

# CUSTOMERS' INTENTION TO SWITCH TO MOBILE SELF-SERVICE TECHNOLOGIES

*Research paper*

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## Abstract

*Self-service technologies (SST) such as online check-ins are more and more becoming an integral part of our daily routines. However, while kiosk SST such as automated teller machines in banking are widely used, mobile SST are just beginning to capture the market. Enforcing customers to switch from kiosk to mobile SST sometimes still turns out to be difficult due to routine seeking, privacy risks, or fear of complex user interfaces. As a result, users are locked into a status quo and do not switch to mobile technologies. Thus, there is a need to better understand why customers switch from kiosk to mobile SST. Against this background, the aim of this paper is to gain a better understanding of the factors influencing customers' intention to switch from kiosk to mobile SST. We investigate the positive and negative determinants, which constitute the positive and negative valence of mobile SST as factors influencing the intention to switch. Our study expands existing research by outlining the particular importance of the positive valence for the customers' intention to switch. We further show that multifunctionality, compatibility with the lifestyle, and enjoyment constitute the most crucial positive determinants rather than prestige reasons.*

*Keywords: Self-service technologies, Mobile technology, Valence framework, Intention to switch.*

## 1 Introduction

Due to the rapid development in information technology, self-service technologies (SST) have become more and more prevalent amongst service providers (Scherer et al., 2015). Automated teller machines in banking, self-checkout systems in supermarkets, and services over the internet such as online check-in for flights are taken for granted in today's fast-paced world (Wang et al., 2013). SST are technological interfaces "that enable customers to produce a service independent of direct service employee involvement" (Meuter et al., 2000, p. 50). In particular, mobile SST are gaining increasing importance. The number of mobile users is expected to grow from 4.8 billion in 2015 to 5.5 billion in 2020. This implies that 70 percent of the global population will be using mobile devices (Cisco, 2016). Compared to kiosk SST (e.g., ATM, self-checkout systems in supermarkets) where customers act anonymously, mobile SST offer companies the opportunity to collect valuable data on their customers. For this reason, companies endorse their customers to switch from "anonymous" SST, such as kiosks, to mobile SST. Yet, the switch from kiosk to mobile SST sometimes still turns out to be difficult due to potential privacy risks, performance risks, fear of complex user interfaces, or the customers' preference to stick with routines. Therefore, it is of central importance to understand the driving forces of customers' intention to switch to mobile SST and to adapt the services to fulfil customers' motives for using them.

Prior research has begun to investigate the adoption of SST (e.g., Curran and Meuter, 2005; Dabholkar and Bagozzi, 2002; Meuter et al., 2005). They found, for example, that the adoption is driven by perceived usefulness, perceived ease of use, time savings, reliability, control over the process, or perceived enjoyment (e.g., Agarwal and Karahanna, 2000; Venkatesh et al., 2012) as well as image, compatibility, and alternative attractiveness (Bansal et al., 2005; Chang et al., 2014; Lu et al., 2011). Further research concerning the reasons for SST rejection explained that user resistance behaviour prevents users from switching between technologies (Laumer et al., 2016b). That implies that users are locked into a status quo and therefore do not switch to alternatives (Polites and Karahanna, 2012). Reasons for rejection can be amongst others switching costs or a response to threats that an individual associates with a new system (Kim and Kankanhalli, 2009; Marakas and Hornik, 1996). Although factors leading to adoption and rejection of SST have been explored, existing research still lacks an in-depth understanding of the factors influencing the intention to switch from kiosk SST to mobile SST. Therefore, the aim of this paper is to gain a better understanding of the factors influencing the intention to switch from kiosk SST to mobile SST. More specifically, we investigate the positive and negative determinants influencing the intention to switch. As these factors vary between mobile SST and other SST, we examine the multidimensional nature of the positive and negative determinants and investigate their relative importance in determining the intention to switch. The research questions driving this study are: 1) *What is the relative importance of the positive and the negative valence for the intention to switch from kiosk to mobile SST?* 2) *What are the determinants of the positive and the negative valence of mobile SST?* To investigate these questions we build upon the valence framework, which assumes that customers perceive products and services as having both positive and negative attributes and combines *positive* and *negative valence determinants* as the fundamental aspects for customer decisions (Peter and Tarpey, 1975).

The remainder of the paper is organised as follows: Section 2 provides an overview of the related literature. In Section 3, we describe the research model. Afterwards, we explain the research methodology and present the results of our analysis in Section 4. In Section 5, we discuss our results and present theoretical and practical implications. Finally, we conclude our paper with a brief summary of our findings in Section 6.

## 2 Theoretical Background

SST offer customers a technological interface that enables access to services independent of physical interaction with a service employee (Curran and Meuter, 2005). Compared to personal service encounters, SST have changed the nature of the service delivery process in depth (Wang et al., 2013; Meuter et al., 2000). SST can be differentiated based on the technology used, namely interactive kiosk, internet (incl. mobile), and interactive voice response (Meuter et al., 2000) whereas the internet-based SST type is the most common (Evanschitzky et al., 2004; Yen and Gwinner, 2003).

### 2.1 Adoption theory and outcomes of SST adoption

For determining the success of information system projects, user acceptance is widely considered as the most important factor (Davis, 1993). It is conceptualized as an outcome variable in a psychological process when users make decisions about technology (Dillon and Morris, 1996) and can be defined as “the demonstrable willingness within a user group to employ information technology (IT) for the tasks it is designed to support” (Dillon and Morris, 1996, p. 3). The most prevalent model for predicting IT acceptance is Davis’ (1989) Technology Acceptance Model (TAM) deriving from the Theory of Reasoned Action (TRA), which conveys that beliefs influence intentions, and intentions in turn influence one’s actions (Ajzen and Fishbein, 1975). The TAM links “external variables to [...] actual use” (Davis and Venkatesh, 1996, p. 20) and therefore builds a complete causal chain. Technology adoption research has analysed several factors leading to adoption. They found that the adoption is driven by, among others, perceived usefulness, perceived ease of use, or time savings, reliability, control over the process, or perceived enjoyment (e.g., Agarwal and Karahanna, 2000; van der Heijden, 2004; Venkatesh et al.,

