Customer coproduction at service encounters
< Value co-creation and the changing role of suppliers and customers >

ABSTRACT

Purpose – Drawing from S-D logic this empirical paper builds on the proposition of customers as coproducers, empirically researching linkages between customer coproduction, a perceived risk of a service, preferences for either a remote or a direct personal encounter, and the intention to use a self-service technology.

Design/Methodology/approach – Based on an exploratory study, a conceptual model is developed, linking perceived risk of service, distinctive preferences for either a remote or a direct personal encounter, customer coproduction, and the intention to use a self-service technology. The empirical research is based on a scenario and questionnaire approach using three scenarios and a total of 386 respondents. The statistical method used to determine whether relationships exist between the model variables is PLS path modelling using SmartPLS 2.0 (Ringle et al. 2005).

Findings – The findings provide empirical evidence that preferences for either a direct personal encounter or a remote encounter, and a perceived risk of a service influence participation in customer coproduction. Moreover the preferred level of customer coproduction affects the intention to use a self-service technology.

Research limitations/implications– The present research provides empirical evidence for modelling the relationship between a perceived risk of a service, customer coproduction, preferences for either a direct personal encounter or a remote encounter, and the intention to use a self-service technology. However, the study examined customer coproduction, as a component of cocreation of value, understanding a direct personal encounter and a remote encounter as opposite poles of a continuum concerning opportunities for participation. Hence, respondents were faced with a relatively dichotomous choice – maximum possible form of customer coproduction (self-service) versus little degree of customer coproduction (personal face-to-face contact).

Practical implications– The research project may provide managerial guidance to determine whether customer coproduction is likely, depending on type of service (particularly perceived risk of a service). Moreover, it might give indications whether it is recommendable to offer self-service technologies or a direct personal encounter instead, or even both in combination.

Originality/value – The study relates customer coproduction and service encounter research. It demonstrates direct linkages between perceived risk of a service, a preference for a direct personal encounter or a remote encounter, customer coproduction and the intention to use a self-service technology. Furthermore, the customer coproduction construct is newly developed.

Key words – customer coproduction, self-service technologies, service-dominant logic, service encounter, value cocreation

Paper type – Research paper

The 2013 Naples Forum on Service
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1   Introduction

The notion that the customer's role in value creation has changed has been a theme of importance among economists and business theorists. Nowadays, customers are not merely seen as "consumers" who "destroy" value embedded by firms in offerings. Firms are claimed to merely provide operand and operant resources such as goods as input resources into customer's value creation processes. Value is said to be created through the joint activities of providers and customers but also the activities of others in the networks of these parties (Beckett and Nayak 2008; Payne et al. 2008; Xie et al. 2008). Hence, the roles of firms and customers are not distinct; value is always cocreated (Vargo and Lusch 2004).

In particular customer coproduction which implies that the customer has to fulfill certain activities by himself/herself is of particular relevance (Normann 2001, p. 34, 95). Customers apply and integrate their own resources and requirements. They may participate in co-developing of an offering such as co-designing of clothes or configuring a personal computer through product configurators, choosing their preferred component parts. This evolution is particularly fostered by technological advance and a decrease in information asymmetry between firms and customers through means such as social media.

First, customer coproduction, value cocreation and service encounter research are related. Second, based on an exploratory pre-study (see Jacob and Rettinger 2011), a conceptual model is proposed, linking perceived risk of service, distinctive preferences for either a remote or a direct personal encounter, customer coproduction, and the intention to use a self-service technology. Then, the outcome of a quantitative study is presented that has been conducted using a scenario and questionnaire approach. Three types of service representing Bowen's (1990) three-group classification typology are chosen. PLS path modeling is applied. In case of customer coproduction the construct is newly developed demonstrating good reliability and validity. The article finishes with a discussion presenting limitations, implications, and future research directions.

2   Conceptual development

2.1 Customer coproduction, value cocreation and service encounters

Customer coproduction is "participation of customers in the creation of the core offering itself by contributing operand and/or operant resources in order to create value" (Jacob and Rettinger 2011, p. 2). Hence, customer coproduction is one component of cocreation of value. It is subordinate to cocreation of value. Whereas customers are always cocreators of value, they do not necessarily take part in customer coproduction. Notwithstanding, customer coproduction influences the amount of value-in-use that can be attained in customer cocreation of value (Lusch and Vargo 2009; Vargo and Lusch 2008).

Value cocreation and particularly customer coproduction may occur at points of interaction between two service systems such as the customer and a firm. All points of interaction between the customer and the firm are opportunities for value creation (Prahalad and Ramaswamy 2004, pp. 33, 121). Those points of interaction may correspond to "service encounters". A service encounter is defined as "a period of time during which a consumer directly interacts with a service." (Shostack 1985, p. 243)

From the customer's point of view, an encounter may be a one-time encounter with a firm or can be made up of a sequence of encounters (Bitner et al. 2000). Shostack (1985) distinguishes between

three types of service encounters. A customer may engage in any, or all of the forms, or combinations thereof (pp. 248-252):

- **Direct personal encounter**
The customer directly interacts with another human being.

- **Indirect personal encounter**
The encounter consists solely of verbal interaction. The customer deals with a human being; still, there is no face-to-face interaction.

- **Remote encounter**
There is no human interaction involved. The encounter takes place through indirect means such as self-service technologies.

In fact, service encounters have traditionally been conceptualized as "high-touch, low-tech". However, technological advance increasingly alters encounter relationships and can considerably increase the number of service encounters a customer has with a firm (Bitner et al. 2000). Prahalad et al. (2000) describe "Spurred by the Web, digitization of content, high-speed wired and wireless networks, and new consumer devices and appliances, there's an unprecedented number of touchpoints between the firm and the end-consumer." (p. 67) Actually, research indicates that Internet bankers contact their banks the most frequently (Howard and Worboys 2003). Technology facilitates the ability of all service systems in a value-creation network to collaborate. In fact, according to S-D logic, technology can be regarded as "bundled operant resources" (Lusch et al. 2007, p. 9).

Accordingly, Parasuraman (2000) enhanced the traditional two-dimensional Services Marketing Triangle by incorporating technology as a fourth dimension. The original triangle and the advanced pyramid model both illustrate the network relationship between the interrelated service systems such as company (or business unit), providers (i.e. a firm's employees, agents or subcontractors), and customers (see also Brown and Bitner 2006, p. 398). External marketing is referred to as "traditional marketing" encompassing all forms of communications with customers in the form of making value propositions (i.e. making promises). However, key to success is "interactive marketing" where the value propositions are either fulfilled or broken. By providing trainings, incentives, technology, and other resources "internal marketing" is expected to ensure that providers are able to perform their roles successfully (Brown and Bitner 2006, p. 397). Unlike the original triangle model the pyramid model implicates that service encounters comprise not only dynamic relationships between company, providers, and customers, but may also be affected by technology (Parasuraman 2000).

Service encounters provide opportunities for collaboration and negotiation, explicit or implicit, between the customer and the firm, as well as opportunities for those processes to break down (Prahalad and Ramaswamy 2004, p. 33). As Bitner et al. (2000) state: "Service encounters are critical moments of truth in which customers often develop indelible impressions of a firm." (p. 139) At service encounters customers typically exercise choice. One dimension of choice is mode of participation in coproduction. Hence, at service encounters, customer participation in coproduction may occur.

As an outcome of a qualitative pre-study (see Jacob and Rettinger 2011), six factors were identified influencing participation in customer coproduction: distinctive preferences, age, situational factors, customer role clarity and ability to coproduce, customer willingness to coproduce, and perceived "importance" of a service. Furthermore, it was found that factors of customer coproduction may

implicate a particular level of participation either a remote encounter using self-service technologies, or a direct personal encounter (Jacob and Rettinger 2011).

2.2 Bowen's (1990) taxonomy of service(s)

In a study conducted by Bowen (1990) a high degree of variation was identified in respondents' perceptions of the amount of participation a customer typically has in the creation of a service. Bowen's taxonomy was based on a cluster analysis of customer perceptions concerning what has traditionally been described as services from different industries. The placement of the particular service within the groups of the taxonomy was entirely based on customer's perceptions, rather than according to the researcher's point of view (Bowen 1990). Seven characteristics were ultimately used to form the groups: service affecting people or things, employee/customer contact, importance of people, level of customization, continuous versus discrete transactions, ability of the customer to switch firms, and differentiation (Bowen 1990, p. 48).

Bowen distinguishes between three groups of service types: The first group is characterized by a high degree of customer contact with individually customized service solutions performed on people. Employees are perceived to be important. Customer input into the creation of the service is essential and highly required (e.g., restaurants, hotels, hospitals). A second group represents moderate customer contact, semi-customized services directed at an individual's property ("things"). The services are more or less non-personal. Customers are to be integrated in the creation of the service (e.g., photofinishing). A third group is characterized by moderate contact, highly standardized services directed at people (e.g., fast food restaurant, budget hotel). Bowen himself extends its implications to what has traditionally been described as services other than those included in the actual study, sharing the same characteristics to increase the usefulness of his study.

Bitner et al.'s (1997) conceptually based distinction concerning the amount of participation matches with the perceptions of customers according to Bowen (1990). Hence, the implications of Bowen's three empirically derived taxonomic groups can be extended by integrating them into the theoretical framework of Bitner et al.'s (1997) three levels of customer participation: A service representing Bowen's first group implies a high level of participation as described by Bitner et al. (1997). A service corresponding to Bowen's second group is apparently characterized by a moderate level of participation, and a service associated with group three suggests a low level of participation, respectively.

2.3 Literature review

Early work in the area of customer coproduction and customer participation in value-creation respectively was mainly focused on the perspective of the firm, elaborating on benefits to the firm such as productivity gains (e.g., Bowen 1986; Bowen and Jones 1986; Larsson and Bowen 1989; Lovelock and Young 1979; Mills et al. 1983; Mills and Moberg 1982). It is argued that it may be beneficial for firms to include customers particularly as customers may have resources (e.g., information, ability, and motivation) to perform even more effectively than employees (Risch Rodie and Schultz Kleine 2000, p. 115).

Another theme that emerges is a focus on customers as partial employees (cf. also Bendapudi and Leone 2003). It is elaborated upon the applicability and constraints of traditional employee management models (e.g., Kelley et al. 1990; Lengnick-Hall 1996; Mills and Moberg 1982). Issues such as motivating (Bateson 1985), and providing adequate training (Goodwin 1988) are dealt with.

