

Prospect Theory and SERVQUAL

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The aim of this paper is to make a scientific contribution for a better understanding of the relationship between the Prospect Theory and SERVQUAL. The first objective is to analyse whether the SERVQUAL scale is an appropriate scale to quantify service quality and customer satisfaction of automobile-insurances. The second objective is to discuss the relationship between service quality and customer satisfaction. With the prospect theory, the relationship is explained and described. Only a negative asymmetric relationship between service quality and customer satisfaction can be explained by the prospect theory. The proposed diminishing sensitivity lacks sufficient significant empirical evidence.

Key words: SERVQUAL, customer satisfaction, prospect theory

Introduction

The subject of service quality and customer satisfaction is not new. These two constructs and their causal order in different industries have received considerable attention in the scientific literature in the past 30 years (Crosby and Stephens 1987; Martinez and Martinez 2010). The insurance industry is characterized by its introverted behaviour in publishing data on service quality and customer satisfaction. The aim of this paper is therefore to identify in how far the characteristics of the Prospect Theory can be used in order to explain the relationship of service quality and customer satisfaction in the insurance industry.

Depending on the understanding of the term 'quality' and its perspective, quality can result in different interpretations. The most influential attempt for systematization goes back to the different quality terms by Garvin (1984), who identified five sub-qualities with partial analyses. However, Garvin's approach has never been extended and often serves only as visualization in service-marketing (Zollondz 2006).

In everyday language, the term 'quality' is used as a synonym of a product or service with specific characteristics. A differentiation between a quality-characteristic as a factor or as a texture is helpful

(Zollondz 2006). Additionally the term 'quality' has a positive connotation as the expectations are fulfilled above average. The level can include a positive and a negative evaluation (Haller 1998).

The quality of a service is the result of a set of characteristics, which can be weighted differently and can have appositive or a negative reciprocity. The quality results from a comparison of expectations with the perceived service quality. The expectations differ from service to service (Masing and Pfeifer 2007). In this paper, the definition based on Lewis and Booms (1983, in Parasuraman, Berry and Zeithaml 1985, 42) is followed:

Service quality is a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis.

Fehr and Rusell (1984, in Oliver 1997) show the need to focus on the terminology: 'Everyone knows what satisfaction is until asked to give a definition. Then it seems, nobody knows.' Usually the term 'satisfaction' is used as a synonym for enjoyment, happiness, gratification or subjective well-being (Brockhaus 1984). As for as its epistemology is concerned, the term 'satisfaction' refers to Latin 'satis' (enough) and 'facere' (to do). The satisfaction with a product or service is therefore that characteristic which is looked for in order to achieve the so-called 'satis'-point (Oliver 1997).

Early concepts of customer satisfaction describe customer satisfaction as an assessment of a specific buying decision; a so-called transactions-specific satisfaction (Oliver and DeSarbo 1988). This cognitive approach dominated the marketing and customer behaviour literature until the early 90ies. In the meantime, many scholars have turned away from the transaction specific satisfaction and add an affective component to the preliminary cognitive description (Caro and Garcia 2007). Other scholars claim that satisfaction should be viewed as a judgment of cumulative experiences with a product or service instead of a transaction specific phenomenon (Johnson and Fornell 1991). According to this argumentation, individuals can combine different experiences with a product or service over a period of time (Rust, Zahorik and Kleiningham 1995). The concept of cumulative satisfaction should be preferred to the transaction-specific satisfaction because it is a more fundamental indicator of a firm's past, current and future performance (Garbarino and Johnson 1999). Giese and Cote (2000) refer to the inconsistent definitions in the scientific literature. In some cases the definitions are only partly

inconsistent but with overlapping components. Overall, three components can be identified:

1. Customer satisfaction as a reaction (affective or cognitive).
2. The reaction refers to a specific focus (expectation, product, consumption and more).
3. The reaction takes place after a specific time period (after consumption, after the decision based on cumulative experience and more).