2012) as well as image, compatibility, and alternative attractiveness in the concrete context of mobile service (Bansal et al., 2005; Chang et al., 2014; Lu et al., 2011). Individuals' resistance to technologies and their respective use has drawn much less attention so far (Cenfetelli, 2004; Lapointe and Rivard, 2005; Laumer et al., 2016a; Kim and Kankanhalli, 2009). From early on, resistance has been identified as a key factor for implementation success (Laumer and Eckhardt, 2012). It was simply considered as the opposite part of acceptance (Venkatesh and Davis, 2000; Venkatesh and Morris, 2000). But it is more than only the flip side of the coin. Causes for resistance against information system implementation can be amongst others switching costs and perceived threats (Bhattacharjee and Hikmet, 2007; Kim and Kankanhalli, 2009; Laumer et al., 2016b). Before switching to an alternative, individuals evaluate relative costs (i.e. causes for resistance) and benefits of the change (i.e. causes for acceptance) (Kim and Kankanhalli, 2009). In this paper, we state that both sides – i.e. positive and negative determinants – need to be considered when investigating individuals' switching intentions. Therefore, we use intention to switch as outcome variable which is influenced by positive and negative determinants which users perceive from actual technology switching.

## 2.2 Determinants of intention to switch to mobile SST

Switching behaviour is determined by the perceived advantages and disadvantages of a technology. Therefore, to investigate the determinants influencing intention to switch to a technology, the two sides of a technology which are its positive and negative determinants need to be combined. Intention to switch has been examined in various fields, for instance in the banking and insurance industry, in retail stores as well as in the context of credit cards, car insurance, car repair, hairstyling, fixed-telephone and banking services (e.g., Chang et al., 2014; Ye and Potter, 2011; Lopez et al., 2006). Human geography differentiates between voluntary and involuntary migrants. While voluntary migrants can freely decide to migrate (Jackson, 1986), involuntary migrants have to migrate due to certain factors (e.g., war) (Bansal et al., 2005). Users of technologies can be both. There are on the one hand voluntary migrants which can freely choose to migrate (switch) between technologies and on the other hand involuntary migrants which have no choice but to migrate (switch) because their current technology service is not continued (Chang et al., 2014). This study examines SST and hence encompasses both types of migrants. As opposed to products or services where users depend on one single vendor (e.g., car insurance), consumption of other products or services (e.g., bank accounts or SST) is not limited to one vendor (Ye et al., 2008; Ye and Potter, 2011). Therefore, switching in the case of SST is rather focus shifting than a total substitution. Even in the event of total substitution, the process may be stepwise, which results in a simultaneous use of several products for some periods (Chang et al., 2014). Against this background, for this work the definition of switching as “users' partial reduction or full termination in usage of a specific technology product while substituting it with usage of an alternative product that satisfies identical needs” (Ye and Potter, 2011, p. 587) is used.

In order to explain switching behaviour, human geographic literature delivers the “push-pull” framework (Lee, 1966; Moon, 1995). It describes switching as migrating from one location to another. While push factors are negative factors driving individuals to leave their origin and go to a destination, pull factors are considered as advantages dragging the individual towards the destination. Against this background, information systems research used this theoretical lens to explain why and how individuals develop switching intentions between technologies (Bansal et al., 2005; Bhattacharjee and Park, 2014; Chang et al., 2014; Wirth and Maier, 2017). However, this “push-pull” framework also includes mooring factors which are considered as factors that still facilitate or hinder the switching intention. For the purpose of our study, these are not necessary to be investigated, which is why it cannot perfectly depict the basis of our study. However, there is another approach which can more appropriately lay the foundation for this work. It is called the valence framework, which assumes that customers perceive products and services as having both positive and negative attributes (Peter and Tarpey, 1975). The valence framework derives primarily from the psychology and economics literature and investigates customer behaviour by involving “perceived risk” and “perceived benefit” as the two fundamental aspects of customers' decisions. While the perceived risk aspect states that customers aim at minimizing negative

effects, the perceived benefit aspect characterizes customers as aiming to maximize positive effects. Finally, the “perceived value” or valence framework assumes that consumers perceive products as having both positive and negative attributes, and accordingly make decisions to maximize their net valence. The valence framework can be considered a suitable model as it takes into account both positive and negative determinants of a decision (Peter and Tarpey, 1975). Against this background, Lu et al. (2011) identify positive and negative valence determinants for mobile payment usage and analyse how they affect a customer’s intention to use. Further studies in the e-commerce environment approve the valence framework as valid model for analysing the positive and negative aspects influencing customer behaviour (Kim et al., 2008; Kim et al., 2009). However, while previous studies show that the valence framework is an adequate model to investigate intention to switch, extensions are required to adapt it to the mobile SST environment and to capture its individual characteristics. Yet, it offers a solid basis to investigate in a first step the positive and negative determinants influencing customers’ behaviour decisions, such as the intention to switch. Consistent with the TRA, intention to switch is posited to be an immediate determinant of the actual usage behaviour. Therefore, this study is based on the valence framework as theoretical foundation that encompasses the positive and negative determinants that influence customers’ intention to switch to mobile SST.

### 2.3 Positive and negative valence determinants of mobile SST

The valence framework describes perceived risk as *negative valence*, whereas perceived benefit represents the *positive valence* (Peter and Tarpey, 1975). Due to the innovative nature of mobile SST, however, the *positive* and *negative valence* need to be regarded more in detail – i.e. how they are composed in this concrete context – and adapted accordingly. Our reflections are described in the following.

#### 2.3.1 Positive valence determinants fostering intention to switch

The reasons why customers adopt SST depend upon the benefits, more precisely the *positive valence determinants* they can receive from it (Yan et al., 2013). Reflecting the literature, the most important positive valence determinants of mobile SST are *independence of location and time*, *time savings*, *personalisation*, *compatibility*, *image*, *multifunctionality*, and *enjoyment* (cf. Table 1).

