Master Thesis

Drivers and Barriers to Value Creation in Mobile Service Delivery

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Abstract

Mobile devices are growing in a popularity way for consumers to access the Internet for mobile services. As the number of mobile devices is multiplying, subscriptions to services through these devices are also expanding. Previous research has found that perceived service value positively mediates the cost/benefit trade-off with behavioural intentions to use mobile services. This research examines the effect of identification with the mobile phone and perceived ubiquity, as possible moderators on the perceived costs/benefits trade-off and perceived mobile service value. A web-survey was conducted using mobile transaction services as illustrative service. The results of the conducted web-survey reveal that perceived ubiquity helps explaining the perceived mobile service value. In contrast to expectations, identification with mobile devices does not make consumers more prone to use mobile services. This study delivered contribution for companies to provide a better understanding of specific drivers and barriers of mobile services to value creation and to help companies effectively allocate their resources to enhance consumer value perceptions.

Key words: ubiquity, identification, mobile services

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1. Introduction

Mobile devices are becoming prevalent in daily life. At the end of 2012 there were more than a billion smartphone subscriptions, which means that 1 of 7 of the world population owns a smartphone and has a growth rate of 46.6 percent compared with last year (Portio Research, march 2013). Also the tablet subscriptions are rising. Industry estimates that almost half of the U.S internet population will be using tablets by year-end (Portio Research, march 2013). As the number of mobile devices is multiplying, subscriptions to services through these devices are also expanding (Shankar et al, 2010) . The total amount of applications (apps) is still growing and is expected to reach an amount of 4.4 billion in 2017 according to Portio Research (march, 2013). Approximately, consumers are spending 80% of their time on their mobile device using apps. Only 20 % of their time is used for opening browsers and visiting websites. Furthermore, the enthusiasm for using mobile services can be addressed to the possibility of the anytime and anywhere access (Okazaki & Mendez, 2013). The anytime and anywhere access of mobile devices distinguishes it from other electronic devices such as the personal computer (PC) (Shankar et al., 2010). Not only the mobility distinguish the mobile devices from PC's, but also the personal attachment consumers have with their mobile devices. Empirical research shows that consumers build up an emotional attachment with their phones (Vincent et al, 2006). (Weller, Shackleford, Dieckmann, & Slovic, 2013) indicate that consumers that have a strong attachment with their mobile phone are more likely to use mobile services. Consumers use key possessions to extend, expand, and strengthen their sense of identity (Belk, 1988). Since choices are often identity based it is assumed that identification with mobile device can play an important role regarding to value creation with mobile services. Although the influence of identity on consumer behavior has been documented in many streams of literature (Oyserman, Fryberg, & Yoder, 2007; Oyserman, 2009), the absence on what effect it has on the intention to use mobile service is still missing.

Furthermore, the growing amount of adopters of mobile devices and their related services indicate an emerging mobile lifestyle. The growing amount of adopters of mobile services can be explained by the anytime and anywhere access. The anytime and anywhere access properties have been referred to as ubiquity in the existing literature (e.g.,(Balasubraman, Peterson, & Jarvenpaa, 2002; Kleijnen, de Ruyter, & Wetzels, 2007; Okazaki & Mendez, 2013). Though the conceptualization of ubiquity can be traced early (Balasubraman et al., 2002), only recent research defined a valid measurement tool for ubiquity (Okazaki & Mendez, 2013). Therefore, no research has been able to examine the unique nature of mobile devices (ubiquity) and predicting the consumer's value perception of mobile services. The ubiquitous nature of mobile services may change the paradigm of marketing, especially in retailing (Shankar & Balasubramanian, 2009). Location is the main competitive advantage in the traditional model of retailing, where consumers entering the retail environment. Hence, nowadays retailers can enter the consumer's environment through mobile devices, and, because the mobile stays with the consumer, the retailer can be anywhere, anytime (Shankar et al., 2010). However, companies still fail to understand how consumers derive value from mobile services (Kleijnen et al., 2007; van der Heijden, 2006), which leads to the following research question:

What are the specific drivers and barriers in the mobile service value creation process that leads to the behavioural intention to use mobile services?