The aim of this paper is not to gain knowledge of single service episodes or contact points but rather to discuss the influence of service-quality on customer satisfaction, the concept of the cumulative satisfaction. Yi and La (2003) recommend the cumulative concept especially if the Confirmation/Disconfirmation (CD) Paradigm is used. In connection to this approach Oliver's (1997, 13) description is applied to this study:

Satisfaction is the consumer's fulfilment response. It is a judgment that a product or service feature of the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfilment, including levels of under- or over fulfilment.

Model Development

The model for this paper is based on the CD-Paradigm. The CD-Paradigm can be traced back to works by Engel, Kollat and Blackwell (1968), Howard and Sheth (1969), and Oliver (1977). The cognitive oriented approach has been accepted in the satisfaction-research stream. The high acceptance is caused by the sound theoretical foundation (Fournier and Mick 1999) and its use in the retail- and service-industry (Oliver and DeSarbo 1988; Spreng, MacKenzie and Olshavsky 1996). In the service quality literature the GAP analysis model and the SERVQUAL scale (Parasuraman, Berry and Zeithaml 1988) which is based on the CD-Paradigm are prominent. With SERVQUAL the customer receives two scores in identical Likert scales, for each of the 22 service attributes (1 = completely wrong/dissatisfied, 7 = completely right/satisfied). As shown in figure 1, one scale indicates the expectations of the service performance (EP) delivered by excellent insurance companies and the other scale reflects the perceived performance (PP) by excellent insurance companies. Afterwards service quality is quantified in a comparison process between these two scores (EP - PP).

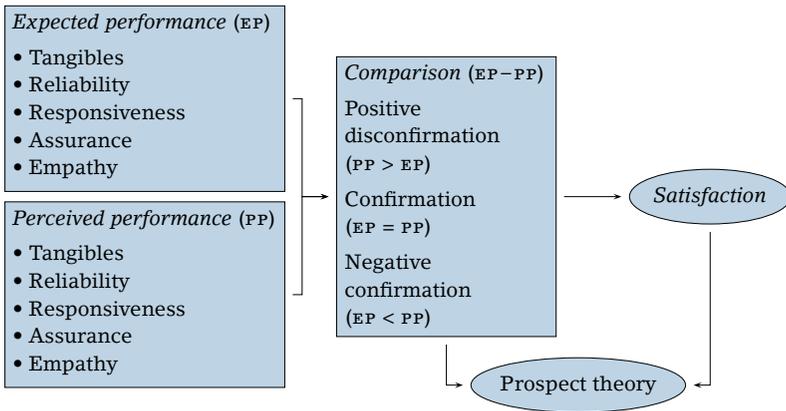


FIGURE 1 Model Development

SERVQUAL consists of five distinct dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman, Berry and Zeithaml 1988, 1991). According to Parasuraman, Berry and Zeithaml (1988, 30–31) SERVQUAL

[...] provides a basic skeleton through its expectations and perceptions format, encompassing statements for each of the five service-quality dimensions. The skeleton, when necessary, can be adapted or supplemented to fit the characteristics of specific research needs of a particular organization.

Even though SERVQUAL receives substantial empirical support, there are with difficulties with it. The critical analysis includes the ambiguous definition of expectation, the instability of the dimensions as well as the lack of applicability across industries. The criticism leads to a lively discourse in the scientific literature (Carman 1990; Cronin and Taylor 1992 and 1994; Teas 1993). Despite the counterarguments the developers do not find the criticism strong enough to abandon the scale (Parasuraman, Zeithaml and Berry 1994) because it is still the only general, diagnostic, and adaptive measure of service quality (Kalamas, Laroche and Cézard 2002).

The development of SERVQUAL took place with customers in the insurance industry and has been applied to many other industries (Ueltschy et al. 2007). However, in the insurance industry, it has been used only to a limited extent. Therefore, it is necessary to prove the reliability and validity of SERVQUAL in the insurance industry:

H₁ SERVQUAL is not a reliable and valid scale to measure service-quality of automobile-insurers.