Determinant	References
Independence of location and time	Kim et al. (2009), Lee and Benbasat (2003), Mallat et al. (2008)
Time savings	Alreck and Settle (2002), Dabholkar (1996), Dabholkar et al. (2003), Lee et al. (2013), Meuter et al. (2000)
Personalisation	Adomavicius and Tuzhilin (2005), Chellappa and Sin (2005), Junglas and Watson (2006), Park (2014), Xu et al. (2011)
Compatibility	Lu et al. (2011), Moore and Benbasat (1991)
Image	Lu et al. (2011), Negahban and Chung (2014), Rogers (2010), Venkatesh and Davis (2000)
Multifunctionality	Negahban and Chung (2014)
Enjoyment	Dabholkar (1996), Davis et al. (1992), van der Heijden (2004), Negahban and Chung (2014)

Table 1. Positive valence determinants influencing intention to switch.

First, mobile SST can be accessed 24/7 around the globe. Thus, for example for buying a ticket or using a service, personal presence is not required anymore. Several studies have shown that this *independence of location and time* has a positive impact on the users’ attitudes to adopt and use a system. This includes advantages like avoiding queuing and the fact of being independent of opening hours (Kim et al., 2009; Lee and Benbasat, 2003; Mallat et al., 2008). Besides the *independence of place and time*, *time savings* play an important role for using SST (Alreck and Settle, 2002; Dabholkar et al., 2003; Lee and Benbasat, 2003; Lee et al., 2013; Meuter et al., 2000). Customers place special value on reducing or avoiding

waiting time and increasing the speed of service delivery (Dabholkar, 1996) and therefore, if a new technology meets these requirements, they are more likely to switch. A further benefit of mobile SST is the possibility of personalised services (Adomavicius and Tuzhilin, 2005; Chellappa and Sin, 2005; Junglas and Watson, 2006; Xu et al., 2011). *Personalisation* is the ability to provide services and contents tailored to individual users, based on knowledge on their behaviour and preferences (Adomavicius and Tuzhilin, 2005). Although usually private information like social media data or customer profiles have to be collected, *personalisation* can increase the adoption of a new technology and thus the intention to switch (Park, 2014). Another advantage is *compatibility*, which describes the degree of fit between an innovation and a potential adopter’s existing values, needs and past experiences as well as his or her lifestyle (Moore and Benbasat, 1991). In the context of mobile SST, peoples’ lifestyles will strongly affect their decision to adopt a technology. With mobile SST being an extension of internet SST, people who frequently use internet SST may be less resistant to accept the mobile version. Therefore, users perceiving mobile SST as compatible with their lifestyle can have a greater intention to switch (Lu et al., 2011). Gaining social status can be another important motivation to adopt an innovation (Rogers, 2010; Moore and Benbasat, 1991). *Image* is defined as “the degree to which use of an innovation is perceived to enhance one’s image or status in one’s social system” (Moore and Benbasat, 1991, p. 195). Individuals are likely to respond to influences within their social systems to establish or maintain a favourable image (Lu et al., 2011; Negahban and Chung, 2014). If important members of a person’s social group believe that he or she should switch to mobile SST, the likelihood of actual service switching rises (Venkatesh and Davis, 2000). Besides, mobile SST provide a vast collection of functionalities and a variety of services (Negahban and Chung, 2014). A mobile SST can, for instance, comprise navigation options, information on delays or alternative routes, alternative transportation information, ticket purchasing or special online offers, to name just a few functionalities. Accordingly, this *multifunctionality* can influence the intention to switch to mobile SST and needs to be considered. Finally, *enjoyment* is a further benefit which is described as the extent to which an activity of using a technology is perceived as enjoyable (Davis et al., 1992; Dabholkar, 1996). In information systems research, *enjoyment* is identified to be a key factor, underlying the acceptance of computers or computer systems (Davis et al., 1992; van der Heijden, 2004; Negahban and Chung, 2014). Customers who enjoy products are more likely to actually use or buy them. Dabholkar (1996) states that customers are more likely to use SST if it looks like being fun which leads to the assumption that *enjoyment* increases a customer’s intention to switch to mobile SST.

### 2.3.2 Negative valence determinants hindering intention to switch

Other determinants prevent customers from switching. In the context of mobile SST, amongst the most important are *privacy risk*, *performance risk*, *complexity*, and *routine seeking* (cf. Table 2).

Determinant	References
Privacy risk	Featherman and Pavlou (2003), Lee (2009), Lu et al. (2011)
Performance risk	Featherman and Pavlou (2003), Lee (2009), Wu and Chen (2005)
Complexity	Ebbers et al. (2008), Jäveläinen (2007), Treviño et al. (2000)
Routine seeking	Kunze et al. (2013), Oreg (2003)

Table 2. Negative valence determinants influencing intention to switch.

*Privacy risk* is defined as the potential loss of control over personal information. This applies when information about a person is used without permission or knowledge (Featherman and Pavlou, 2003). The determinant has been identified as being an important performance-based inhibitor to electronic service evaluation and adoption (Featherman and Pavlou, 2003; Lee, 2009; Lu et al., 2011). It is a major challenge especially for services using sensitive financial information like banking or payment apps (Lee, 2009). We assume that this holds true for all mobile SST using personal data which leads to the assumption that *privacy risk* can decrease the intention to switch. Another negative determinant is *performance risk*, which is explained as the possibility that a service may not perform as it was promised