The following sub-questions will be addressed:

1) *Does identification with the mobile device moderate the cost/benefit trade-off with perceived mobile service value?*

2) *Does perceived ubiquity with the mobile device moderate the cost/benefit trade-off with perceived mobile service value?*

This research builds further on the mobile value creation model of (Kleijnen et al., 2007). Specific benefits and costs of mobile services are identified that influences the value perception of the consumers. The perceived mobile service value in turn, leads to behavioural intention to use the mobile services. The present research aims at gaining a deeper understanding on the role that ubiquity and identification have on the intentions to use mobile services. Firstly, the research examines the specific benefits of using mobile services on the perceived mobile service value. Secondly, the effect of costs of mobile services on the perceived value is investigated. Thirdly, it inspects what mediating effect of perceived mobile service value on the behavioural intentions to use mobile services. Fourthly, it tries to find evidence that identification moderates the cost/benefit trade-off with mobile service value. Finally, it examines the interaction effect of ubiquity on the cost/benefit trade-off and mobile service value. The findings provide marketers a better understanding of specific drivers and barriers of mobile services to value creation and to help companies effectively allocate their resources to enhance consumer value perceptions.

This thesis starts with a literature review, which summarize relevant research about mobile value creation. Specifically, the possible interaction effects of ubiquity and identification with mobile phones are discussed. Hence, the hypotheses are introduced and examined by a web-survey. The questions were based on mobile transaction services. The findings are analyzed and discussed, and new important insights and areas for future research are introduced. Finally, this thesis provides implications for marketers and advertisers. Taken together, this work adds on current literature on examine the role of identification with mobile devices and the perceived ubiquity on mobile value creation.

2. Literature review

2.1 Conceptual background

To gain a better understanding of the intention to use mobile services, prior research has often embraced the technology acceptance model (TAM) of Davis (1989), to explain consumer technology adoption. However, parsimony has been one of TAM's strengths but also its major weakness as it has limited use in explaining users' behavioral intention to adopt complex mobile services (Venkatesh & Davis, 2000). Another major theoretical limitation of the TAM model is the exclusion of the possibility influence from institutional, social and personal factors (Dillon & Morris, 1996). Hence, it makes it difficult to apply the model outside the organization/workplace for which it is originally created (Carlsson, Hyvönen, Repo, & Walden, 2005). This critism is also applicable to mobile services as these are used across the spheres of work, home and leisure of an individual (Rao, 2007). Furthermore, the Tam model predicts consumers' technology adoption by consumer's attitudes towards the technology (Davis, 1989). However, several studies report that a positive attitude toward a new technology is not an invariable significant predicator of consumers' intentions to use that technology (Jackson, Chow, & Leitch, 1997). Additionally, personalization and ubiquity of the mobile services make their adoption somewhat different than other Information and Communication Technologies (ICT) services (Rao, 2007).

Across different service contexts, (Cronin, Brady, & Hult, 2000) indicate that service value leads to behavioral intentions, rather than the broad attitudinal construct of (Davis, 1989). Indeed, (Kleijnen et al., 2007) and Brady et al., (2005), also show that service value positively influence the behavioral intentions of the consumer. However, companies fail to understand how consumers derive value from mobile services (Shankar et al 2003). Therefore, this research will build further on the conceptual framework of (Kleijnen et al., 2007), which proposes that perceived service value influence the behavioral intention to use mobile