Because the aim of this paper is not to gain knowledge on single service contact experience, but rather on the influence of the service quality on customer satisfaction, the concept of the cumulative satisfaction is used. In the literature, satisfaction is applied as a one-dimensional (Aga and Safakli 2007) as well as a multi-dimensional construct (Ostrom and Iacobucci 1995). With a one-dimensional construct customer satisfaction is evaluated solely with one variable, while with a multi-dimensional construct more variables determine the overall satisfaction.

While Ostrom and Iacobucci (1995) analyze different service industries, Hermann, Huber and Braunstein (2000) focus solely on the automobile insurance industry. The latter use four dimensions which determine the overall satisfaction: relative quality, product-satisfaction, back-office satisfaction and front-office satisfaction. To measure customer satisfaction in this research the scale by Hermann, Huber and Braunstein (2000) is used. Therefore, the reliability and validity as well as the dimensionality need to be proved:

- H₂ *The scale to measure customer satisfaction of automobile-insurance customers is not reliable and valid.*
- H₃ *The scale to measure customer satisfaction of automobile-insurance customers is not multi-dimensional.*

Eskildsen et al. (2004) as well as Ueltschy et al. (2007) confirm a significant influence from service quality on customer satisfaction. Figure 2 illustrates two different relationships discussed in literature: (i) linear and symmetric and (ii) non-linear and asymmetric.

Figure 2 shows the traditional view of the relationship between service quality and customer satisfaction. In this approach, the relationship is linear and symmetric. A linear symmetric relationship implies that a change of a unit in service quality leads to an equal unit change in customer satisfaction, independent of whether the change happens in the low or high end of the scale. In most customer satisfaction programs, the use of such linear and symmetric relationships is ubiquitous (Anderson and Mittal 2000). Nevertheless, current research shows that, in most cases, is not linear and symmetric but follows a non-linear and asymmetric relationship with diminishing returns in its impact on satisfaction as depicted in figure 2 (Anderson and Mittal 2000; Stan et al. 2007; van Doorn 2008).

Furthermore, the literature distinguishes between negative asymmetric (Stan et al. 2007) and positive asymmetric (van Doorn 2008) relationships. A relationship is negative asymmetric when changes in the negative evaluation of service quality have a greater impact

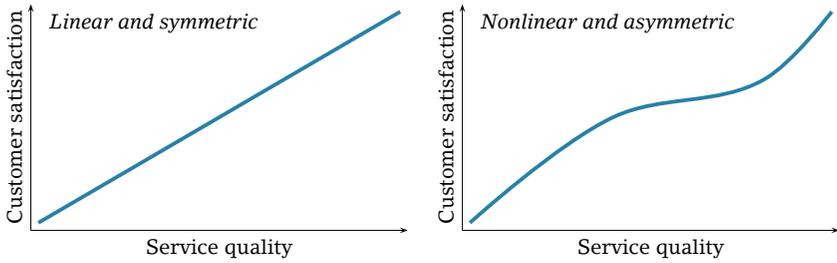


FIGURE 2 Service Quality and Satisfaction Relationships

on customer satisfaction than changes in the positive evaluation.

For instance, a decrease in the negative evaluation (from 3 to 1) has a much larger impact on overall satisfaction than equal increase in positive evaluation (from 5 to 7). In addition to that, because of the inherent nonlinearity, performance changes towards the middle of the scale are more consequential than performance changes at the high end (Anderson and Mittal 2000). In contrast with a positive asymmetry, a greater change of positive evaluation has a higher impact on customer satisfaction than a negative change (van Doorn 2008).

Prospect Theory

In order to explain the non-linear and asymmetric relationships, several scholars (e.g. Yi and La 2003; Slotegraaf and Inman 2004) use the hypothetical value function of the prospect theory by Kahneman and Tversky (1979). The prospect theory is a descriptive theory in which all of the alternatives an individual faces are reduced to a series of prospects that are evaluated independently of an S-shaped value function as depicted in figure 1. As shown in figure 1, the value function of the prospect theory has three characteristics:

- reference point dependency,
- loss aversion (the function is steeper for losses than for gains), and
- diminishing sensitivity (concave for gains and convex for losses).