In the past, research was mainly focused on coproduction in industrial markets characterized by a limited number of buyers and sellers as well as by deeply rooted structures of cooperation (e.g., Jacob 2006; Koufteros et al. 2005). Other research examined customer participation in what has traditionally been described as services industries where the customer by definition was regarded as part of the production process (e.g., Bitner et al. 1997; Fitzsimmons 1985; Lovelock and Young 1979; Mills and Moberg 1982). However, due to technological advance, increasingly opportunities for participating in the production of tangible goods have been created and scholars have begun to deal with participation in what has traditionally been described as consumer markets (cf. also Bendapudi and Leone 2003; Wikström 1996).

Moreover, the idea of cocreation of value becomes apparent (Normann 2001; Normann and Ramírez 1993; Prahalad and Ramaswamy 2004). The roles of "producers" and "consumers" merge. Customers are seen as cocreators of value. However, the changing role of the customer is increasingly regarded as merely a starting point for the development of an advanced marketing theory. Vargo and Lusch (2004) present a new dominant logic for marketing: the service-dominant logic of marketing that is continuously developed further by scholars (e.g., Grönroos 2008; Gummesson 2006; Payne et al. 2008; Vargo and Lusch 2008) as a collaborative work-in-progress.

In fact, despite an emerging body of research on customer coproduction, the majority of work is conceptually-based. Empirical research is scarce (for an exception see Chan et al. 2010). This is possibly due to the fact that service-dominant logic is still regarded as a work-in-progress, collaboratively developed pre-theory requiring much theory building (Payne et al. 2008; Risch Rodie and Schultz Kleine 2000, p. 122; Woodruff and Flint 2006).

Moreover, despite some research on participation of customers and the role of new technologies, there is little to suggest that we have a more general understanding of which modes of participation customers as cocreators of value would prefer by themselves.

3   Quantitative study

Based on a qualitative pre-study (see Jacob and Rettinger 2011) a quantitative study was conducted. In fact, an experimental design was chosen to carefully control and to test the effects of research. Rather than confining the study to one type of service and customer coproduction exclusively, several categories of service were selected. This is in line with argumentations put forward by scholars such as Cermak et al. (1994) that customer participation should be examined across a certain array of service types.

In chapter 2.2, Bowen's (1990) taxonomy for classifying what has traditionally been described as "services" has been introduced and developed further by integrating it into the theoretical framework of Bitner et al.'s (1997) levels of customer participation. His taxonomy is one of the few with an empirical basis permitting generalization to a broader range of service types. Furthermore, it uses data directly deriving from customer perceptions and considers respondents' perceptions of the amount of participation a customer typically has in customer coproduction of a particular service. As such, following Gwinner et al. (1998) as well as Danaher et al. (2008), an experimental design using Bowen's three-group classification typology was developed.

The specific types of participation chosen from Bowen's study, representing his taxonomy, were decided upon on basis of the findings of the qualitative pre-study (see Jacob and Rettinger 2011). Moreover, as almost all survey respondents should be able to rate their perceptions, all chosen types of service were intended to be commonplace. Following these criteria, different types of service were chosen: financial consulting, photofinishing, and ticketing for a spectator sports event. These

types of service were frequently raised by the interviewees themselves and/or chosen to be discussed out of a given range. Furthermore, the service types were also selected because customer familiarity with, and usage of these types of service is almost universal. It was anticipated that the great majority of customers had, by the time of the study, been exposed to choice between self-service and full-service in these settings or very similar ones (e.g., ticketing for an entertainment event).

The findings of the qualitative pre-study reveal that customer perceptions and preferences do not vary considerably between several forms of self-service technologies. Respondents mainly focused on discussing a direct personal encounter as opposed to using a self-service technology. As a consequence, the quantitative strand of the study concentrates on examining a remote encounter (i.e. using self-service technologies) compared with a direct personal encounter. The particular self-service technologies chosen were decided upon on basis of the depth interviews. In case of each scenario, a self-service technology was selected that was frequently raised by the interviewees themselves. In case of financial consulting, and ticketing for a spectator sports event, the Internet was chosen, whereas in case of photofinishing a self-service kiosk was considered to be most suitable (see Jacob and Rettinger 2011).

The two basic assumptions that are underlying the quantitative study are that the customer has a free choice among levels of customer coproduction that is the firm offers a choice concerning levels of participation and there is no force from its side, such as fees to make some options less attractive. This is in line with literature that has identified that customers seem to want some choice between levels of participation and may resent a forced choice, or no choice at all (Bitner et al. 2002, p. 105; Reinders et al. 2008).

Given these assumptions, the following research questions motivate the quantitative study:
• Which factors influence participation in customer coproduction in situations in which customers as cocreators of value have a choice?
• What determines a preference for a direct personal encounter or a remote encounter in terms of customer coproduction?

Age and situational factors as factors influencing participation in customer coproduction are not particularly analyzed in the quantitative strand of the study. Situational factors are held constant as circumstances of choice were regarded as too complex to account for. Age is not part of the analysis as the relevance of demographic variables is questioned (see for instance Meuter et al. 2003).

3.1 Conceptual model and hypotheses

Perceived risk of service

As indicated, the qualitative pre-study (see Jacob and Rettinger 2011) provided some evidence that perceived "importance" of a service influences participation in customer coproduction. In fact, a detailed analysis of the qualitative data revealed that "importance" was typically associated with perceived risk of a service. Hence, perceived "importance" of a service is referred to as perceived risk of a service. In line with this, research indicates that perceived risk is important for customers in the context of choice between alternative ways of participation in customer coproduction (Langeard et al. 1981, p. 38).

According to Murray and Schlacter (1990) the construct can be defined as follows (p. 53):
> Perceived risk is a multi-dimensional construct (…) which implies that consumers experience pre-purchase uncertainty as to type and degree of expected loss resulting from

the purchase and use of a product (…). Types of risk include financial, performance, physical, psychological, social and convenience loss (…).

Analogous to Laroche et al. (2004, p. 376), perceived risk is seen as a subjective expectation of loss.
- Social risk is defined as the potential loss of esteem, respect, and/or friendship offered to the customer by other individuals.
- Time risk is viewed as the potential loss of time and effort associated with the service.
- Psychological risk is the potential loss of self-image or self-concept as the result of the service.
- Financial risk is the potential loss of money associated with the service.
- Performance risk is the potential loss due to service failure.

With reference to the findings of the qualitative pre-study, it was analyzed that in particular financial risk and psychological risk seem to be relevant for financial consulting as well as photofinishing, and ticketing for a spectator sports event. Consequently, these two forms were considered for the quantitative study.

As research indicates, customers choosing to participate highly such as using self-service technologies may intend to manage perceived risk of a service by increasing the degree of perceived control (see Bateson 1985, Dabholkar 1996, Etgar 2008). By contrast, customers rejecting the use of a participative option may be prevented from managing risk in the same way as they tend to refuse the amount of effort required of them (Langeard et al. 1981, p. 38).

For a complex and high-perceived-risk service such as mortgages or financial consulting, research suggests that people may tend to rely on personal contact. However, self-service technologies are said to be used for routine transactions implicating a low level of perceived risk (Frambach et al. 2007; Prendergast and Marr 1994).

Hence, a significant negative relationship between "Perceived risk of a service" and "Customer coproduction" is expected. Accordingly, a significant negative relationship between "Perceived risk of service" and "Distinctive preference for SST" is expected.

Distinctive preference for SST

In the qualitative pre-study, it was found that customer perceptions and preferences do not vary considerably between several forms of self-service technologies such as Internet, self-service kiosks, automated machines, and automated phone systems. Moreover, respondents mainly discussed direct personal encounters as opposed to using self-service technologies. Furthermore, two different types of distinctive preferences for a particular level of customer coproduction could be identified regardless of situation: A distinctive preference for a direct personal encounter and a distinctive preference for a remote encounter (see Jacob and Rettinger 2011). As indicated, scholars such as Lee (2002), Prendergast and Marr (1994), Langeard et al. (1981), Rayport and Jaworski (2004), and Bateson (1985b) also identified strong preferences among respondents for either a direct personal encounter or a remote encounter.

Hence, it is expected that a distinctive preference for either a direct personal encounter or a remote encounter, represented by using self-service technologies, influences participation in customer coproduction. In fact, as literature suggests that a preference for using a self-service technology implicates a high level of customer coproduction (see Lovelock and Wirtz 2007, p. 246, Silpakit and Fisk 1985, p. 118), a significant positive relationship between "Distinctive preference for SST" and "Customer coproduction" is expected.

Customer coproduction

As the qualitative pre- study demonstrates, customer participation in coproduction is influenced by customer ability, customer role clarity, and customer willingness to produce, in particular efficiency and perceived control. A direct personal encounter and using self-service technologies (i.e. a remote encounter) are seen as opposite poles in terms of levels of customer coproduction. The respondents differed regarding their perceptions in terms of the amount of input or contribution required. Whereas one group of respondents regarded using self-service technologies as requiring the highest amount of input compared to a direct personal encounter, another group of respondents shared an opposing view, regarding a direct personal encounter as requiring the highest amount of own contribution (see Jacob and Rettinger 2011). It becomes apparent that customer coproduction is closely linked with the intention to use self-service technologies or preferring a direct personal encounter instead. As indicated, respondents may struggle in terms of their perceptions of the meaning of participation. Hence, in line with literature, a significant positive relationship between "Customer coproduction" and "Intention to use SST" is expected.

Intention to use SST

Fishbein and Ajzen (1975, pp. 335-383) argue that the best predictor of a person's behaviour is his or her intention to perform the behaviour. Intentions are viewed as the immediate antecedents of corresponding overt behaviours (Fishbein and Ajzen 1975, pp. 335-383).

It is often hardly possible or simply impractical to measure a person's intention immediately prior to his or her performance of the behaviour. Consequently, the measure of intention obtained may not be representative of the person's intention at the time of the behavioural observation. Intervening events may lead to changes in intentions. Notwithstanding, an appropriate measure of intention usually allows, by tendency, an accurate prediction of behaviour (Fishbein and Ajzen 1975, pp. 335-383). In fact, in one exploratory study examining choice between alternative ways of obtaining the same service Langeard et al. (1981, p. 35) found the overlap between actual and intended behaviour to be very high.