services. Value can be seen as a customer-perceived trade-off between costs and benefits (Brady et al., 2005). Furthermore, in this research the model is extended by including two moderators: ubiquity and identification. The costs and benefits, mobile service value, and the moderators that influence the value creation, can be illustrated in the following model:
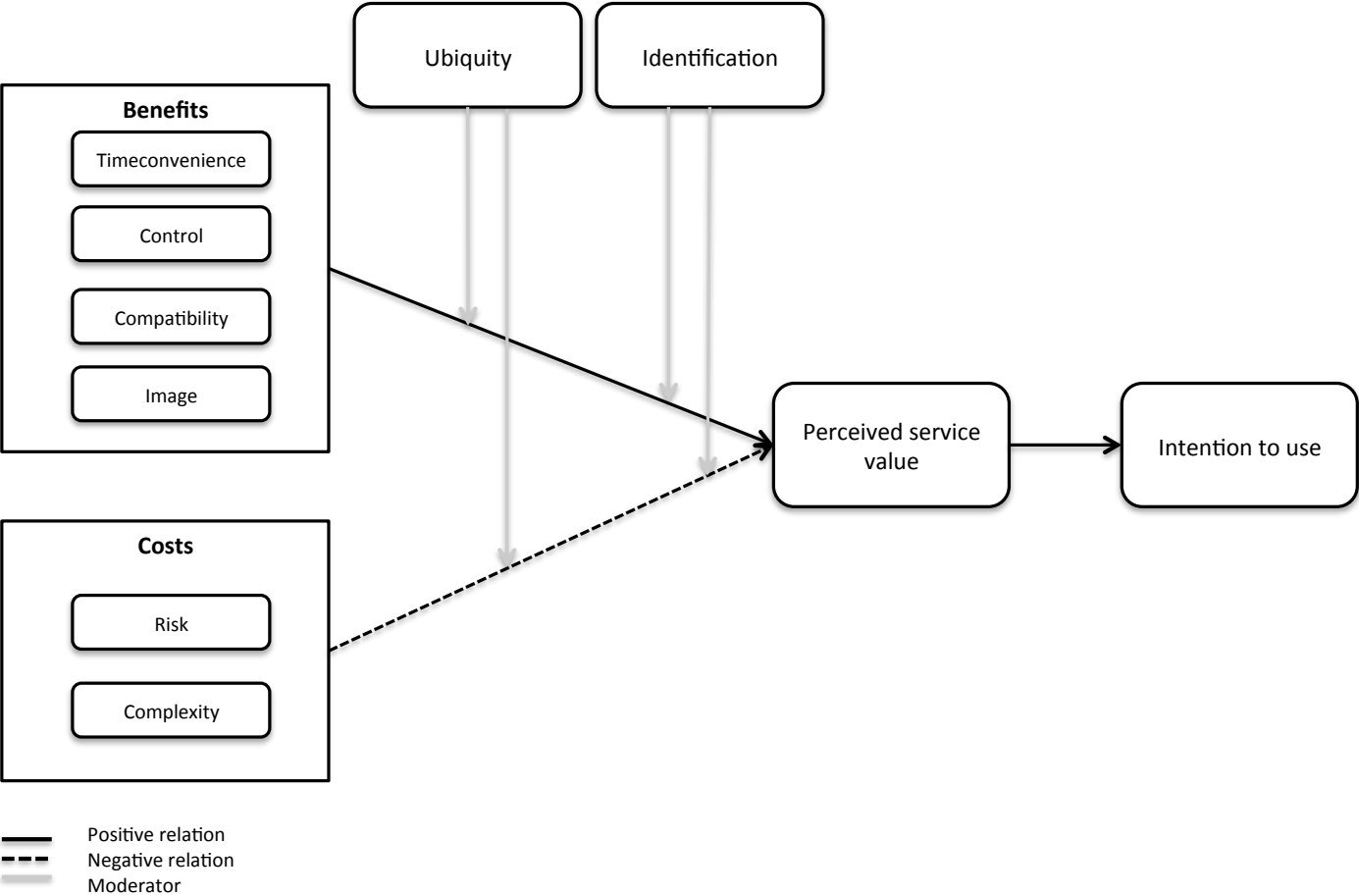
To continue, existing literature, testing the effect of benefits and costs on mobile value, will be discussed in the following paragraphs, followed by research on the two moderators and the effect on intention to use mobile services, in order to formulate appropriate hypotheses.