The reference point is built by the expectations of the service quality offered by the automobile insurers. On the x-axis the perceived performance and on the y-axis the values for the customer-satisfaction are shown. According to Einhorn and Hogarth (1981), the loss aversion integrated into the prospect theory suggests that losses loom larger than gains. In the satisfaction context, a negative deviation from the reference point, expectations, should carry more

weight in the overall-satisfaction judgment than equal amounts of positive outcomes on attribute performance.

The diminishing sensitivity in the context of satisfaction means that, at high (low) levels of service quality, positive (negative) performance on a specific item should not affect satisfaction as dramatically as it does at lower levels of performance. This development is similar to the diminishing returns hypothesis in classical economics and is depicted in figure 1. In order to figure out whether the relationship between service quality and customer satisfaction can be explained by the characteristics of the prospect theory, a two-step approach is necessary. First, one has to find out if a non-linear relationship exists, therefore:

H₄ *The positive and negative deviations from the five SERVQUAL dimensions do not show a negative asymmetric influence towards customer satisfaction.*

Secondly, it is necessary to prove the characteristic of the diminishing sensitivity by the following hypothesis:

H₅ *The negative and positive deviations of the five SERVQUAL dimensions cannot be explained by the diminishing sensitivity according to the prospect theory.*

Sample

Data for this study were obtained by a student sample in Austria. Student samples are always discussed in the literature; nevertheless, there are several reasons to use students instead of a heterogeneous sample. Calder, Philips and Tybout (1981) differentiate between two forms of studies: As 'effects application research' the scholars describe those studies in which the research goal is to obtain findings that can be generalized directly to a real-world situation of interest. 'Theory application research' aims at obtaining a scientific theory that can be generalized through the design of theory-based interventions that are viable in the real world. In addition to that, 'theory application research' requires a falsification procedure. Theories that survive rigorous attempts at falsification are accepted and accorded scientific status. If the analysis is based on a theory, a homogenous sample like students should be favoured because this reduces the standard as well as the beta-error and leads to a higher statistical power (Sternthal, Tybout and Calder 1996) – under the assumption that the theory is true (Calder, Philips and Tybout 1981). In order to receive statistically significant results, the concept of Jacob Cohen (1988) for statistical power analysis for behavioural

sciences is used to determine the required sample size. Based on this concept, the power of a statistical test depends upon three parameters: (i) the significance criterion, (ii) the reliability (power) of the sample results, and (iii) the 'effect size' (d) – that is, the degree to which the phenomenon exists. For this analysis $\alpha = 0.10$, power = 0.8 and $d = 0.2$ has been chosen and leads to a sample size of $n = 310$.

Analysis & Results

According to Churchill (1979, 68), the calculation of the coefficient alpha should be absolutely the first measure to calculate to assess the quality of the instrument. The scientific literature requires a Cronbach's alpha of $\alpha > 0.8$ in order to accept specific test scores. A lower score of $\alpha > 0.7$ is sufficient for Cortina (1993) if the scale items are higher than 20.

The SERVQUAL results show for the 'expectations' $\alpha = 0.92$, 'perceived performance' $\alpha = 0.96$ and for the GAP (EP - PP) $\alpha = 0.93$. The results for the dimension 'tangible' is $\alpha = 0.78$; 'reliability' $\alpha = 0.86$, 'responsiveness' $\alpha = 0.86$, and 'empathy' $\alpha = 0.85$. Based on these results, H_1 has to be falsified and the alternative hypothesis that SERVQUAL is a reliable and valid scale needs to be accepted.