or advertised. Thus, unexpected losses may be caused, for instance, by a temporal disconnection from the internet or a general breakdown in the server connection (Featherman and Pavlou, 2003; Lee, 2009; Wu and Chen, 2005). Thus, malfunctions may reduce a customer’s intention to switch. A further disadvantage influencing the intention to switch is *complexity*, which refers to the amount of interrelated actions necessary in order to solve a problem. The higher the complexity becomes, the more information an individual needs in order to conduct the process correctly (Ebbbers et al., 2008). Comparing low involvement products (like basic banking or general insurance) with high involvement products (like mortgage or investment advices), low involvement products do not necessarily require face-to-face channels. But high complex tasks are preferred to be conducted offline, therefore preventing customers from switching to mobile SST (Ebbbers et al., 2008; Järveläinen, 2007; Treviño et al., 2000). Regardless of this, using a new technology like mobile SST properly can be a challenge for the customer and he or she may experience it as difficult to go through the process without failure. A feeling of dissatisfaction arises if the customer does not succeed which results in a decrease of the customer’s intention to switch (Koufaris, 2002). In addition to that, *routine seeking* has been identified as an important determinant influencing the resistance to change (Kunze et al., 2013; Oreg, 2003). Users may not adopt a new service because switching may require more work in the short term or they simply are not positive about new innovations or changes in their lives (Kunze et al., 2013; Oreg, 2003). Therefore, instead of adopting a new service, users may prefer sticking with their routine with the result that they do not develop an intention to switch to mobile SST.

### 3 Research Model

Based on the theoretical background, this study states that intention to switch to mobile SST is determined by the *positive* and the *negative valence*. It adopts a two-dimensional conceptualization with the valences consisting of determinants influencing the intention to switch. Both valences are operationalized as latent and formative second-order constructs formed by the underlying determinants. The proposed relationships are shown in Figure 1 and explained below.

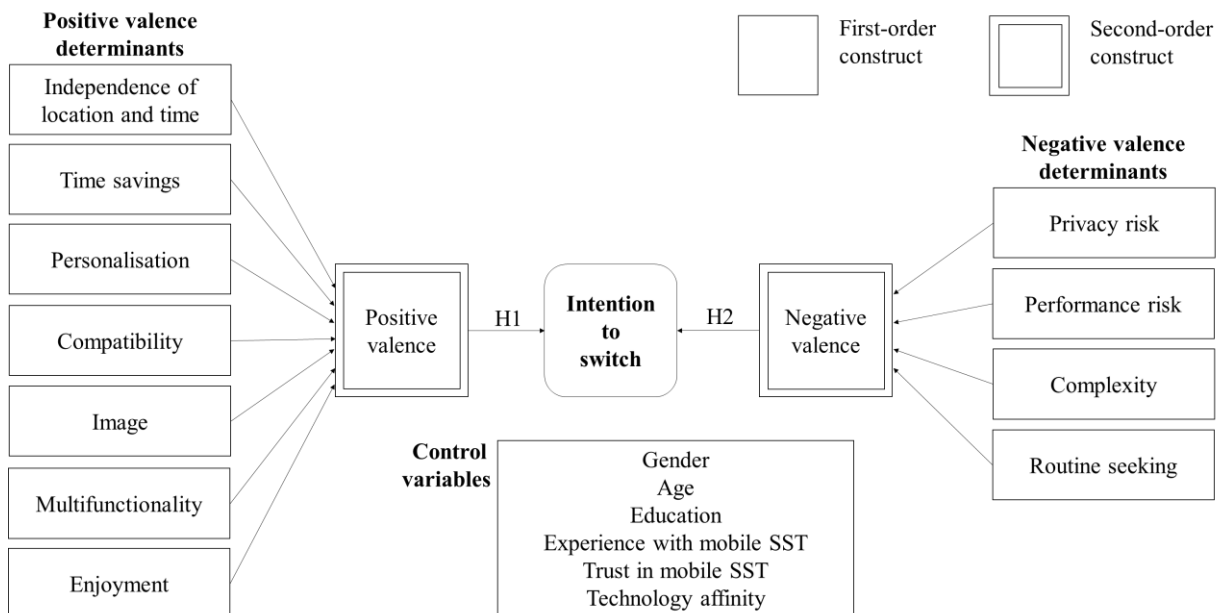


Figure 1. Research model.

The *positive* and the *negative valence* are important factors that influence future behaviour choices of the customers through feedback loops into the decision processes (Babin et al., 1994). In this regard, customers aim to maximize positive and minimize negative effects. Therefore, the *positive valence*

should influence customers’ intention to switch positively while the *negative valence* should lead to a lower intention to switch respectively. For this reason, we propose the following hypotheses:

H1: *Positive valence influences intention to switch positively.*

H2: *Negative valence influences intention to switch negatively.*

## 4 Research Methodology and Results

This study adopts a field survey methodology for data collection. As public transportation in Germany offers different well-accepted SST options, we considered a survey at railway stations to be an effective method for capturing the proposed determinants and their impact on the intention to switch. We focussed on two kinds of SST in this study, namely on the switch from kiosk SST to mobile SST as they allow us to analyse the drivers of intention to switch between different kinds of SST with different degrees of anonymity. In the following, we describe the development of the measures, the administration of the survey, and the analysis via Structural Equation Modelling (SEM) techniques.

### 4.1 Measurement development

We adapted measures from previously validated multi-item scales to foster reliability and validity of the measurement. The design of the survey followed standard instrument construction procedures (Atteslander, 2010; Moore and Benbasat, 1991). To measure the *positive valence*, we combined constructs from Mallat et al. (2008), Dabholkar (1996), Xu et al. (2011), Moore and Benbasat (1991), Venkatesh and Davis (2000), and Negahban and Chung (2014). Items for measuring the *negative valence* were adapted from Lee (2009), Lu et al. (2011), Järveläinen (2007), Oreg (2003), and Treviño et al. (2000). All constructs were adapted to the context of mobile SST. The items and measurement scales are provided in the appendix. All items were rated to five-point Likert scales ranging from strongly disagree (1) to strongly agree (5). Experience with mobile SST was measured on a five-point scale ranging from never to always (never, rarely, sometimes, often, always).