2.2 Hypothesis 1 – Benefits of using mobile service channel

In order to identify the antecedents of mobile value creation, this research is build upon the diffusions of innovations theory of Rogers (1995). It is one of the most popular theories that explore factors that affecting an individual to adopt an innovation or technology (Chen, 2013). The five factors that the theory explores are: relative advantage, compatibility, complexity, trialability and observability (Rogers, 1995). However, (Agarwal, R.Prasad, 1998) found that only relative advantage, compatibility and complexity positively relates to innovation adaption. Therefore, only those three will be taken into consideration in this research, where relative advantage and compatibility are indicated as benefits in this research. Complexity is indicated as a cost in this research and will be discussed later. Moreover, based on empirical research, this research defines three benefits of relative advantage for mobile services, namely: time convenience, users control and image (Kleijnen, de Ruyter, & Wetzels, 2004; Kleijnen et al., 2007; Rao, 2007). Hence, in the following paragraphs the benefits of mobile services, perceived time convenience, users control, compatibility, and image, will be discussed.

2.2.1   Perceived time convenience

Mobile services allows consumers to access the services anytime and anywhere (Balasubraman et al., 2002), which in this research is referred as the ubiquity nature of mobile services. In context of mobile transaction services, it allows consumer to make use of the service at their most convenient time. Furthermore, leveraging the ubiquity of the mobile channel by exploiting its time and efficiency utilities will contribute to consumer value perceptions (Kleijnen et al., 2007). Hence, this leads to the following hypothesis:

- *H1a: Perceived time convenience positively affects perceived mobile service value.*

2.2.2 Perceived control

Perceived control can be defined as the extent to which consumers a determined the timing, content, and sequence of the transactions (Kleijnen et al., 2007). Empirical research shows that consumer's perceived control can have considerable impact on service experience (Bateson & Hui, 1991). Consumers create a positive feeling to the service experience when they perceived higher perceived control (Bateson, John E G, Hui, 1991). Furthermore, higher perceived control is also associated with the ability to make decisions (Bateson & Hui, 1991). Indeed, Internationale Nederlanden Groep (ING, 2011) revealed in a research that using mobile banking services enables the consumers to have more control over their money matters. Consumers indicated that they have the ability to check their account and use mobile transaction services at any time. Thus, the following hypothesis was developed:

- *H1b: Perceived control positively affects the perceived value of mobile channel use.*

2.2.3 Perceived service compatibility

Adopted from Rogers diffusion of innovations theory (1995), compatibility is defined in this research as the degree to which an innovation is perceived as being consistent with the individual's values, past experiences and needs. Some consumers naturally resist to innovations, as innovations requires them to change and learn in order to adopt (Ram 1987). Furthermore, (Agarwal & Karahanna, 1998) state that more innovative, and thus more experienced users, will recognize the value of the innovation more easily. In the context of mobile banking, some consumers are more mobile literature than others and, consequently, would be expected to have fewer problems utilizing mobile banking and getting accustomed to it quickly (Koenig-Lewis, Palmer, & Moll, 2010). Hence, perceived compatibility should have a positive effect on value perceptions.