The results for the satisfaction scale are similar with a Cronbach's alpha between $\alpha = 0.88$ and $\alpha = 0.93$ for the four dimension. In detail, the 'relative quality' receives $\alpha = 0.91$, 'product satisfaction' $\alpha = 0.85$, 'back-office-satisfaction' $\alpha = 0.93$ and 'front-office-satisfaction' $\alpha = 0.89$. The overall satisfaction receives $\alpha = 0.92$. According to these results, H_2 has to be rejected because the data for the satisfaction scale are reliable and valid.

A factor analysis can be used to confirm whether the number of suggested dimensions can be verified empirically. Because the eigenvalue of the factor analysis has only one component with a value of 11.22 and a variance of 66%, no rotation of the component is possible. This indicates that only in this context the customer-satisfaction is one-dimensional and, not as assumed, multi-dimensional. Therefore, H_3 has to be falsified as well.

In order to analyze the relationship between service quality and customer satisfaction, the analytic strategy was adapted by Anderson and Sullivan (1993). Consequently, the asymmetric and diminishing impact of each SERVQUAL-item on overall satisfaction is modelled as follows:

$$\text{Overall Satisfaction} = \text{Intercept} + \beta_1 \times \text{LN_GAP} + \beta_2 \times \text{LP_GAP}. \quad (1)$$

The extent to which the automobile insurers provide service quality higher or lower than the given expectation by the customer is represented by GAP , divided into N_GAP and P_GAP to indicate negative and positive service quality based on $SERVQUAL$ respectively. The letter L of LN_GAP and LP_GAP indicates the natural logarithm. Since natural logarithms cannot operate negative numbers, the $SERVQUAL$ item of the negative deviation from the expectations LN_GAP_1 is equal to $\ln(-GAP_1)$ and LP_GAP_1 is equal to zero. If the deviation from the expectation of an item is positive, then LP_GAP is equal to $\ln(GAP_1)$ and LN_GAP_1 equals to zero. For example, if an item is '-3,' then the $LN_GAP = \ln(-(-3))$ and $LP_GAP = 0$. If an $SERVQUAL$ item is '4,' then $LP_GAP = \ln(4)$ and $LN_GAP = 0$.

It should be noted that, in this analysis plan, the overall customer satisfaction has been taken as the dependent variable, LN_GAP and LP_GAP are the independent variables. That means, two coefficients (β_1 and β_2) are estimated for each of the five $SERVQUAL$ dimensions, which results in 10 coefficients. Due to this analysis plan, hypotheses H_4 and H_5 can be answered based on the regression coefficient. First, it ensures that all coefficients are positive, which makes the interpretation more useful and convenient for managers. The greater the absolute value of the coefficient, the greater the effect of the deviation of service quality on customer satisfaction. If the coefficient of a negative GAP is higher than the coefficient of the positive GAP , then a negative asymmetry exists. In addition to that, the natural logarithm transformation captures diminishing sensitivity. If the coefficient alpha for a positive GAP on an item is significant, it can be interpreted as diminishing sensitivity on a specific dimension. Results for these analyses are reported in table 1.

A comparison of the results in table 1 show that $LN_GAP_j > LP_GAP_j$ for all five $SERVQUAL$ dimensions, indicating a negative asymmetry. In addition to that, the magnitude of the asymmetry is different for each attribute. Thus, the magnitude of the asymmetry is much larger for the dimension 'responsiveness' (-1.384 vs. 0.257) than for 'tangibles' (-0.477 vs. 0.243). Therefore, H_4 has been falsified because a negative asymmetry between positive and negative deviations on $SERVQUAL$ dimensions has been identified.