All in all, the following hypotheses can be derived (see Figure 1):
H1: The higher the perceived risk of a service, the less is the distinctive preference for SST.
H2: The higher the perceived risk of a service, the less is the level of customer coproduction.
H3: The higher the distinctive preference for SST, the higher the level of customer coproduction.
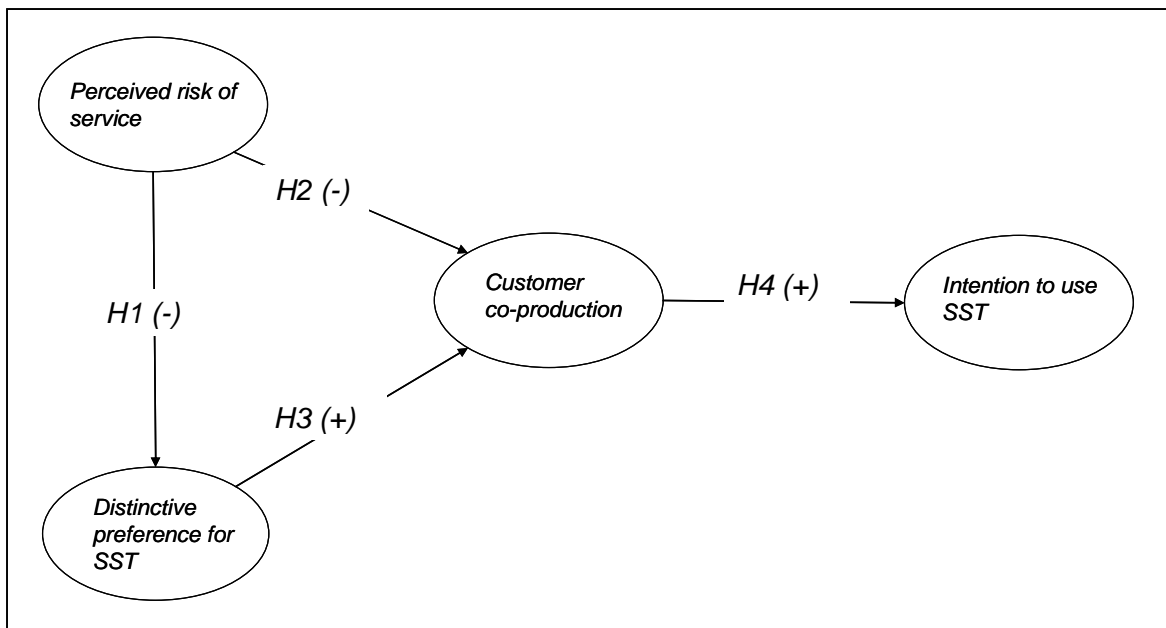H4: The higher the level of customer coproduction, the higher the intention to use SST.

Figure 1: Conceptual model and hypotheses
(Source: Own representation)

3.2 Survey instrument

A scenario and questionnaire approach was used in which respondents read a scenario and answer questions that follow. The original questionnaire was prepared in English and then translated into German using standard back translation (Brislin 1980, p. 431; Harkness 2003, p. 41) for distribution in Germany. It was decided to use a scenario approach over a field study for several reasons. Given the different levels of customer coproduction being tested, the questionnaire was thought to be too long to be administered in a field study to customers. Responses in real-world settings would not be as thoughtful; less hurried people would be likely to self-select themselves into the sample, creating a non-respondent bias (Dabholkar 1994, 1996). Moreover, as the focus of the study was on the intrinsic attractiveness of modes of participation, the scenario created for each type of service allowed to hold constant factors such as monetary or situational factors .

Research demonstrates the validity of scenarios and the similarity of results between laboratory research and role-playing studies (e.g., Bem 1967). The scenario method is advocated by many researchers and has widely been applied in customer behaviour (e.g., Bateson 1985; Dabholkar 1994,1996). The scenario method has been found to be particularly successful as a research tool when subjects are required to play themselves rather than projecting themselves in unfamiliar roles (Dabholkar 1994, 1996). In this study, respondents "played" themselves instead of imagining themselves in unfamiliar roles.

As the value of a scenario approach depends heavily on the subject's ability to project himself or herself into a particular situation, much time and effort was spent to develop realistic scenarios. Three scenarios were developed following Bateson (1985), Dabholkar (1994, 1996), and Langeard et al. (1981). Monetary and situational variables that might influence a customer's choice between alternative ways of customer coproduction were tightly controlled. The scenarios represented situations in the context of financial consulting, photofinishing, and ticketing for a spectator sports event; in each instance, a choice between alternatives representing different levels of customer coproduction was presented. The three scenarios presented rotated at random in order to account for effects of order or halo effects (Nisbett and Wilson 1977).

Respondents were instructed to read the situation carefully. They were informed of the importance to imagine themselves in the situation described and then to answer the following questions. They were assured that there are no right or wrong answers and that they should answer questions as honestly as possible. These procedures were intended to reduce informants' evaluation apprehension and make them less likely to edit their responses to be more socially desirable or consistent with how they think they were expected to respond (Dabholkar 1994; Podsakoff et al. 2003).

Pretest I

The realism of each scenario was tested by asking eight subjects to read a particular version and then to rate the realism using two five-point Likert scales. The items used were "the situation described was realistic" and "I had no difficulty imagining myself in this situation" adapted from Dabholkar (1994, 1996). Moreover, the informants were offered the opportunity to comment by providing blank fields to potentially fill in. Furthermore, three respondents were asked to "think aloud" while reading the scenarios in order to ensure that reactions, hesitations, and other cues could be identified (Hunt et al. 1982).

The pretest did not give rise to any major changes. Realism checks showed that scenario II (photofinishing) and III (ticketing for a spectator sports event) were judged as highly realistic and very easy to imagine oneself in (rating each around five on a scale of one to five each). Scenario I (financial consulting) was judged as realistic and easy to imagine oneself in (rating around four on a scale of one to five each).

The difference in rating concerning scenarios II / III, and scenario I was probably less due to the scenario itself but due to the fact that in particular younger people often seem to be less experienced with financial consulting than with photofinishing or ticket for a spectator sports event. Notwithstanding, whereas scenario II and III remained unchanged, slight modifications were made to scenario I to improve clarity.

Pretest II

Before collecting data for the study, a second pretest was conducted to ensure the integrity of the data collection instrument. Possible alternative explanations of the observed effects were intended to be eliminated in order to allow for causal inferences to be made ("internal validity") (Fishbein and Ajzen 1975, p. 115). A small pilot study among twelve informants that did not take part in the actual study was carried out. The sample size is in line with literature that indicates that a sample size of twelve can be seen as satisfactory in pretests, depending on the instrument and the target population (Hunt et al. 1982). The questionnaire was pretested through an online survey tool. This is in line with scholars who recommend that subsequent pretests should be conducted using the same method as to be used in the ultimate research (Hunt et al. 1982).

Respondents were asked to comment on any item that they found ambiguous or difficult to understand by providing blank fields to potentially fill in. It was found that the meaning of the questions intended was equivalent to the meaning that the informants attributed to the questions (Hunt et al. 1982). On the basis of the problems identified by the respondents minor adjustments were made to the questionnaire. However, the process did not give rise to any major changes. The results provide support for the strength of the manipulations embedded in the three scenarios.

3.3   Measurement

The measures for each construct were adapted from existing research, with the wording of each item slightly changed to apply to the specific context of the study. The selection of the items was based on the ability to apply them to the context of the study with as little alteration as possible. With the exception of "Intention to use SST" [IT] each of the scale items were measured on a seven point Likert scale with 1 equalling strongly disagree and 7 strongly agree. The different format of scale items was designed to encourage a psychological break in the survey in order for respondents to think more cognitively rather than processing scale items in an automatic manner (Collier and Sherrell 2010). The scale items for each construct rotated at random in order to account for effects of order or halo effects (Nisbett and Wilson 1977).

3.3.1 Exogenous variable

Perceived risk of service

"Perceived risk of service" [RISK] was operationalized as a multidimensional higher order construct. Two different types of risk were measured in the investigation: financial [FIN-RISK] and psychological [PSY-RISK] risk. The Perceived Risk Scale developed by Laroche et al. (2004) was used. This scale demonstrated good reliability and validity (convergent and discriminant) and was built on prior work (Stem Jr et al. 1977; Stone and Gronhaug 1993). It has particularly shown to be valid in research concerning online versus offline environments (Laroche et al. 2004; Pavlou 2003). Two items were used to measure financial risk whereas three items were used to measure psychological risk. All scales ranged from 1 equalling strongly disagree to 7 equalling strongly agree. The items were reworded slightly to fit the specific study context. In particular, the items were worded accordingly to the service investigated.

3.3.2 Endogenous variables

Distinctive preference for SST

Due to the two different types of distinctive preferences for a particular level of customer coproduction identified (see chapter 3.1), "Distinctive preference for SST" [PREF] was operationalized as a multidimensional higher order construct. Two types of preference were measured in the investigation: need for interaction [PREF-P] and perceived relative advantage of SST [PREF-T]. Six items adapted from Meuter et al. (2005) were used.

Three items were used to measure need for interaction whereas three items were used to measure relative advantage. All scales ranged from 1 equalling strongly disagree to 7 equalling strongly agree. The items were reworded slightly to fit the specific study context. In particular, the items were worded accordingly to the service investigated. In order to make all scales comparable for statistical analysis the three items measuring need for interaction were subsequently recoded.

Customer coproduction

The development of a reliable and valid scale concerning coproduction or customer participation has been a complicated issue. Some studies have measured coproduction or customer participation using a single item measurement approach (e.g., Cermak et al. 1994) which might be questioned from the point of view of measure reliability.

"Customer coproduction" [CP] was operationalized as a multidimensional higher order construct. Three aspects of customer coproduction were measured in the investigation: role clarity [CP-RC], ability [CP-AB], and willingness to coproduce [CP-W]. Seventeen items adapted from Meuter et al. (2005) were used. Three items were used to measure role clarity, four items were used to measure ability, and nine items were used to measure willingness to coproduce. All scales ranged from 1 equalling strongly disagree to 7 equalling strongly agree. The items were reworded slightly to fit the specific study context. In particular, the items were worded accordingly to the service investigated. In order to make all scales comparable for statistical analysis one item [CP-AB3] was subsequently recoded.