- *H1c: Perceived compatibility positively affects the perceived value of mobile channel use.*

2.2.4 Perceived Image

Rogers (1995) include perceived image also as a relative advantage to adapt to an innovation. Perceived image has been found to have a positive effect on behavioral intention (Larivière et al., 2013) Perceived image is in this research defined as the degree to which the adoption and the use of an innovation is perceived by users to enhance their image and their social system (Rao, 2007). Consumers adapt to mobile services because they believe that these services may help to create or alter a positive image and social for themselves within their social setting rather than for necessity (Teo & Pok, 2003; Jackson et al., 2006). Indeed, (Leung & Wei, 2000) note that mobile services are a way to express personality, status and image in a public context. Therefore, in this research it is suggested that image is a perceived as a benefit for consumers to use the mobile channel. This leads to the following hypothesis:

- *H1d: Perceived image positively affects the perceived value of mobile channel use.*

2.3 Hypothesis 2 – Costs of using mobile service channel

In forming value perceptions, consumers weigh the benefits against the costs (Brady et al., 2005). In this section two costs will be discussed: complexity and risk. The prior one is adopted from one of the factors of the diffusion theory of Rogers (1995). Based on Rogers (1995) complexity definition, in this research complexity refers to the degree the mobile service is perceived to be difficult to understand, learn or operate. Furthermore, the second cost factor is risk. Risk has been an important issue in online commerce from the very beginning (Bhimani, 1996). Existing research has shown that consumers are anxious about security issues and their privacy (Gerrard et al., 2006 as cited in Koenig-Lewis et al., 2010). Hence, risk is included in this research.

2.3.1 Perceived risk

Several factors can influence the risk perception of users. In the context of mobile transactions, perceived risk is generally defined as a perception about implicit risk in using the open internet infrastructure to exchange private information (Zhou, 2011). Indeed, security is regarded as the most serious disadvantage of mobile banking with fears about external intrusion resulting in the scrutiny of personal financial details and even the removal of money from accounts (Littler & Melanthiou, 2006). Furthermore, mobility increases the threat of security violations arising from the required infrastructure for wireless applications (Chen, 2013). Hence, perceived risk of the consumer using mobile services should have a negative effect on the value perceptions.

- *H2a: Perceived risk negatively affects the perceived value of mobile channel use.*

2.3.2 Perceived complexity

Adopted from the diffusion theory of Rogers (1995), complexity represents in this research the degree to which an innovation is perceived to be difficult to understand, learn or operate. Kleijnen et al. (2004) indicates that in understanding the mobile service process the cognitive effort may be perceived as a barrier. For example, consumers using mobile financial services have a hard time understanding what specific actions they must perform to complete their transactions (Suoranta & Mattila, 2004). Furthermore, the lifecycle of mobile services is relatively short. That is, new technologies are becoming rapidly obsolete. These short lifecycles requires certain amount of recurring learning before consumers get confident and satisfied using mobile services (Rao, 2007). Hence, perceived complexity is expected to have a negative effect on the value mobile service perceptions of the consumer.

- *H2b: Perceived risk negatively affects the perceived value of mobile channel use.*

2.4 Hypothesis 4 – Intention to use

Consumers engage normally in a 'cost-benefit' analysis when selecting a decision-making procedure (Wright, 1975). Indeed, Lee (2009) shows that the intention to use mobile banking is positively affected by perceived benefit of the mobile service. In the service literature (Chang en Wildt1994) perceived service value is one of the most important determinant for behavioral users intentions. Kleijnen et al. (2007) revealed that this process also counts with using mobile services. Perceived value of the mobile services influence the behavioral intentions to use mobile services (Kleijnen et al., 2007). Hence, perceived value should influence the intentions to use mobile services.

- *H3: Perceived mobile service value of mobile channel use mediates the cost/benefit trade-off with intention to use mobile services.*

2.5 Moderators

In the previous paragraphs the value creation model was discussed. The intention of using mobile services is determinant by the perceived mobile service value, which in turn is influenced by the costs and benefits that consumers perceive of mobile services. However, personalization and ubiquity of the mobile services make their adoption somewhat different than other Information and Communication Technologies (ICT) services (Rao, 2007). Therefore, two moderators, ubiquity and identification with mobile device, are added to the model that possible moderate the relationship of the cost and benefits with mobile service value.