### 4.2 Data collection

We administered a survey consisting of questions capturing the constructs encompassed in the research model. We provided a clear description of kiosk SST, mobile SST and the rationale of the questionnaire to assure the interviewees’ understanding of the objective. To receive meaningful results, we conducted the survey at two train stations in Germany. Interviewers chose their prospects randomly and not in the sphere of influence of any particular SST. Train stations were chosen as they offer different SST options, amongst them kiosks SST, which are broadly accepted and adopted by the customers, and mobile SST. The survey was conducted on different working days in order to cover a broad range of users with varying demographic variables. Of the 443 surveys collected, 315 usable responses (71.11%) remained for data analysis after removing those from the data set which were not completed entirely or displayed deficient answers. Table 3 lists demographic information of the respondents.

Measure	Items
Gender	Male (n=146; 46.35%) Female (n=169; 53.65%)
Age	14-19 (n=45; 14.29%) 20-29 (n=129; 40.95%) 30-39 (n=50; 15.87%) 40-49 (n=35; 11.11%) 50-59 (n=39; 12.38%) >59 (n=17; 5.40%)
Education	University (Master, Bachelor) (n=161; 51.11%) Elementary school (n=90; 28.57%) No degree (n=2; 0.63%) Secondary Education (n=62; 19.68%)

Table 3. Demographic information about the respondents (n=315).

### 4.3 Analysis and results

Two construct types compose the research model: first-order constructs (*positive* and *negative valence determinants*) and second-order constructs (*positive* and *negative valence*). We utilise a two-step approach to analyse the hypotheses (cf. Anderson and Gerbing, 1988; Chiu et al., 2014). While the first step tests the composition of the first-order constructs (measurement model), the second step examines the structural relationships among the latent second-order constructs (structural model). This proceeding enables to ensure reliability and validity of the measures before examination of the structural model parameters (Anderson and Gerbing, 1988). We chose Partial Least Squares (PLS) and the software package Smart PLS 3 for our analysis. PLS enables latent constructs to be modelled as formative and reflective indicators and therefore is suggested for studies including formative constructs (Lowry and Gaskin, 2014). Moreover, a component-based approach to estimation is applied, placing minimal restrictions on sample size, measurement scales and residual distribution (Chin, 1998). As *positive* and *negative valence* are latent variables composed of manifest measurement variables causing changes in them, we operationalise them as formative second-order constructs.

#### 4.3.1 Measurement model

The second-order constructs were measured by the observed variables for the first-order constructs. We therefore used the approach of repeated manifest variables. The first-order constructs perfectly predict the repeated indicators in the second-order constructs, as they also comprise those indicators. For endogenous and formative second-order constructs, this “repeated indicator” approach has been proven to work very well (Lowry and Gaskin, 2014). Consequently, the standard PLS algorithm can be used for analysing our research model. The second-order construct *positive valence* was measured by the observed manifest variables for *independence of location and time* (IN), *time savings* (TS), *personalisation* (PE), *compatibility* (CO), *image* (IM), *multifunctionality* (MU) and *enjoyment* (EN). *Negative valence* was measured by *privacy risk* (PR), *performance risk* (PF), *complexity* (CX) and *routine seeking* (RS) (see appendix).

We established reliability and internal consistency of the measures as well as convergent and discriminant validity (via item loadings) to test the adequacy of the measurement model (Chin et al., 2003). Composite reliability (CR) values were used to analyse reliability. As can be seen in Table 4, all CR exceed the commonly acceptable threshold 0.7 (Fornell and Larcker, 1981). Convergent validity was analysed based on two requirements: First, in order to be significant, the indicator loadings need to exceed 0.5 (Gefen and Straub, 2005) which is fulfilled by our model. Due to page limitations, we could not provide a separate table including all indicator loadings. Second, the average variance extracted (AVE) of each construct should be higher than the variance due to the measurement error for that construct and should surpass a 0.5 threshold (Nunnally, 1967). Table 4 shows that all AVE values meet the requirement. All of the items exhibit a loading higher than 0.5 on their respective construct.

Construct	Items	CR	Mean	AVE	Construct	Items	CR	Mean	AVE
IN	3	0.80	4.34	0.57	PR	3	0.92	3.30	0.78
TS	4	0.77	3.53	0.51	PF	3	0.88	3.73	0.68
PE	3	0.87	3.14	0.68	CX	3	0.90	2.30	0.75
CO	3	0.89	3.35	0.73	RS	4	0.88	2.57	0.64
IM	3	0.86	1.88	0.69	IS	3	0.93	3.55	0.82
MU	4	0.88	3.29	0.65	TR	3	0.87	3.99	0.69
EN	4	0.84	3.23	0.58	TA	3	0.89	3.73	0.58

Table 4. Descriptive statistics of variables.



	IN	TS	PE	CO	IM	MU	EN	PR	PF	CX	RS	IS	TR	TA
IN	<b>0.76</b>													
TS	0.34	<b>0.68</b>												
PE	0.21	0.42	<b>0.83</b>											
CO	0.32	0.49	0.40	<b>0.86</b>										
IM	-0.05	-0.05	0.09	0.14	<b>0.83</b>									
MU	0.31	0.41	0.39	0.52	0.04	<b>0.80</b>								
EN	0.23	0.25	0.30	0.47	0.26	0.44	<b>0.76</b>							
PR	-0.17	-0.26	-0.12	-0.32	0.02	-0.24	-0.15	<b>0.88</b>						
PF	-0.04	-0.02	-0.09	-0.18	-0.12	-0.18	-0.15	0.25	<b>0.84</b>					
CX	-0.26	-0.40	-0.11	-0.36	0.08	-0.40	-0.22	0.24	0.13	<b>0.87</b>				
RS	-0.24	-0.36	-0.21	-0.24	0.13	-0.27	-0.05	0.20	-0.06	0.30	<b>0.80</b>			
IS	0.37	0.47	0.25	0.63	0.09	0.51	0.51	-0.37	-0.16	-0.37	-0.30	<b>0.90</b>		
TR	0.23	0.31	0.27	0.32	-0.14	0.38	0.21	-0.29	-0.12	-0.36	-0.32	0.34	<b>0.83</b>	
TA	0.27	0.32	0.16	0.50	0.05	0.41	0.46	-0.28	-0.06	-0.47	-0.31	0.58	0.33	<b>0.85</b>

Note: Pearson correlation coefficients with absolute value > 0.1120 are significant at p < 0.01; > 0.0792 significant at p < 0.05; >0.0618 significant at p < 0.1. Square root of AVE is in bold.