Intention to use SST

Following Dabholkar (1996) as well as Falk et al. (2007), behavioural intention to use SST was measured adapting the two-item operationalization proposed by Fishbein and Ajzen (1975, pp. 335-383). Hence, "Intention to use SST" [IT] was measured for each setting using a seven-point semantic differential with endpoints unlikely/likely [IT1] and a five point semantic differential with endpoints impossible/possible [IT2]. Intention to strive for a direct personal encounter was also measured for each setting using a seven-point semantic differential with endpoints unlikely/likely [IT3] and a five point semantic differential with endpoints impossible/possible [IT4].

2x2 scales were used for each setting in order to avoid using a single item measurement approach that might have harmed measurement reliability. Furthermore, the different format of scales was intended as psychological breaks forcing respondents to think more cognitively (Collier and Sherrell 2010). In order to make all scales comparable for statistical analysis, two items were subsequently recoded ([IT3] and [IT4]). Furthermore, all scales were standardized.

In order to reduce the number of variables factor analysis was performed using SPSS 17. Bartlett's test of sphericity demonstrates that variables are correlated in the base population (approximate Chi-square= 4168.119; df=66; p-value=0.000). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy indicates that correlations between pairs of variables can be explained by other variables (KMO=0.615). Both tests underline that factor analysis is appropriate. 69% of total variance can be explained. The proportion of variance explained by the common factors is sufficient; the communalities exceed 0.6. As a consequence, new variables for each factor were created. The factor scores were derived using regression. For each scenario, one factor "Intention to use SST" [IT_] was calculated as an indicator for measuring the latent variable "Intention to use SST" [IT].

3.4 Data collection procedure

In order to test the model hypotheses, an online survey was conducted. The validity of Internet-based surveys and the similarity of results between Internet-based surveys and traditional paper and pencil surveys has been well documented (e.g., Buchanan and Smith 1999; Davis and Cowles 1989).

The study requires that respondents have access to the Internet and at least some experiences with self-service technologies. Otherwise, there would be no choice in terms of customer coproduction as the customers' lack of possession of operand and/or operant resources would determine choice. As scholars stress (e.g., Meuter et al. 2005) and findings of the qualitative pre-study demonstrate (see Jacob and Rettinger 2011), access to the Internet, usage and experience with self-service

technologies is not yet a common phenomenon. Hence, a simple random sample of the population would likely result in a sample with limited access to the Internet or little experiences with self-service technologies. Moreover, a nationwide sample of respondents was preferred to avoid any geographic bias. As a consequence, a specific nationwide audience was targeted for data collection. The population consisted of a database of respondents from a European marketing research firm that specialized in Internet market research.

A major problem of online market research is the lack of sample quality due to a self-selection of participants (Hollaus 2007, pp. 49-52). The marketing research firm accounts for this problem by actively recruiting using computer-assisted telephone interviewing (CATI) with ongoing re-recruitment. The panel itself is actively managed to be representative for Internet users, in Germany, at the age of 14-69 years. The database comprises about 21,000 active participants in Germany (as per January 2010) who signed up and agreed to complete online surveys in exchange for incentives. A systematic sample bias is avoided as nobody can enrol himself/herself in the panel (no self-selection). There is no „multi-source" sampling as there is no purchase of e-mail addresses or sampling from telephone directories. No participants are invited to take part by friends or acquaintances, and no participants are recruited via websites (http://www.link-institut.de).

It is very likely that the participants of the database are substantially more experienced with self-service technologies than the general population. Notwithstanding, although the database may not be representative of the general German population, it may be seen as representative for Internet users, in Germany. As it is necessary that respondents have access to the Internet and at least some experiences with self-service technologies, it addresses the needs of the study. Hence, the base population of the study can be described as the participants of a database that is actively managed to be representative for Internet users, in Germany. Results of the study may be generalizable to Internet users in Germany.

A random sample of 1,000 was drawn from the database. This sampling approach enabled to collect data from a nationwide sample of customers in a timely and cost-effective manner. As data was gained from different groups of respondents and locations data triangulation was applied (cf. Denzin 1978). The survey was placed on a Web site, and e-mail messages were sent to those randomly selected from the database notifying them of a new survey and requesting their participation. Two follow-up mails were sent to remind those randomly selected of participation. This is in line with research that indicates that follow-up reminders may approximately double the response rate of an electronic survey (Cook et al. 2000). In about two weeks, 522 responses were collected electronically implicating a return rate of 52%. The survey was then removed from the Web site.

In terms of Internet-based surveys two concerns are of major relevance: (1) respondents may fill out a survey multiple times, and (2) people who are not part of the population of interest may enter the Web site and complete the survey (i.e. "random walk-ins") (Hollaus 2007, pp. 88-89; Meuter et al. 2005). The marketing research firm accounts for these problems. Each database member possesses a unique password that is needed to be able to enter and complete a survey. A password protection system prevents users from completing the survey multiple times and eliminates random walk-ins. Personal data is merely known to the marketing research firm; participants of the database can only be identified by a specific respondent number (http://www.link-institut.de). Hence, anonymity of respondents is ensured.

3.5 PLS path modelling

Data analysis was performed by applying structural equation modelling. The PLS method was considered the best analytical method for this study given the nature of the theory, data, and the measures. PLS path modelling is recommended for studies where the phenomenon under study is new and the theoretical framework is not sufficiently grounded, yet (Chin and Newsted 1999, pp. 312-313) which is certainly the case in this study with a focus on S-D logic. The weights that are calculated for a construct merely consider those constructs it is structurally connected with. Hence, misspecified paths or poorly developed constructs cannot bias other estimates throughout the proposed model (Chin 2010, p. 660). PLS path modelling is particularly suitable for theory building. It is commonly used in exploratory stages of building theory in order to test and validate models, whereas covariance-based structural equation modelling is particularly suitable where prior theory is strong, and testing and refinement is the goal using global goodness of model fit criteria (Henseler et al. 2009, pp. 278-282, 296). Moreover, covariance-based structural equation modelling requires a multivariate normality distribution, whereas PLS path modelling does not require normally distributed data (Henseler et al. 2009, pp. 295-296). As elaborated upon in chapter 3.8 the data demonstrates absence of normal distribution. Furthermore, the PLS approach is able to deal with formative as well as reflective indicators, even within one structural equation model (Götz et al. 2010, p. 691). The path model of this study actually includes a formative second-order construct.

In addition, scholars state that PLS path modelling might outperform covariance-based SEM for modelling higher-order constructs as the latter involve various constraints. However, in PLS, latent variable scores are determinate and directly estimated. Hence, latent variable scores for lower-order latent variables can be directly obtained, and can be used as manifest variables for the higher-order latent variables (Wetzels et al. 2009). In fact, the structural model of the empirical study includes three second-order construct models: Following Laroche et al. (2004), "Perceived risk of service" [RISK] was operationalized as a type II second-order construct (reflective first-order, formative second-order) (cf. Jarvis et al. 2003). "Customer coproduction" [CP] and "Distinctive preference for SST" [PREF] both were operationalized as type I second-order constructs (reflective first-order, reflective second-order) (cf. Jarvis et al. 2003) as their factors were seen as having a similar content, respectively; expecting the respective indicators to covary with each other highly (see also Haenlein and Kaplan 2004).

3.6 Profile of respondents

A total of 386 respondents completed the online questionnaire implicating a completion rate of 39%. The rate can be regarded as fine; for instance, Cook et al. (2000) mention a mean response rates of published studies of 34.6%. Studies with smaller response rates may possibly face difficulties to get published although representativeness of samples is considered to be more important than response rates (Cook et al. 2000). Moreover, the sample size exceeds minimal recommendations for using structural equation modelling with PLS (see Chin and Newsted 1999, p. 314) and also takes into account that scholars insistently recommend basing sample size decisions on statistical significance criteria rather than on the algorithmic power of the PLS approach (Henseler et al. 2009, pp. 291-293).

Although the sample was randomly drawn from a database actively managed to be representative for Internet users in Germany at the age of 14-69 years, the sample itself can be characterized as being slightly older than the base population. Particularly, respondents between 30 years and 39 years of age seem to be underrepresented. Moreover, female persons in general are slightly overrepresented. In terms of education, average monthly income, and Internet usage the sample

seems to be adequate compared with the base population. Overall, although the sample may suffer from some weaknesses in terms of representativeness it may still meet the needs of the study.

3.7   Characteristics of the sample

The respondents demonstrate high familiarity with the three different types of service presented as situations in the scenarios. 58% of the respondents indicated to have experiences with financial consulting, 69% affirmed experiences with digital photofinishing, and 92% have already bought a ticket for an event. Hence, it is ensured that the majority of respondents were likely able to project himself or herself into the particular situation as described in the scenarios.

Moreover, a huge difference in terms of choice between a direct personal encounter and using a self-service technology, as described in the three scenarios can be identified. Whereas in case of financial consulting, when directly asked to make a decision, the vast majority of respondents (85%) preferred a direct personal encounter to using a self-service technology, the majority of respondents in terms of photofinishing (54%) and ticketing (64%) chose the prevailing self-service option.

Cochran's Q chi-square test (Cochran 1950) was performed using SPSS 17 in order to analyze the differences in more detail. For a significance level of $\alpha = 0.05$, a p-value of less than 0.001 by Cochran's Q test indicates extremely significant heterogeneity (n=359, Cochran's Q =254.598, 2 df). The null hypotheses can be rejected. Hence, the difference in terms of choice between a direct personal encounter and using a self-service technology can be seen as unlikely to have occurred by chance. This result provides support for confining the study to the three types of service chosen representing Bowen's (1990) taxonomy.

3.8   Evaluation of PLS results

Although the partial least squares approach requires input data simply to be numeric (Tenenhaus et al. 2005), all data defining the constructs was tested for normal distribution using SPSS 17. In fact, a Kolmogorow-Smirnow-Lilliefors test and a Shapiro-Wilk test were performed. Data demonstrates absence of normal distribution. With the exception of "Intention to use SST" [IT] data was not standardised as the first step in the partial least squares algorithm is standardization (Tenenhaus et al. 2005).

PLS path modelling was assisted by using the software SmartPLS 2.0 (Ringle et al. 2005) to estimate the parameters in the outer and inner model. The PLS algorithm was applied using a standardised data metric, a path weighting scheme for the inside approximation, and a missing value algorithm applying case wise replacement.

3.8.1 Outer model assessment

Whereas reflective measurement models have to be assessed with regard to both their reliability and validity, formative measurement models primarily have to be assessed in terms of validity (Henseler et al. 2009, pp. 298-303).