2.5.1 Ubiquity

Ubiquity has been referred to as one of the most important characteristics of mobile services. Ubiquity, in context of mobile services is the anywhere, anytime nature (Balasubraman et al., 2002) or combined flexibility of space and time (Kleijnen et al., 2007). So far, little research

included ubiquity in their adoption and intention to use models. However, it would be extremely difficult to assess consumer's value perceptions of, and responses to, mobile services without taking this concept into consideration (Okazi & Mendez, 2013). In this research it is suggested that the ubiquity nature of mobile services moderates the impact of the benefits and costs of mobile services on the perceptions of mobile service value.

First, ubiquity has a positive impact on time convenience. The ubiquitous nature of the mobile service makes it possible for consumers to use the mobile service at any place at any time. Leveraging the ubiquity of the mobile channel by exploiting its time and efficiency utilities therefore will contribute to consumer value perceptions (Kleijnen et al., 2007).

Second, in the context of mobile transactions services, it frees users from the spatial and temporal limitations and enables them to conduct ubiquitous payment (Zhou, 2011). Consumers have the ability to control their timing of the transaction and therefore it assumed in this research that ubiquity influence the relationship of users control and mobile service value.

Third, (Shankar et al., 2010) argues that the huge number of adopters of the mobile and of the related services, indicate emerging mobile lifestyles. This emerging lifestyle of always being on the move, requires a service that is compatible with their needs and values. One of the characteristics of ubiquity is continuity that refers to the state or quality of being continuous, which seems to correspond to one of the characteristics of mobile services: 'Being always on' (Okazaki & Mendez, 2013). Therefore, ubiquity positively influences the relationship of service compatibility and mobile service value.

Fourth, mobile services are a way to express one's image (Leung and Wei, 2000). Consumers adapt to mobile services because they believe that these services may help to create or alter a positive image (Teo & Pok, 2003; Jackson et al, 2006), or their emerging lifestyle. Therefore,

it this research expects that ubiquity has a positive influence on the perceived image and perceived value.

Fifth, consumers are concerned about the risk when using mobile services, especially when it concerns mobile transactions services. Ubiquity increases the threat of security violations arising from the required infrastructure for wireless applications (Chen, 2013). Consumers are concerned about the risk since more points in the telecommunication can be found between mobile devices than between fixed devices (Corradi, Montanari, & Stefanelli, 2001). Hence, it can be argued that ubiquity has a negative influence on the relationship between risk and perceived value.

Last, consumers using mobile financial services have a hard time understanding what specific actions they must perform to complete their transactions (Suoranta et al. 2005). The ubiquity nature of mobile services contributes in some cases for a longer, and more difficult completion of the mobile transaction than on fixed devices. Consequently, ubiquity negatively influences the relationship between perceived complexity of the mobile service and perceived value.

- *H4a: The relationship between perceived benefits of mobile services and perceived value of mobile channel use is moderated by ubiquity such that it has a stronger positive relationship on perceived value.*
- *H4b: The relationship between perceived costs of mobile services and perceived value of mobile channel use is moderated by ubiquity such that it has a weaker negative relationship on the perceived value.*

2.5.2   Identification

Mobile devices are becoming prevalent in consumers daily life and have tremendous impact on people's lives. Most of the consumers won't leave their house without their mobile device, which indicate their strong emotional attachment with their mobile devices (Vincent, 2006). (Weller et al., 2013) indicate that consumers that have a strong attachment with their mobile phone, are more likely to use it. Consumers use key possessions to extend, expand, and strengthen their sense of identity (Belk, 1988). Identification is in this research defined as the extent to which consumers see their mobile device as an extension of the self, and thus identify themselves with their mobile device. Furthermore, consumer behavior is often identity-based (Oyserman, 2009). So far no mobile service adoption model integrated identification with mobile devices, and is therefore included in this conceptual model as a potential moderator.