Table 5. Correlations among constructs and square root of AVE.

Discriminant validity was assessed first by its cross-factor loadings. The loading in absolute terms of each item on its assigned construct should exceed its loadings on all other constructs (Chin, 1998) which our model well satisfies but again this result could not be displayed due to page limitations. Second, the correlations among the constructs must be lower than 0.85 (Kline and Santor, 1999) which is also fulfilled (Table 5). Third, the square root of the AVE of each construct must exceed the correlations of the construct with the other constructs (Fornell and Larcker, 1981). As can be seen in Table 5, these requirements are well met and therefore, the measures demonstrate discriminant validity. Given the strong evidence for convergent and discriminant validity, the scales exhibit good internal consistency and reliability and the measurement model was deemed acceptable.

#### 4.3.2 Structural model

In order to examine the explanatory power of the structural model (referring to our hypotheses 1 and 2), we determined the structural paths and the R<sup>2</sup> score of the endogenous variable. The result of the path analysis with a bootstrap sample number of 5.000 shows that our hypotheses are supported. All paths show significance and the model explains 58.1% of the variance of intention to switch. This implies that the model explains the cohesions well and the model has a good fit (Hair et al., 2011). The results are presented and discussed subsequently.

The evaluation of our model reveals the following results. First, path analysis shows that based on the data of all respondents, *positive valence* influences intention to switch positively ( $\beta=0.40, p<0.001$ ) while *negative valence* exhibits negative influence respectively ( $\beta=-0.11, p<0.05$ ). This is in line with our expectations (cf. hypotheses 1 and 2). The comparison of the path coefficients based on Johnson et al. (1987) reveals that the effect of *positive valence* on intention to use is significantly stronger ( $t=6.21; p<0.001$ ) than the effect of *negative valence*. Second, the results further reveal that all proposed determinants of positive valence, namely *independence of location and time* ( $\beta=0.14, p<0.001$ ), *time savings* ( $\beta=0.20, p<0.001$ ), *personalisation* ( $\beta=0.18, p<0.001$ ), *compatibility* ( $\beta=0.31, p<0.001$ ), *image* ( $\beta=0.04, p<0.1$ ), *multifunctionality* ( $\beta=0.32, p<0.001$ ), and *enjoyment* ( $\beta=0.25, p<0.001$ ) constitute significant components. Weight comparisons (Johnson et al., 1987) show that among *positive valence*, *multifunctionality* and *compatibility* exhibit higher influence on *positive valence* ( $p<0.1$ ) than the other determinants. These findings indicate that determinants related to the “mobile lifestyle” are valued most. Third, *privacy risk* ( $\beta=0.46, p<0.001$ ), *performance risk* ( $\beta=0.16, p<0.01$ ), *complexity* ( $\beta=0.44, p<0.001$ ), and *routine seeking* ( $\beta=0.47, p<0.001$ ) were found to have significant positive influence on *negative valence*. *Routine seeking*, *privacy risk*, and *complexity* have a much higher influence than *performance risk*.

Weight comparisons (Johnson et al., 1987) showed that the differences are statistically significant ( $p < 0.001$ ) elucidating that people trust mobile SST and do not expect this technology to have serious functionality errors. This is not without reason in a world where people grow up with mobile SST becoming an integral part of everyone’s life. The more a person is exposed to a technology the more the technology as well as its proper functionality are taken for granted. Finally, *experience* ( $\beta = 0.23, p < 0.001$ ) and *technology affinity* ( $\beta = 0.22, p < 0.001$ ) exhibit significant influences while *education* shows a slightly significant influence ( $\beta = -0.08, p < 0.05$ ) and *gender, age* and *trust* were found to have no significant influence on intention to switch at all.

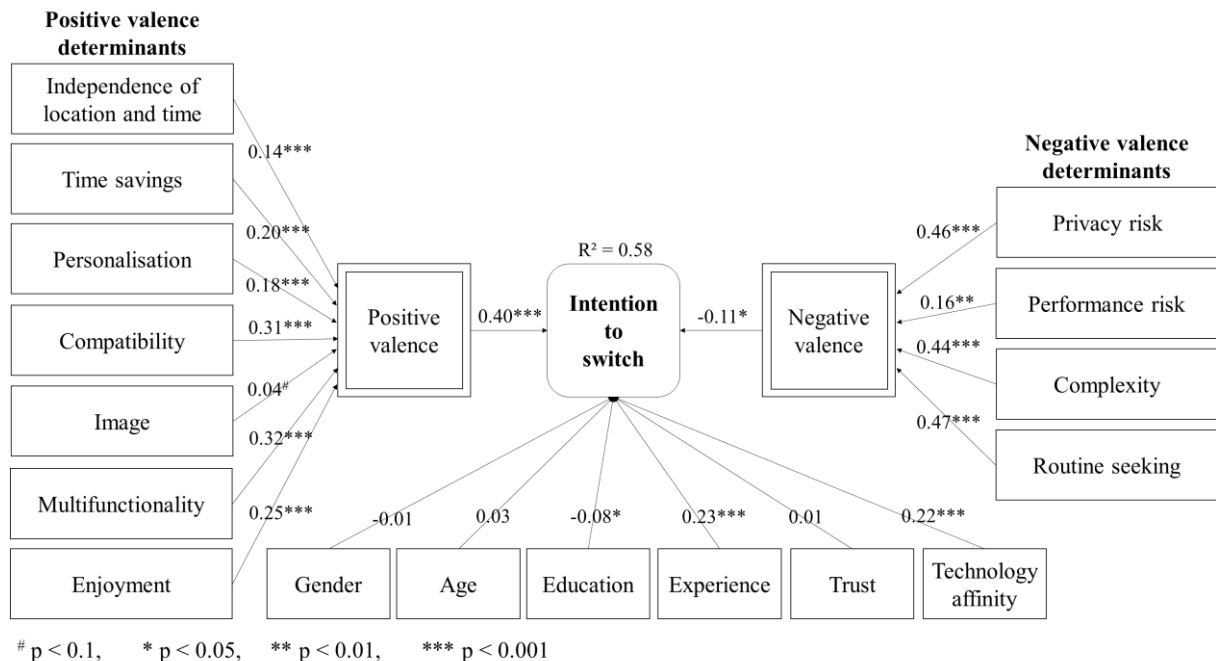


Figure 2. PLS results of the research model.