3.8.1.1 Reliability and validity of reflectively measured constructs

The most prominent criterion for assessing internal consistency reliability is Cronbach's α (Cronbach 1951). However, as scholars stress Cronbach's α tends to underestimate the internal consistency reliability of latent variables in PLS path models. Hence, the composite reliability (Dillon-Goldstein's Rho) is frequently recommended in addition. It is considered to be a better indicator of the unidimensionality of a block of reflective indicators, taking into account that indicators might have different loadings (Henseler et al. 2009, pp. 298-299; Tenenhaus et al. 2005).

The research can be described as being in an early stage. Hence, both reliability coefficients are expected to exceed 0.7 (Nunnally and Bernstein 1994, pp. 264-265). As shown in Table 1, Table 2, and Table 3, for all three scenarios, composite reliability for all latent variables even exceeds 0.8. With the exception of FIN-RISK in case of scenario I, Cronbach's α also exceeds 0.7. Hence, internal consistency reliability is fulfilled.

Moreover, the reliability of each indicator should be assessed. A latent variable should explain a substantial part of each indicator's variance (at least 50%). Consequently, the absolute standardized factor loadings representing the absolute correlations between a construct and each of its manifest variables should be higher than 0.7 ($\approx \sqrt{0.5}$) (Henseler et al. 2009, p. 299). Reflective indicators with outer standardized loadings smaller than 0.4 might be eliminated from measurement models. However, as scholars stress, eliminating indicators should be considered carefully given PLS's characteristic of "consistency at large" (Henseler et al. 2009, p. 299).

Non-parametric bootstrapping was used as implemented in SmartPLS. As higher numbers of resamples may lead to more reasonable standard error estimates, 1,000 replications were used. The standard procedure without compensating for any sign change was applied as it is typically regarded as the most conservative approach (Tenenhaus et al. 2005).

In case of all three scenarios, all factor loadings are extremely significant at a significance level of α=0.05. In case of scenario I, after careful examination, the indicator CP_W31 was eliminated from the measurement model. Although the standardized loadings of this indicator did exceed 0.4 there was a substantial increase in relevant criteria. For scenario II, after careful examination, the indicator CP_AB32U was removed from the outer model. The standardized loadings of this indicator did exceed 0.4. However, there was a substantial increase in relevant criteria. In case of scenario III, after careful examination, the indicators CP_W53, CP_W63, CP_W73, and CP_W83 were eliminated from the measurement model. Although the standardized loadings of these indicators did exceed 0.4 there was a substantial increase in relevant criteria.

For the assessment of validity, two complementary validity subtypes are typically of relevance: the convergent validity and the discriminant validity (Henseler et al. 2009, p. 299).

Convergent validity

"Convergent validity is the degree to which two or more attempts to measure the same concept through maximally dissimilar methods are in agreement." (Bagozzi and Phillips 1982, p. 468) Hence, convergent validity signifies that a set of indicators represents one and the same underlying construct. The average variance extracted (AVE) serves as a criterion of convergent validity. An AVE value of at least 0.5 is recommended as it indicates that more than half of the variance of a latent variable's indicators is explained (Henseler et al. 2009, p. 299).

As the AVE of second order latent constructs are underestimated by SmartPLS it was computed by hand in case of the two type I second order latent constructs "Customer coproduction" [CP] and "Distinctive preference for SST" [PREF]. As shown in Table 1, Table 2, and Table 3 the average variance extracted exceeds 0.5 in case of all latent variables and all three scenarios. Consequently, convergent validity is fulfilled.

Table 1: Scenario I: Evaluation of reflective measurement models

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Redundancy
CP	0.650 >0.5	0.905 >0.8	0.889 >0.7	0.394	0.176
CP-AB	0.633 >0.5	0.873 >0.8	0.805 >0.7	0.633	0.440
CP-RC	0.754 >0.5	0.902 >0.8	0.838 >0.7	0.754	0.475
CP-W	0.573 >0.5	0.915 >0.8	0.894 >0.7	0.573	0.332
FIN-RISK	0.691 >0.5	0.817 >0.8	0.562 -	0.691	0.000
IT	1.000 >0.5	1.000 >0.8	1.000 >0.7	1.000	0.244
PREF	0.805 >0.5	0.894 >0.8	0.858 >0.7	0.585	0.001
PREF-P	0.690 >0.5	0.869 >0.8	0.774 >0.7	0.690	0.529
PREF-T	0.763 >0.5	0.906 >0.8	0.845 >0.7	0.763	0.641
PSY-RISK	0.799 >0.5	0.922 >0.8	0.874 >0.7	0.799	0.000
RISK	0.562 >0.5	0.860 >0.8	0.792 >0.7	0.562	0.189

(Source: Own representation)

Table 2: Scenario II: Evaluation of reflective measurement models

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Redundancy
CP	0.687 >0.5	0.925 >0.8	0.914 >0.7	0.453	0.195
CP-AB	0.765 >0.5	0.907 >0.8	0.846 >0.7	0.765	0.543
CP-RC	0.813 >0.5	0.929 >0.8	0.885 >0.7	0.813	0.517
CP-W	0.574 >0.5	0.924 >0.8	0.907 >0.7	0.574	0.396
FIN-RISK	0.786 >0.5	0.880 >0.8	0.728 >0.7	0.786	0.000
IT	1.000 >0.5	1.000 >0.8	1.000 >0.7	1.000	0.335
PREF	0.748 >0.5	0.889 >0.8	0.847 >0.7	0.575	0.021
PREF-P	0.829 >0.5	0.936 >0.8	0.897 >0.7	0.829	0.661
PREF-T	0.703 >0.5	0.876 >0.8	0.789 >0.7	0.703	0.486
PSY-RISK	0.743 >0.5	0.897 >0.8	0.827 >0.7	0.743	0.000
RISK	0.641 >0.5	0.899 >0.8	0.858 >0.7	0.641	0.361

(Source: Own representation)

Table 3: Scenario III: Evaluation of reflective measurement models

	AVE	Composite Reliability	Cronbachs Alpha	Communality	Redundancy
CP	0.788 >0.5	0.906 >0.8	0.883 >0.7	0.462	0.143
CP-AB	0.631 >0.5	0.872 >0.8	0.804 >0.7	0.631	0.532
CP-RC	0.695 >0.5	0.872 >0.8	0.781 >0.7	0.695	0.561
CP-W	0.502 >0.5	0.826 >0.8	0.756 >0.7	0.502	0.335
FIN-RISK	0.826 >0.5	0.905 >0.8	0.789 >0.7	0.826	0.000
IT	1.000 >0.5	1.000 >0.8	1.000 >0.7	1.000	0.192
PREF	0.802 >0.5	0.896 >0.8	0.861 >0.7	0.591	0.070
PREF-P	0.772 >0.5	0.910 >0.8	0.852 >0.7	0.772	0.624
PREF-T	0.703 >0.5	0.877 >0.8	0.788 >0.7	0.703	0.556
PSY-RISK	0.756 >0.5	0.903 >0.8	0.839 >0.7	0.756	0.000
RISK	0.620 >0.5	0.891 >0.8	0.846 >0.7	0.620	0.333

(Source: Own representation)

Discriminant validity

Bagozzi and Phillips (1982) state: "Discriminant validity is the degree to which measures of distinct concepts differ." (p. 469) Two criteria should be met (Henseler et al. 2009, p. 299):

First, on the indicator level, the loading of an indicator on its assigned latent variable is expected to be higher than its loadings on all other latent variables (Henseler et al. 2009, p. 300). In fact, the indicators correlate higher with their latent variable than with other latent variables. Hence, the criterion is met in case of all latent variables and all three scenarios.

Second, the Fornell-Larcker criterion implies that a latent variable should explain better the variance of its own indicators than the variance of other latent variables. Hence, the average variance extracted of a latent variable should exceed the squared correlations between the latent variable and all other latent variables (Henseler et al. 2009, pp. 299-300).

As shown in Table 4, Table 5, and Table 6, the correlation between "Role clarity" [CP-RC] and "Ability" [CP-AB] is higher than the average variances extracted of "Role clarity" [CP-RC] and "Ability" [CP-AB] themselves. It might not be astonishing as role clarity and ability are closely linked. Role clarity affects knowledge and consequently influences ability to coproduce (Larsson and Bowen 1989). The correlation indicates that one could have aggregated both latent variables. However, based on the theoretical framework regarding "Role clarity" [CP-RC] and "Ability" [CP-AB] as components of the second-order latent variable "Customer coproduction" [CP] and using the repeated indicator approach, it was decided to keep both latent variables separately. Apart from this, taking into account the hierarchical construct models, the Fornell-Larcker criterion is met in case of all latent variables and all three scenarios.

All in all, discriminant validity is fulfilled in case of all latent variables and all three scenarios.

Table 4: Scenario I: Discriminant validity

	CP	CP-AB	CP-RC	CP-W	FIN-RISK	IT	PREF	PREF-P	PREF-T	PSY-RISK	RISK
CP	**0.806**										
CP-AB	0.841	**0.795**									
CP-RC	0.803	0.850	**0.868**								
CP-W	0.773	0.346	0.293	**0.757**							
FIN-RISK	-0.066	-0.142	-0.128	0.055	**0.831**						
IT	0.494	0.397	0.305	0.442	0.084	**1.000**					
PREF	0.665	0.495	0.411	0.621	-0.017	0.724	**0.897**				
PREF-P	0.490	0.414	0.335	0.403	-0.034	0.676	0.877	**0.830**			
PREF-T	0.685	0.469	0.396	0.686	0.000	0.631	0.917	0.612	**0.874**		
PSY-RISK	-0.121	-0.305	-0.281	0.156	0.427	0.129	0.059	-0.009	0.107	**0.894**	
RISK	-0.121	-0.296	-0.272	0.145	0.675	0.133	0.042	-0.018	0.087	0.955	**0.750**

(Source: Own representation)

Table 5: Scenario II: Discriminant validity

	CP	CP-AB	CP-RC	CP-W	FIN-RISK	IT	PREF	PREF-P	PREF-T	PSY-RISK	RISK
CP	**0.829**										
CP-AB	0.844	**0.875**									
CP-RC	0.801	0.878	**0.902**								
CP-W	0.841	0.452	0.378	**0.758**							
FIN-RISK	-0.194	-0.305	-0.321	0.003	**0.886**						
IT	0.579	0.440	0.406	0.536	-0.098	**1.000**					
PREF	0.653	0.480	0.435	0.626	-0.203	0.727	**0.865**				
PREF-P	0.515	0.483	0.443	0.384	-0.350	0.665	0.893	**0.911**			
PREF-T	0.627	0.335	0.295	0.735	0.036	0.588	0.837	0.500	**0.839**		
PSY-RISK	-0.258	-0.430	-0.432	0.017	0.675	-0.124	-0.153	-0.309	0.082	**0.862**	
RISK	-0.255	-0.416	-0.424	0.012	0.873	-0.124	-0.189	-0.354	0.069	0.949	**0.800**