Due to logarithm transformation, the diminishing sensitivity hypothesis can be facilitated. A characteristic of a logarithm function is that, as the values get more extreme, the function tapers off and thus resembles the diminishing curve. If the coefficient is significant, it gives support for the diminishing hypothesis (Anderson and Sullivan 1993). The results in table 1 show that the hypothesis can neither

TABLE 1 Regression Results

Item	LN_Dimension _x			LN_Dimension _x			(7)	(8)	(9)
	(1)	(2)	(3)	(4)	(5)	(6)			
Tangibles	-0.477	0.127	0.007	0.243	0.364	0.003	Yes	No***	No***
Reliability	-1.111	0.000	0.245	0.500	0.416	0.008	Yes	Yes***	No***
Responsiveness	-1.384	0.000	0.391	0.257	0.450	0.019	Yes	Yes***	No***
Assurance	-1.155	0.000	0.317	0.380	0.492	0.008	Yes	Yes***	No***
Empathy	-1.215	0.000	0.327	0.139	0.747	0.026	Yes	Yes***	No***

NOTES (1) regression coefficient for negative deviations (β_1), (2) significance, (3) R^2 , (4) regression coefficient for positive deviations (β_1), (5) significance, (6) R^2 , (7) negative asymmetry, (8) diminishing sensitivity (β_1), (9) diminishing sensitivity (β_2).

be falsified for the negative deviation from the reference point of the dimension ‘tangibles’ nor for any dimension of the positive deviation. Therefore a diminishing sensitivity according to the prospect theory can only be identified for the negative deviations of the dimensions ‘reliability,’ ‘responsiveness,’ ‘assurance,’ and ‘empathy.’

Discussion

This paper investigates whether the relationship between service quality and customer satisfaction can be explained and described by the characteristics of the prospect theory in the context of the automobile-insurances. The results can be summarized as follows:

1. Despite the criticism of the SERVQUAL scale, the results show a reliable and valid alpha coefficient in the automobile-insurance industry.
2. Customer satisfaction is not, as assumed, a multi-dimensional construct. It should rather be investigated as a one-dimensional construct with a single variable, which shortens also the questionnaire.
3. Service quality and customer satisfaction have a negative asymmetric relationship on the dimension level. That is, a negative GAP has a greater impact on customer satisfaction than an equivalent positive GAP.
4. Regarding diminishing returns, the results are mixed. For four out of five negative GAPS, there is empirical support for diminishing returns but not for the positive GAPS.
5. Finally, results calls into question previous linear conceptualized models and show additional proof for non-linearity where the prospect theory can serve for the description and explanation purposes.

These results show that the relationship between service-quality and customer satisfaction is fundamental and has several implications for research and practice.

Conclusions

Improving the service quality is a key for insurance companies as it is considered a competitive advantage in the market. In this study, the constructs used have been analyzed individually at the beginning. Only after the proof of their reliability and dimensionality, the constructs have been added to a causal chain. This shows whether the instruments can be further used in the chosen industry. The results show that the SERVQUAL can be used in its entirety in the automobile insurance industry, while the satisfaction construct should be used one-dimensionally. In addition to that, the procedure to determine the correct sample size based on the concept for statistical power analysis for behavioural science supports the results to find also small effects in the causal relationship. From the theoretical point of view, it has been shown, that the descriptive characteristics of the prospect theory can be used only to a limited extent to explain the impact of service quality on customer satisfaction.

The discussion has exposed the relevance of service quality in the insurance industry as it is of an utmost concern and differs significantly to the retail business. By understanding the difference in the effects of service quality on customer satisfaction, managers of insurance companies can implement changes more effectively. Based on the result if a manager wants to improve customer satisfaction, he/she would receive the highest impact on a change in the dimension 'responsiveness,' while a change in the dimension 'tangible' would lead to less change in satisfaction. The strategic implications are therefore straightforward: Maximization of customer satisfaction can be achieved not by maximization but rather by optimization of the service quality.

Limitations

The first restriction can be found in the student sample. A student sample gives the advantage of a homogenous group but limits the results, as only a specific target group has been asked. A heterogeneous approach might lead to a different result. The second restriction can be found in the focus of a specific insurance sector. A replication research with different insurance-sectors is needed to enhance the robustness of the negative asymmetric relationship.

The third limitation can be found in the single database. It is of interest if, when, and how the expectations as well as the perceived performance change over the time and how this change influences customer satisfaction.

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