## 5 Discussion

### 5.1 Implications for theory and practice

Our research investigated the influence of *positive* and *negative valence* on the intention to switch from kiosk to mobile SST. For this reason, we developed a research model to capture the *positive* and *negative valence determinants* which are crucial for customers’ intention to switch. Our work has several contributions to theory and practice. First of all, we developed a multidimensional research model allowing us to capture the influence of *positive* and *negative valence* on customers’ intention to switch from kiosk to mobile SST. Thereby, we found that the *positive valence* ( $\beta = 0.40, p = 0.001$ ) as well as the *negative valence* ( $\beta = -0.11, p = 0.05$ ) are both crucial for intention to switch (cf. Figure 2). We found that the *positive valence* is significantly more important than the *negative valence* ( $p < 0.001$ ). To date, the influence of positive and negative aspects on intention to switch has only been investigated by few studies in information systems research (e.g., Kim et al., 2006; Chang et al., 2014). While existing research focuses on switching intentions in social network sites (Chang et al., 2014) or between email services (Kim et al., 2006), we expand existing research by examining two of the most prevalent SST types, namely kiosk and mobile SST. The significantly stronger effect of the *positive valence* observed in our study is in contrast to Chang et al. (2014), who examine behaviour on social network sites and state that the influence of positive and negative aspects are similarly strong. It therefore can be assumed that the relative importance of positive and negative aspects varies depending on the context.

Second, we investigated – as one of the first – how the *positive* and *negative valence* are composed in the context of mobile SST. We found that the benefits *multifunctionality* ( $\beta=0.32, p<0.001$ ), *compatibility* ( $\beta=0.31, p<0.001$ ), and *enjoyment* ( $\beta=0.25, p<0.001$ ) are the most important for the intention to switch while the relevance of *image* ( $\beta=0.04, p<0.1$ ) as well as *performance risk* ( $\beta=0.16, p<0.01$ ) are rather negligible. In literature to date, little is known about the compositions of the *positive* and *negative valence* for the intention to switch. Thus, in contrast to existing research which considers only few or even single determinants (e.g., Bhattacharjee and Park, 2014; Chang et al., 2014; Kim et al., 2006; Moore and Benbasat, 1991), we are the first trying to get an in-depth understanding of the multiplicity of the determinants composing the *positive* and *negative valence*. Regarding the few determinants considered in prior research, our findings confirm the strong positive influence of *enjoyment* on intention to switch (Dabholkar, 1996; Negahban and Chung, 2014). Further, they are in line with Moore and Benbasat (1991) who find *image* effects in IS adoption as being surprisingly low. The clear dominance of *multifunctionality*, *compatibility*, and *enjoyment* reveals that customers expect mobile SST to fit their lifestyle and to be convenient for managing their daily tasks. Thus, customers expect mobile SST to be a companion in every life situation. Further, the minor importance of *performance risk* clearly demonstrates a general trust in the new technology. More precisely customers presumably expect the technology to be mature and without functional risks (such as incorrect ticket download). The reason may be a general technology ubiquity in addition with a growing network coverage. Long Term Evolution (LTE), Wi-Fi (for instance in trains) and elimination of roaming fees lead to weaker perceptions of potential performance risks as the amount of possible connection errors decreases.

Third, we show that while prior *experience* with mobile SST favours the switch ( $\beta=0.23, p<0.001$ ), this also applies for *technology affinity* ( $\beta=0.22, p<0.001$ ). As previous studies on customer characteristics have shown that prior experience indeed plays a role for initial or repeat use intention of technologies (e.g., Cheung and Lee, 2010; Kim and Gupta, 2009; van der Heijden et al., 2003), we confirm this research stream but extend it by the customers' *technology affinity*. Surprisingly, neither *age* ( $\beta=0.03$ ) nor *education* ( $\beta=-0.08, p<0.05$ ) play a major role for switching from kiosk to mobile SST.

Our research has also several implications for practice. First, based on our findings, we highly recommend firms to recognize especially the benefits as the main driving determinants leading to an actual switch to mobile SST. Thus, firms should focus on further improving and promoting the benefits of their mobile SST, rather than justifying the disadvantages. Moreover, if companies generally aim at increasing their customer base, it apparently seems to be less effective to emphasize the disadvantages of possible competitors but rather to advertise and highlight their own advantages. Second, since mobile SST nowadays support users in nearly every situation of life, we strongly suggest practitioners to put particular focus on multifunctional, compatible and enjoyable SST features to meet customers' lifestyles. Otherwise, customers may reject the mobile SST and not switch from their habitually used SST. Further, as people are regularly exposed to mobile SST in their daily lives, they expect flawless functionality. Besides, companies do not need to address customers by age groups as customers of different ages do not display differences in their intention to switch.

## 5.2 Limitations

Although the study enables a deeper understanding of the determinants influencing customers' intention to switch to mobile SST, a number of limitations remain. Yet, together with the findings of this paper, our implications represent starting points for future research. First, the collected data was from one specific case and contained a large amount of answers from younger people which may limit the generalizability of our findings. However, since our survey was carried out in a real customer service setting, we are confident that our rich data set provides a solid foundation for testing the research model. Second, while the valence framework delivers a good basis for first insights in this topic, future research needs to include further aspects, such as computer self-efficacy, identity concepts and emotions which additionally play important roles in usage decisions. Third, our study did not differentiate between different functions and types of mobile SST but rather analysed mobile SST in general. We decided to do so in a

first step to prevent mixing distinct effects that may arise for different types of mobile SST. Yet, future research should examine variations of mobile SST.