(Source: Own representation)

Table 6: Scenario III: Discriminant validity

	CP	CP-AB	CP-RC	CP-W	FIN-RISK	IT	PREF	PREF-P	PREF-T	PSY-RISK	RISK
CP	**0.888**										
CP-AB	0.920	**0.794**									
CP-RC	0.903	0.814	**0.834**								
CP-W	0.838	0.615	0.614	**0.709**							
FIN-RISK	-0.348	-0.365	-0.326	-0.230	**0.909**						
IT	0.438	0.368	0.308	0.474	-0.287	**1.000**					
PREF	0.570	0.481	0.449	0.576	-0.336	0.746	**0.895**				
PREF-P	0.431	0.394	0.342	0.397	-0.343	0.694	0.901	**0.878**			
PREF-T	0.592	0.467	0.464	0.638	-0.255	0.642	0.890	0.604	**0.839**		
PSY-RISK	-0.451	-0.501	-0.489	-0.209	0.568	-0.177	-0.288	-0.287	-0.226	**0.870**	
RISK	-0.462	-0.503	-0.477	-0.245	0.829	-0.247	-0.345	-0.347	-0.267	0.931	**0.787**

(Source: Own representation)

3.8.1.2 *Validity of a type II second-order factor*

Tests of validity for a second-order factor should follow a similar procedure as is used to examine the validity of first-order factors (Chin 2010, p. 667). In order to evaluate a second-order factor of type II it is particularly necessary to check whether the estimated path coefficients, representing weights of the formative construct, are significant (Henseler et al. 2009, p. 302). Furthermore, the variables of the formative block must be tested for multicollinearity by calculating the variance inflation factor (VIF) using the latent variable scores of the reflectively measured first-order components. A variance inflation factor of higher then ten is regarded as a critical level of multicollinearity (Henseler et al. 2009, p. 302).

As stated "Perceived risk of service" [RISK] was conceptualized as a type II second-order factor. The "perceived risk" scales developed by Laroche et al. (2004) were used as they demonstrated good reliability and validity.

As shown in the appendix, for all three scenarios, the relevant estimated path coefficients forming the second-order factor "Perceived risk of service" are extremely significant at a significance level of $\alpha=0,05$ (bootstrapping-method) (see Table 13, Table 14, and Table 15).

Moreover, for all three scenarios, the variance inflation factor, calculated using SPSS 17, does not reach a critical level (see Table 7). Consequently, collinearity does not seem to pose a problem.

Table 7: Variance inflation factor (RISK)

	VIF
FIN-RISK 1	1.232
PSY-RISK 1	1.229
FIN-RISK 2	1.925
PSY-RISK 2	1.972
FIN-RISK 3	1.489
PSY-RISK 3	1.440

(Source: Own representation)

All in all, the second-order construct "Perceived risk of service" demonstrates good validity.

3.8.2 Inner model assessment

Scholars typically recommend four criteria for assessing the structural model: The amount of variance in the particular construct that is explained by the model, estimates for path coefficients, effect size, and prediction relevance (Chin 2010, pp. 674-680; Henseler et al. 2009, p. 303)

In case of scenario I, all path coefficients with the exception of the path coefficient (RISK -> PREF) are significant at a significance level of α=0.05. Whereas the path coefficient (RISK -> CP) is very significant, all other significant path coefficients are extremely significant (bootstrapping-method). The effect size of the latent variable "Distinctive preference for SST" [PREF] on the latent variable "Customer coproduction" [CP] is moderate, whereas the effect size of the latent variable "Perceived risk of service" [RISK] on the latent variable "Customer coproduction" [CP] is weak. The predictive relevance of the latent variable "Distinctive preference for SST" [PREF] on the latent variable "Customer coproduction" [CP] is weak, whereas the predictive relevance of the latent variable "Perceived risk of service" [RISK] on the latent variable "Customer coproduction" [CP] is extremely weak (blindfolding procedure with D=7) (cf. appendix Table 13).

For scenario II, all estimates for path coefficients are significant at a significance level of α=0.05. In fact, with the exception of the path coefficient (RISK -> CP) all path coefficients are extremely significant at a significance level of α=0.05 (bootstrapping-method). The effect size of the latent variable "Distinctive preference for SST" [PREF] on the latent variable "Customer coproduction" [CP] is moderate, whereas the effect size of the latent variable "Perceived risk of service" [RISK] on the latent variable "Customer coproduction" [CP] is extremely weak. Accordingly, the predictive relevance of the latent variable "Distinctive preference for SST" [PREF] on the latent variable "Customer coproduction" [CP] is moderate, whereas the predictive relevance of the latent variable "Perceived risk of service" [RISK] on the latent variable "Customer coproduction" [CP] is extremely weak (blindfolding procedure with D=7) (cf. appendix Table 14).

For scenario III, all estimates for path coefficients are extremely significant at a significance level of α=0.05 (bootstrapping-method). The effect size of the latent variable "Distinctive preference for SST" [PREF] on the latent variable "Customer coproduction" [CP] is weak. The effect size of the latent variable "Perceived risk of service" [RISK] on the latent variable "Customer coproduction" [CP] is also weak. Accordingly, the predictive relevance of the latent variable "Distinctive preference for SST" [PREF] on the latent variable "Customer coproduction" [CP] is weak, whereas the predictive relevance of the latent variable "Perceived risk of service" [RISK] on the latent variable "Customer coproduction" [CP] is weak, too (blindfolding procedure with D=7) (cf. appendix Table 15).

In case of all three scenarios, both the effect size and the predictive relevance of the latent variable "Perceived risk of service" [RISK] on the latent variable "Distinctive preference for SST" [PREF] is almost non-existent (cf. appendix Table 13, Table 14, and Table 15).

All in all, "Distinctive preference for SST" [PREF] has the largest influence on "Customer coproduction" [CP]. There is a positive path relationship that is extremely significant with a weak to moderate effect size. Moreover, "Customer coproduction" [CP] influences "Intention to use SST" [IT]. There is a positive path relationship that is extremely significant. "Perceived risk of service" [RISK] influences "Customer coproduction" [CP]. There is a negative path relationship that is significant with a weak effect size. In case of scenario II and III, "Perceived risk of service" [RISK] has also a slight influence on "Distinctive preference for SST" [PREF]. There is a negative path relationship that is extremely significant (cf. appendix Table 13, Table 14, and Table 15).

As shown in Table 8, Table 9, and Table 10, the R² of "Customer coproduction" [CP] is moderate in case of all three scenarios. A "moderate" R² can be regarded as acceptable as the endogenous latent variable is explained by only a few exogenous latent variables (cf. Henseler et al. 2009, p. 303).

In case of scenario I and scenario III, the R² of the latent variable "Intention to use SST" [IT] is merely weak. In case of scenario II, the R² of the latent variable "Intention to use SST" [IT] is moderate. The low R² in case of scenario I and scenario III might be particularly caused by the fact that the endogenous variable merely relies on one latent variable. Notwithstanding, at least in case of scenario I and scenario III, there might be some doubts in terms of the theoretical underpinning (cf. Henseler et al. 2009, pp. 303-304). As it is an early stage of research, not all the indicators might have been identified that may account for the variance. Moreover, although the scenarios were carefully created to control monetary and situational variables that might influence a customer's choice (see chapter 3.2), there might have been some noise. The model obviously cannot sufficiently explain the endogenous latent variable "Intention to use SST" [IT] (cf. Table 8, Table 9, and Table 10). However, it should be mentioned that the major focus of this study is on customer coproduction.

As shown in Table 8, Table 9, and Table 10, the R² of "Distinctive preference for SST" [PREF] is extremely weak in case of all three scenarios. Which might not be astonishing as the path relationship (RISK -> PREF) merely shows an extremely low effect size. The low R² might be particularly caused by the fact that the endogenous variable merely relies on one latent variable. Hence, not all the indicators might have been identified that may account for the variance. There might be some doubts in terms of the theoretical underpinning (cf. Henseler et al. 2009, pp. 303-304). The model obviously cannot sufficiently explain the endogenous latent variable "Distinctive preference for SST" [PREF]. However, it was not intended to sufficiently explain the latent variable "Distinctive preference for SST" [PREF] as it was not the major focus of the study.

As shown in Table 8, Table 9, and Table 10, in case of all three scenarios, the Stone-Geisser's criterion demonstrates that the data collected empirically can be well reconstructed with the help of the model and the estimated parameters (blindfolding procedure with $D=7$). Hence, the model has predictive relevance.

Table 8: Scenario I: Inner model assessment

	R Square	Q Square
CP	0.464 moderate	0.181 >0
CP-AB	0.708 substantial	0.436 >0
CP-RC	0.645 moderate	0.470 >0
CP-W	0.597 moderate	0.328 >0
IT	0.244 weak	0.242 >0
PREF	0.002 weak	0.001 >0
PREF-P	0.769 substantial	0.523 >0
PREF-T	0.841 substantial	0.637 >0
RISK	1.000 substantial	0.182 >0

(Source: Own representation)

Table 9: Scenario II: Inner model assessment

	R Square	Q Square
CP	0.444 moderate	0.199 >0
CP-AB	0.713 substantial	0.537 >0
CP-RC	0.641 moderate	0.509 >0
CP-W	0.707 substantial	0.393 >0
IT	0.335 moderate	0.334 >0
PREF	0.036 weak	0.021 >0
PREF-P	0.797 substantial	0.654 >0
PREF-T	0.700 substantial	0.480 >0
RISK	1.000 substantial	0.637 >0

(Source: Own representation)

Table 10: Scenario III: Inner model assessment

	R Square	Q square
CP	0.405 moderate	0.184 >0
CP-AB	0.846 substantial	0.528 >0
CP-RC	0.816 substantial	0.557 >0
CP-W	0.702 substantial	0.334 >0
IT	0.192 weak	0.180 >0
PREF	0.119 weak	0.070 >0
PREF-P	0.812 substantial	0.619 >0
PREF-T	0.792 substantial	0.550 >0
RISK	1.000 substantial	0.613 >0

(Source: Own representation)

In addition, the variance inflation factor was calculated using SPSS 17. As shown in Table 11, collinearity does not seem to pose a problem at the level of the structural model.