One of the main characteristic of a mobile device is that is it a personal asset. Mobile devices have positioned themselves as highly personal assets. The mobile devices are used on a constant basis and have the ability to store increasingly large amounts of personal information (Larivière, 2013). Furthermore, personalizing mobile devices is a highly popular practice, demonstrated by the existence of a multi million dollar industry for accessories such as cases and skins (Larivière et. al., 2013). Hence, it is no surprise that consumers get attached to their mobile device. Belk (1988) indicates that possessions become an extension of the self. People routinely symbolize who they are and may become, as well as who they are not and want to be avoid becoming, through consumption choices that can be self-symbolizing (Shavitt 1990). Furthermore, brand personality also enables consumers to express his or her own self (Belk, 1988). Brand personality refers to the set of human characteristics associated with a brand (Aaker, 1997). Mobile device users prefer a widely accepted brand of smartphone as it reflects a unique status symbol (Suki, 2013). Furthermore, brand personality also helps to

express the ideal self and specific dimensions of the self (Kleine, Kleine, and Kernan, 1993). Because possessions are a reflection of consumers identity (Belk, 2013), and people act in ways that are congruent with their identities (Oyserman et al., 2007), it is proposed in this research that identification with mobile devices moderates the benefits/costs trade-off and perceived value. First, identification has a positive effect on the total benefits of mobile services. Consumers that are more attached to their mobile devices are more likely to use it (Weller et al., 2013). This might be explained that the mobile and related mobile services are compatible with one's values (Larivière, 2013). In addition, consumers that highly identify themselves with their mobile device have a feeling to be more in control (Vincent, 2006), hence, it can be argued that this also counts for mobile services and consumers have more control over determine the sequence, timing, and content of mobile transaction services. Second, identification with the mobile phone, make the relationship between total costs of mobile services and perceive value of the mobile channel use, less strong. With other words, it is expected that they perceive less complexity using mobile services since they are frequently users of mobile devices. (Weller et al., 2013). Moreover, this leads to the following hypothesis:

H5a: The relationship between perceived benefits of mobile services and perceived value of mobile channel use is moderated by identification such that it has a stronger positive relationship on perceived value.

H5b: The relationship between perceived costs of mobile services and perceived value of mobile channel use, moderated by identification such that it has a less negative relationship on the perceived value.

3. Research design

The previous chapter discussed the literature referring to the mobile service value creation and the moderators identification and perceived ubiquity. In the literature review different hypotheses are developed. This chapter will elaborate on the research design and the methods applied. According to Malhotra (2010), research can be classified as exploratory or conclusive. This research can be classified as conclusive since it aims to examine the different drivers and barriers in the mobile service value creation process. Furthermore, Malhotra (2010) indicates that in conclusive research, the distinction can be made between descriptive research and causal research. The present study can be classified as causal research since it aims to obtain evidence of cause-and-effect relationships (Malhotra, 2010).

3.1 Setting

In this study the value creation model in mobile services is tested by a mobile banking services, especially, mobile transaction services. The lifecycle of mobile services is relatively short. Technologies are becoming rapidly obsolete, and are replaced by new ones. Therefore, this research is based on a relatively new mobile service: mobile service transactions. In the Netherlands mobile banking services were first introduced by Intenationale Nederlanden Groep (ING, n.d) in 2011.

3.2 Design and procedure

The research is designed with the aim of testing how the benefits of mobile transaction services affect the value of mobile services (H1), how the costs of mobile banking affects the value of mobile services (H2), how the value of the mobile banking services influences the intention to use the mobile services (H3), the moderating role of perceived ubiquity influences the value of the mobile service (H4), and the moderating of identification with the mobile phone influence the value of the service (H5). In order to test these hypotheses a quasi experiment was set up. The data is obtained through a survey. In the beginning of the survey,

the participants received one scenario in which they were asked to make a transaction with their mobile phone: *Imagine you are in the supermarket and using their wifi to check your email on your smartphone. You receive an email from your housemate that you have to pay your electricity bill today otherwise you have no electricity for the next month. You decide to use your smartphone and* <u>*the wifi of the supermarket*</u> *to pay this bill. Because you use your smartphone to pay the bill it will take* <u>*13 minutes*</u> *to complete the transaction.*

