6,938 | 76,338 | | | | |
| 5 | ,608 | 6,753 | 83,091 | | | | |
| 6 | ,498 | 5,535 | 88,626 | | | | |
| 7 | ,466 | 5,173 | 93,798 | | | | |
| 8 | ,310 | 3,446 | 97,244 | | | | |
| 9 | ,248 | 2,756 | 100,000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Component | | |
|---|---|---|---|
| | 1 | 2 | 3 |
| SQE1 - Gebruikers moeten tevreden zijn met de betrouwbaarheid van het systeem. | ,676 | | |
| SQE1 - Gebruikers moeten tevreden zijn met de responstijd van het systeem. | ,855 | | |
| SQE1 - Gebruikers moeten tevreden zijn met het gebruiksgemak van het systeem. | ,846 | | |
| SQE1 - Gebruikers moeten tevreden zijn met de bruikbaarheid van het systeem voor hun werk. | ,824 | | |
| SQE2 - De directie moet tevreden zijn met de verhoogde efficientie veroorzaakt door het werken met het systeem. | | ,752 | |
| SQE2 - De directie moet tevreden zijn met de verhoogde winstverwachting gegenereerd door het gebruiken van het systeem. | | ,849 | |
| SQE2 - De directie moet tevreden zijn met de bijdrage van het systeem aan strategische doelstellingen (continuiteit, voordeel tov de concurrent). | | ,753 | |
| SQE3 - Geleverde applicaties moeten betrouwbaar zijn. | | | ,832 |
| SQE3 - Geleverde applicaties moeten probleemloos samenwerken met de bestaande IT omgeving. | | | ,803 |

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 4 iterations.

# Factor Analysis Expectations Price and Complaint Handling

```
FACTOR
    /VARIABLES      ComplaintDisExp1      ComplaintDisExp2      ComplaintProcExp1
ComplaintProcExp2 ComplaintIntExp1 ComplaintIntExp2 PriceDisExp1 Pr
    iceDisExp2 PriceDisExp3 PriceProcExp1 PriceProcExp2
    /MISSING LISTWISE
    /ANALYSIS      ComplaintDisExp1      ComplaintDisExp2      ComplaintProcExp1
ComplaintProcExp2 ComplaintIntExp1 ComplaintIntExp2 PriceDisExp1 Pri
    ceDisExp2 PriceDisExp3 PriceProcExp1 PriceProcExp2
    /PRINT INITIAL EXTRACTION ROTATION
    /FORMAT BLANK(.40)
    /CRITERIA MINEIGEN(1) ITERATE(25)
    /EXTRACTION PC
    /CRITERIA ITERATE(25) DELTA(0)
    /ROTATION OBLIMIN
    /METHOD=CORRELATION.
```

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings[a] |
|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 3,863 | 35,115 | 35,115 | 3,863 | 35,115 | 35,115 | 3,262 |
| 2 | 2,000 | 18,180 | 53,295 | 2,000 | 18,180 | 53,295 | 2,991 |
| 3 | 1,235 | 11,232 | 64,527 | | | | |
| 4 | ,892 | 8,108 | 72,635 | | | | |
| 5 | ,700 | 6,361 | 78,996 | | | | |
| 6 | ,632 | 5,748 | 84,744 | | | | |
| 7 | ,524 | 4,760 | 89,504 | | | | |
| 8 | ,415 | 3,776 | 93,280 | | | | |
| 9 | ,295 | 2,683 | 95,962 | | | | |
| 10 | ,253 | 2,296 | 98,259 | | | | |
| 11 | ,192 | 1,741 | 100,000 | | | | |

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

**Pattern Matrix[a]**

| | Component | |
|---|---|---|
| | 1 | 2 |
| PCE - Het behandelen van een klacht moet resulteren in een positieve uitkomst. | | ,666 |
| PCE - Het behandelen van een klacht moet resulteren in een eerlijke uitkomst. | ,679 | |
| PCE - Een hoofdleverancier moet ondanks eventuele problemen toch adequaat reageren op een klacht. | ,696 | |
| PCE - De hoofdleverancier moet een goede policy hebben om klachten op te lossen. | ,667 | |
| PCE - Medewerkers van hoofdleveranciers moeten hun best doen klachten op een goede manier af te handelen. | ,883 | |
| PCE - Medewerkers van hoofdleveranciers moeten die klanten met een klacht op een nette manier behandelen. | ,753 | |
| PPE - De prijs van het contract moet helder opgebouwd zijn. | ,486 | |
| PPE - Klanten moeten gelijk behandeld worden bij het opstellen van de prijs. | | ,781 |
| PPE - De prijs van het contract moet op kosten gebaseerd zijn. | | ,869 |
| PPE - Prijsvoorwaarden moeten eerlijk zijn. | | ,620 |
| PPE - De prijs moet op een transparante manier samengesteld zijn. | | ,438 |

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 7 iterations.