Table 11: Variance inflation factor (Inner model)

	VIF
RISK 1	1.002
PREF 1	1.002
RISK 2	1.037
PREF 2	1.037
RISK 3	1.135
PREF 3	1.135

(Source: Own representation)

3.9 Findings

Cochran's Q chi-square test provides first evidence that the respondent's choice between a direct personal encounter and using a self-service technology in case of financial consulting, photofinishing, and ticketing for a spectator sports event differed significantly. Hence, it is expedient to test the PLS path model for each of the three service types. Furthermore, it is confirmed that the significant difference did not occur by chance.

With reference to the research question: *Which factors influence participation in customer coproduction in situations in which customers as cocreators of value have a choice?* the PLS path modelling results demonstrate that customer coproduction implicates that customer ability, customer role clarity, and willingness to coproduce is fulfilled.

Moreover, referring to hypothesis H1: *The higher the perceived risk of a service, the less is the distinctive preference for SST.* it can be stated that a perceived risk of a service might have a slight influence on a distinctive preference for either a remote encounter or a direct personal encounter. In fact, in case of two scenarios, a small negative relationship between a perceived risk of a service and a distinctive preference for a self-service technology could be identified. In case a service is considered to be "risky", particularly referring to the potential loss of money associated with the service, people obviously tend to prefer a direct personal encounter, regardless of situation. However, in case the risk of a service is perceived as low, people tend to favour using self-service technologies. Hence, H1 can be conditionally supported.

The study supports the notion that a perceived risk of a service influences customer coproduction. In fact, there is a negative relationship. In case of a service that is perceived as "risky", people tend to prefer a low level of customer coproduction. They want to be relieved of having to make much own contributions, expecting the firm to perform most production work. Unlike, in case of a low perceived risk of a service they tend to prefer a high level of customer coproduction. They want to be enabled to make their own contributions. As a consequence, hypothesis H2: *The higher the perceived risk of a service, the less is the level of customer coproduction.* is supported.

Furthermore, a distinctive preference for either using a self-service technology or a direct personal encounter has the largest influence on customer coproduction. In fact, there is a positive relationship between a distinctive preference for using a self-service technology and customer coproduction. Hence, hypothesis H3: *The higher the distinctive preference for SST, the higher the level of customer coproduction.* is supported.

Referring to the research question: *What determines a preference for a direct personal encounter or a remote encounter in terms of customer coproduction?* the PLS results further support the hypothesis H4: The higher the level of customer coproduction, the higher the intention to use SST.

All in all, the conceptual model can be applied for types of service representing Bowen's (1990) group 1 (directed at people; high level of participation; high degree of customization), group 2 (directed at tangible things; moderate level of participation; moderate degree of customization), and group 3 (directed at people; low level of participation; moderate degree of customization). As a consequence, the conceptual model can be used for a wide range of diverse types of service. Moreover, the conceptual model demonstrates predictive relevance. All four hypotheses formulated can be supported even though in case of hypothesis 1 and scenario I with some restriction (see table 12).

	hypotheses	scenario	path coefficient	t-value	p-value (α=0.05)	
H1	The higher the perceived risk of a service, the less is the distinctive preference for SST.	I II III	0.042 -0.189 -0.345	0.643 3.380 6.893	0.520 0.001∗∗∗ 0.000∗∗∗	(conditionally supported)
H2	The higher the perceived risk of a service, the less is the level of customer co-production.	I II III	-0.149 -0.136 -0.301	2.856 2.518 4.825	0.004∗∗ 0.012∗ 0.000∗∗∗	supported
H3	The higher the distinctive preference for SST, the higher the level of customer co-production.	I II III	0.671 0.627 0.466	20.743 16.145 11.268	0.000*** 0.000*** 0.000***	supported
H4	The higher the level of customer coproduction, the higher the intention to use SST.	I II III	0.494 0.579 0.438	9.786 16.884 7.646	0.000*** 0.000*** 0.000***	supported

Table 12: Results of the quantitative study
(Source: Own representation)

4. Discussion and Implications

The findings of the empirical study support the notion that a distinctive preference for either a direct personal encounter or a remote encounter (i.e. using self-service technologies) influences customer participation in coproduction. In fact, a preference for a remote encounter has a positive influence on customer coproduction, whereas a distinctive preference for a direct personal encounter has a negative one. A perceived risk of a service has a negative influence on customer coproduction. Hence, if a service is regarded as less "risky", individuals are more inclined to participate in coproduction. Unlike, if the perceived risk of a service is higher, individuals tend to prefer lower levels of customer participation, preferring to be relieved of doing something, leaving more work to the firm. Furthermore, there is a positive relationship between customer coproduction and the intention to use a self-service technology. This confirms scholarly thought (e.g., Lovelock and Wirtz 2007, p. 246; Silpakit and Fisk 1985, p. 118) that using a self-service technology represents participation in coproduction at a maximum level.

As the empirical part of the thesis used Bowen's (1990) empirically derived taxonomy for classifying service(s), the findings discussed apply to diverse types of service such as Bowen's (1990) group 1 (directed at people; high level of participation; high degree of customization), group 2 (directed at tangible things; moderate level of participation; moderate degree of customization), and group 3 (directed at people; low level of participation; moderate degree of customization). All

in all, the findings can be useful in situations beyond the one studied; generalizations can be devised.

However, the study concentrated on individual human beings as customers. Notwithstanding, according to S-D logic, every individual that interacts with a firm is a customer. Consequently, customer coproduction might be researched with a focus on business organizations or entire households.

The study examined customer coproduction, as a component of cocreation of value, understanding personal face-to-face contact and impersonal self-service technologies as opposite poles of a continuum concerning opportunities for participation. Hence, respondents were faced with a relatively dichotomous choice – maximum possible form of customer coproduction (self-service) versus little degree of customer coproduction (personal face-to-face contact). Future research may focus on measuring customer coproduction along the whole continuum.

The research project analyzed customer coproduction in the context of cocreation of value. A value cocreation configuration among service systems itself was not examined in more detail. Hence, future research might study these network relationships.

Moreover, the research focused on customer coproduction during a particular service encounter. Behaviours at other stages were not part of the analysis. However, particularly cocreation of value is not restricted to the boundaries of a service encounter. Future research may examine value cocreation outside a service encounter.

The study focused on customer coproduction from the point of view of the customer. However, coproduction may not only occur between a firm and a customer. Hence, it might be analyzed from the point of view of other service systems integrating resources.

The research studied self service in terms of self-service technologies. Yet, self-service may be performed without using any self-service technology. Future research may focus on this aspect.

As described, the quantitative study focused on a comparison between one self-service technology and a direct personal encounter. However, individuals might be confronted with a choice situation between various forms of encounters. This might be researched in more detail.

While the scenario and questionnaire approach was appropriate for this study for reasons explained, intention to use SST may not translate into actual behaviour. Moreover, the use of a scenario approach may prevent researchers from determining whether individuals would apply a decision heuristic in a real world setting (Dabholkar 1994). As a consequence, a field study collecting responses in a real-world setting might be useful.

As indicated, the quantitative sample was drawn from a database actively managed to be representative for Internet users in Germany, at the age of 14-69 years. However, it suffers from some weaknesses in terms of representativeness: The sample can be described as being slightly older than the base population; female persons are overrepresented. Moreover, the sample merely represented German Internet users. Hence, it is not possible to generalize the survey results to the German population at large or to an international population. Future research may examine customer coproduction in a broader or more international context.

Service-Dominant Logic is a collaboratively developed emerging field of research. As a consequence, much research, theory building as well as empirical contributions are needed. All in all, as Lusch and Vargo (2009, p. 10) state: "The age of co-creation and service-dominant marketing

has arrived." In particular, customer coproduction is expected to flourish with the growth of new types of communications and networks such as blogs, open innovation communities, and crowdsourcing platforms. As a consequence, this study is certainly a timely contribution.

Appendix

Measures and sources

Perceived risk of service [RISK]
Five items adapted from Laroche et al. (2004)

Financial risk [FIN-RISK]

- Wenn ich innerhalb der nächsten zwölf Monate, [eine Beratung zu Kapitalanlagen] in Anspruch nehmen würde, wäre ich besorgt, dass die finanziellen Aufwendungen dafür unklug sein könnten. [FIN_RISK1]
- Eine Beratung zu Kapitalanlagen könnte zu größeren finanziellen Verlusten führen. [FIN_RISK2]

Psychological risk [PSY-RISK]

- Der Gedanke an [eine Beratung zu Kapitalanlagen] löst bei mir ein Gefühl von Besorgnis/Beklemmung aus. [PSY_RISK1]
- Beim Gedanken an [eine Beratung zu Kapitalanlagen] fühle ich mich gedanklich unbehaglich. [PSY_RISK2]
- Der Gedanke an [eine Beratung zu Kapitalanlagen] löst bei mir eine innere Anspannung aus. [PSY_RISK3]

Distinctive preference for SST [PREF]
Six items adapted from Meuter et al. (2005); three items recoded

Need for interaction [PREF-P]

- Ein persönlicher Kontakt mit einer/einem Angestellten, sorgt dafür, dass [eine Beratung zu Kapitalanlagen] für mich angenehm ist. [PREF_P1]/[PREF_P1U]
- Die persönliche Aufmerksamkeit eines Kundendienstmitarbeiters/einer Kundendienstmitarbeiterin ist mir bei [einer Beratung zu Kapitalanlagen] wichtig. [PREF_P2]/[PREF_P2U]
- Es stört mich, bei [einer Beratung zu Kapitalanlagen], Technik zu nutzen, wenn ich stattdessen mit einer Person sprechen könnte. [PREF_P3]/[PREF_P3U]

Perceived relative advantage of SST [PREF-T]

- Die Verwendung [des Internets] verbessert [eine Beratung zu Kapitalanlagen]. [PREF_T1]
- Allgemein glaube ich, dass die Verwendung [des Internets], im Falle [einer Beratung zu Kapitalanlagen], von Vorteil ist. [PREF_T2]
- Ich denke, [das Internet] ist im Allgemeinen, der beste Weg, für [eine Beratung zu Kapitalanlagen]. [PREF_T3]

Customer coproduction [CP]

Role clarity [CP-RC]