## 6 Conclusion

Due to the ongoing proliferation of SST and the resulting autonomy of the customer in vast aspects of daily life, it is an imperative to differentiate between the different types of SST. While kiosk SST are widely used, also mobile SST are beginning to capture the market. Yet, enforcing customers to switch from kiosk to mobile SST can still be difficult due to routine seeking, privacy risks, or fear of complex user interfaces. As a result, users are locked into a status quo and do not switch to alternatives. Nevertheless, it can be advantageous for companies when their customers use the mobile SST as this enables them to collect valuable data on their customers. Hence, there is a need to better understand why customers switch from kiosk to mobile SST. Against this background, the aim of this paper was to gain a better understanding of the factors influencing the intention to switch from kiosk SST to mobile SST. We investigate the positive and negative determinants, which constitute the *positive* and *negative valence* of mobile SST as factors influencing the intention to switch. Our study expands existing research by outlining the particular importance of the *positive valence* for the customers’ intention to switch, elucidating that concerns about potential disadvantages are rather low. With this in mind, the determinants *multifunctionality*, *compatibility*, and *enjoyment* clearly constitute the most crucial determinants, which shows that factors supporting “the mobile lifestyle” are appreciated most by the customers. By contrast, they see little importance in *performance risk*, which implicates a general trust in the new technology. Moreover, we examined that people who generally like using new technologies apparently rather tend to switching as compared to people with low *technology affinity*. Companies are therefore well advised to focus on highlighting the advantages of the mobile SST rather than justifying potential disadvantages in order to convince their customers to switch. Overall, our study is the first to combine *positive* and *negative valence determinants* as the fundamental aspects for customers’ intention to switch to mobile SST and to compare their relative importance. With our work, we hope to contribute to a better understanding of customers’ switching behaviour in the context of mobile SST. Furthermore, our theoretical and practical contributions serve as a proper starting point for future research on this exciting topic.

## Appendix A – Questionnaire Items

<b>Independence of location and time (IN)</b> (developed based on Mallat et al., 2008)	
IN 1	Mobile SST eliminate the act of queuing.
IN 2	Using mobile SST is independent of time.
IN 3	Using mobile SST is independent of location.
<b>Time savings (TS)</b> (adapted from Dabholkar, 1996)	
TS 1	I need a lot of time for using mobile SST.
TS 2	Using mobile SST is very quick.
TS 3	Using mobile SST allows me to save time.
TS 4	Using mobile SST reduces queuing time.
<b>Personalisation (PE)</b> (adapted from Xu et al., 2011)	
PE 1	Mobile SST can provide me with personalised services tailored to my needs.
PE 2	Mobile SST can provide me with additional information tailored to my personal interests.
PE 3	Mobile SST can provide me with more convenient services that I like.
<b>Compatibility (CO)</b> (adapted from Moore and Benbasat, 1991)	
CO 1	Using mobile SST is compatible with all aspects of my life.
CO 2	I think that using mobile SST fits well with the way I like to live.
CO 3	Using mobile SST fits into my life style.
<b>Image (IM)</b> (adapted from Venkatesh and Davis, 2000)	
IM 1	People around me using mobile SST have more prestige than those who do not.
IM 2	Using mobile SST enhances my image.
IM 3	Using mobile SST is considered a status symbol among my friends.

<b>Multifunctionality (MU)</b> (adapted from Negabhan and Chung, 2014)	
MU 1 The multifunctionality of mobile SST meets my needs.	MU 3 The multifunctionality of mobile SST is adequate for accomplishing my experience.
MU 2 Mobile SST has all the functionality that I find necessary.	MU 4 I am satisfied with the multifunctionality of mobile SST
<b>Enjoyment (EN)</b> (adapted from Dabholkar, 1996)	
EN 1 It is enjoyable to mobile SST.	EN 3 It is pleasant to use mobile SST.
EN 2 It is exciting to use mobile SST.	EN 4 It is interesting to use mobile SST.
<b>Privacy risk (PR)</b> (adapted from Lu et al., 2011)	
PR 1 I would not feel safe providing personal private information over mobile SST.	PR 3 I would not feel secure sending sensitive information across mobile SST.
PR 2 I am worried about using mobile SST as other people may access my personal data.	
<b>Performance risk (PF)</b> (adapted from Lee, 2009)	
PF 1 Mobile SST may not perform well due to connection problems.	PF 3 Mobile SST may process data and service requests incorrectly.
PF 2 Mobile SST may not perform well due to technical problems.	
<b>Complexity (CX)</b> (developed based on Treviño et al., 2000 and Järveläinen, 2007)	
CX 1 I assume that much individual information is needed to use mobile SST.	CX 3 I presume using mobile SST to be a complicated incident.
CX 2 My information needs to understand the individual steps of mobile SST may be high.	
<b>Routine seeking (RS)</b> (adapted from Oreg, 2003)	
RS 1 I prefer having a stable routine to experiencing changes in my life.	RS 3 I like to do the same old things rather than try new and different ones
RS 2 I generally consider changes to be a negative thing.	RS 4 I like to experience novelty and change in my daily routine.
<b>Intention to switch (IS)</b> (adapted from Chang et al., 2014)	
IS 1 I am considering switching to mobile SST.	IS 3 I am determined to switch to mobile SST.
IS 2 The chance that I switch is high.	
<b>Trust in mobile SST (TR)</b> (adapted from Kim et al., 2009)	
TR 1 Mobile SST always provide accurate service.	TR 3 Mobile SST always provide safe service.
TR 2 Mobile SST always provide reliable service	
<b>Technology affinity (TA)</b> (adapted from Venkatesh et al., 2003)	
TA 1 I use a lot of new technologies in my everyday life.	TA 3 It is pleasant for me to deal with new technologies.
TA 2 I feel good about using new technologies.	

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