Three items adapted from Meuter et al. (2005)

- Ich fühle mich darin sicher, [das Internet], im Falle [einer Beratung zu Kapitalanlagen], erfolgreich nutzen zu können. [CP_RC1]

- Ich weiß, was von mir erwartet wird, wenn ich [das Internet] für [eine Beratung zu Kapitalanlagen] nutze. [CP_RC2]

- Die einzelnen Prozessschritte bei der [Verwendung des Internets], im Falle [einer Beratung zu Kapitalanlagen], sind mir klar. [CP_RC3]

Ability [CP-AB]

Four items adapted from Meuter et al. (2005); one item recoded

- Ich bin vollkommen in der Lage, [das Internet], im Falle [einer Beratung zu Kapitalanlagen], zu nutzen. [CP_AB1]

- Ich habe Vertrauen in meine Fähigkeiten, [das Internet] im Falle [einer Beratung zu Kapitalanlagen] nutzen zu können. [CP_AB2]

- Ich denke NICHT, dass ich kompetent genug bin, [eine Beratung zu Kapitalanlagen], mittels [Internet] vornehmen zu können. [CP_AB3]/[CP_AB3U]

- Erfahrungen aus der Vergangenheit bestärken mich darin, [das Internet], [im Falle einer Beratung zu Kapitalanlagen], erfolgreich nutzen zu können. [CP_AB4]

Willingness to coproduce [CP-W]

Nine items adapted from Meuter et al. (2005)

- Die Nutzung [des Internets] würde mir bei [einer Beratung zu Kapitalanlagen] eine zusätzliche Bequemlichkeit bieten. [CP_W1]

- Die Nutzung [des Internets] würde es mir ermöglichen, [eine Beratung zu Kapitalanlagen], auf schnellere Weise vornehmen zu können. [CP_W2]

- Die Nutzung [des Internets] würde es mir ermöglichen, [eine Beratung zu Kapitalanlagen], wann immer ich möchte vorzunehmen. [CP_W3]

- Die Nutzung [des Internets] würde mir eine größere Kontrolle, über [eine Beratung zu Kapitalanlagen] ermöglichen. [CP_W4]

- Die Nutzung [des Internets] würde mir das Gefühl geben, etwas selbst vollbringen zu können. [CP_W5]

- Die Nutzung [des Internets] würde mir ein Gefühl von Spaß, durch die Verwendung von Technik geben. [CP_W6]

- Die Nutzung [des Internets] würde mir ein Gefühl von Unabhängigkeit geben. [CP_W7]

- Die Nutzung [des Internets] würde mir ein Gefühl geben, in der Interaktion mit dem Anbieter innovativ zu sein. [CP_W8]

- Die Nutzung des Internets würde mir ein größeres Vertrauen in meine eigenen Fähigkeiten geben. [CP_W9]

Intention to use SST [IT]

Two-item operationalization adapted from Dabholkar (1994); two items recoded

- Würden Sie in der beschriebenen Situation [eine Beratung zu Kapitalanlagen] bei einem [Online-Beratungsangebot] [einer Bank] [im Internet] nutzen? (Endpoints: *sehr unwahrscheinlich – sehr wahrscheinlich*) [IT1]
- Würden Sie in der beschriebenen Situation [eine Beratung zu Kapitalanlagen] bei einem [Online-Beratungsangebot] [einer Bank] [im Internet] nutzen? (Endpoints: *würde ich definitiv nicht tun – würde ich definitiv tun*) [IT2]

- Würden Sie in der beschriebenen Situation [eine Beratung zu Kapitalanlagen] persönlich vor Ort, bei einer/einem Angestellten [einer Bankfiliale] einholen? (Endpoints: *sehr unwahrscheinlich – sehr wahrscheinlich*) [IT3]/[IT3U]
- Würden Sie in der beschriebenen Situation [eine Beratung zu Kapitalanlagen] persönlich vor Ort, bei einer/einem Angestellten [einer Bankfiliale] einholen? (Endpoints: *würde ich definitiv nicht tun – würde ich definitiv tun*) [IT4]/[IT4U]
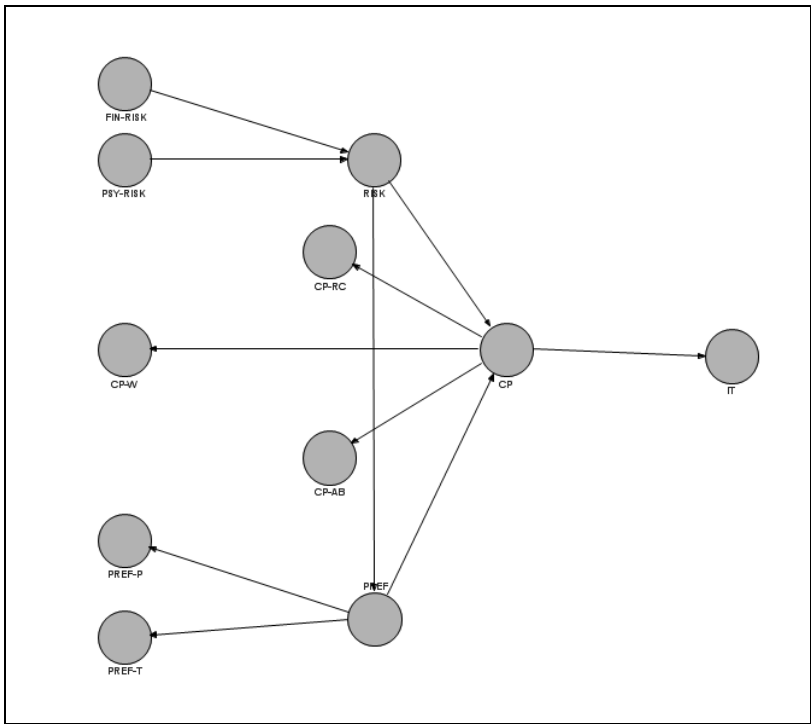
Figure 1: Structural model in SmartPLS

(Source: Own representation with SmartPLS)

Table 13: Scenario I: Weights (inner model)

	Path	Original Sample	Sample Mean	Standard Deviation	Standard Error	t-value	df	tails	p-value	Effect size	q²
	CP -> CP-AB	0.841	0.844	0.021	0.021	40.146	999	2	0.000 ***		
	CP -> CP-RC	0.803	0.805	0.028	0.028	29.182	999	2	0.000 ***		
	CP -> CP-W	0.773	0.773	0.039	0.039	20.008	999	2	0.000 ***		
	CP -> IT	0.494	0.494	0.051	0.051	9.786	999	2	0.000 ***		
Weights (outer model)	FIN-RISK -> RISK	0.327	0.325	0.028	0.028	11.775	999	2	0.000 ***		
	PREF -> CP	0.671	0.673	0.032	0.032	20.743	999	2	0.000 ***	0.274 moderate	0.034 weak
	PREF -> PREF-P	0.877	0.876	0.019	0.019	46.398	999	2	0.000 ***		
	PREF -> PREF-T	0.917	0.918	0.009	0.009	104.881	999	2	0.000 ***		
Weights (outer model)	PSY-RISK -> RISK	0.816	0.816	0.030	0.030	27.169	999	2	0.000 ***		
	RISK -> CP	-0.149	-0.151	0.052	0.052	2.856	999	2	0.004 **	0.030 weak	0.002
	RISK -> PREF	0.042	0.043	0.066	0.066	0.643	999	2	0.520	0.000	0.000

(Source: Own representation)

Table 14: Scenario II: Weights (inner model)

	Path	Original Sample	Sample Mean	Standard Deviation	Standard Error	t-value	df	tails	p-value	Effect size	q²
	CP -> CP-AB	0.844	0.845	0.020	0.020	42.184	999	2	0.000 ***		
	CP -> CP-RC	0.801	0.802	0.027	0.027	29.805	999	2	0.000 ***		
	CP -> CP-W	0.841	0.841	0.024	0.024	34.886	999	2	0.000 ***		
	CP -> IT	0.579	0.580	0.034	0.034	16.884	999	2	0.000 ***		
Weights (outer model)	FIN-RISK -> RISK	0.427	0.427	0.017	0.017	25.444	999	2	0.000 ***		
	PREF -> CP	0.627	0.630	0.039	0.039	16.145	999	2	0.000 ***	0.238 moderate	0.040 moderate
	PREF -> PREF-P	0.893	0.893	0.013	0.013	68.371	999	2	0.000 ***		
	PREF -> PREF-T	0.837	0.838	0.022	0.022	38.091	999	2	0.000 ***		
Weights (outer model)	PSY-RISK -> RISK	0.661	0.661	0.018	0.018	36.085	999	2	0.000 ***		
	RISK -> CP	-0.136	-0.137	0.054	0.054	2.518	999	2	0.012 *	0.014	0.001
	RISK -> PREF	-0.189	-0.190	0.056	0.056	3.380	999	2	0.001 ***	0.001	0.000

(Source: Own representation)

Table 15: Scenario III: Weights (inner model)

	Path	Original Sample	Sample Mean	Standard Deviation	Standard Error	t-value	df	tails	p-value	Effect size	q²
Weights (outer model)	CP -> CP-AB	0.920	0.921	0.011	0.011	81.142	999	2	0.000 ***		
	CP -> CP-RC	0.903	0.904	0.014	0.014	67.052	999	2	0.000 ***		
	CP -> CP-W	0.838	0.837	0.028	0.028	29.716	999	2	0.000 ***		
	CP -> IT	0.438	0.438	0.057	0.057	7.646	999	2	0.000 ***		
	FIN-RISK -> RISK	0.442	0.442	0.020	0.020	21.984	999	2	0.000 ***		
	PREF -> CP	0.466	0.465	0.041	0.041	11.268	999	2	0.000 ***	0.138 weak	0.025 weak
	PREF -> PREF-P	0.901	0.901	0.011	0.011	80.048	999	2	0.000 ***		
	PREF -> PREF-T	0.890	0.890	0.013	0.013	67.014	999	2	0.000 ***		
Weights (outer model)	PSY-RISK -> RISK	0.680	0.680	0.023	0.023	29.725	999	2	0.000 ***		
	RISK -> CP	-0.301	-0.305	0.062	0.062	4.825	999	2	0.000 ***	0.041 weak	0.006 weak
	RISK -> PREF	-0.345	-0.346	0.050	0.050	6.893	999	2	0.000 ***	0.014	0.005

(Source: Own representation)

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