In total four scenarios were created to which the participants randomly assigned to. In the scenarios two variables were manipulated; the main benefit (time convenience) and the main cost (risk) of using mobile services. Newell and Newell (2001) indicate that time is the main benefit of mobile services since it offers the ability to access the service anywhere at anytime. Also, time is a valuable resource for consumers and are often in short supply (Newell and Newell, 2001). In the scenario's it either took 1 minute (high time convenience) or 13 minutes (low time convenience) to complete the survey. Furthermore, the second variable that was manipulated was the main cost of mobile services; risk. Mobility increases the threat of security violations arising from the required infrastructure for wireless application (Chen, 2013). In the scenario the participants were either in the supermarket and using the wifi of the supermarket (high risk) or they were at home using their own wifi (low risk). The following figure provides an overview of what is manipulated in each scenario.
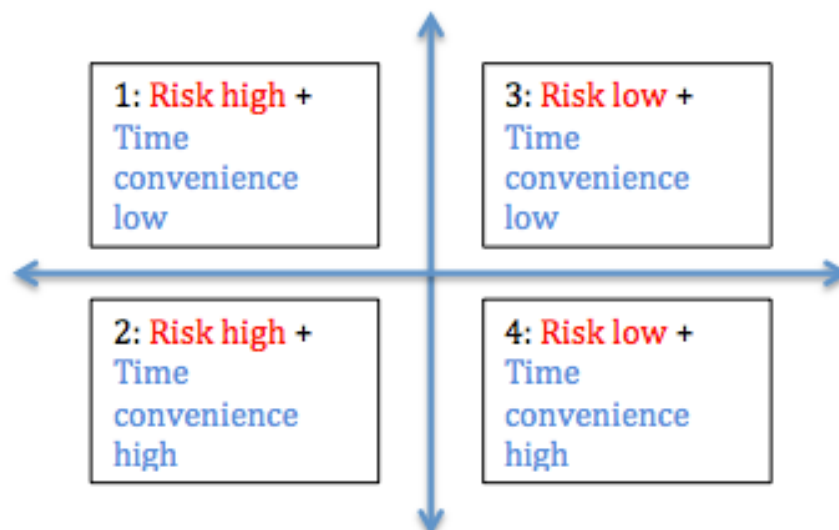
In order to test the questionnaire a pre-test was set up. The pre-test consisted of 36 qualitative interviews. Before the interviews the respondents were asked if they possessed a smartphone. A smartphone can be indicated as a mobile phone acquainted with mobile technologies such as Wireless Application Protocol (WAP). The respondents were asked to fill in the questionnaire and after the filling the questionnaire the respondents were asked their opinion about the scenario and to indicate which questions items were unclear. Furthermore, in order to create a valuable construct for identification, respondents were asked their opinion of 13 different questions about identification.

After the pre-test the questionnaire was ready. The responses were obtained in December 2013. In order to collect enough respondents in a short time spam a non-probability convenient sample method was used. An announcement was placed on social media to fill in the questionnaire. The announcement was targeted at people that were in a possession a mobile device. Of the 247 almost 68 percent completed the questionnaire. In the end, a useable sample was obtained of 168 respondents comprising 46,4 percent women and 53,6 percent men. The ages of the respondents were as follows: 49 percent younger than 25, 25 percent 25-40, 16 percent 41-55, and 10 percent older than 55 years of age.

3.3 Questions and measures

3.3.1   Scenarios

In the beginning of the survey the respondents received a scenario in which time and risk was manipulated. Because it is important to not create bias, the word 'scenario' is replaced by 'situation'. The respondents were asked to indicate whether or not they would use the mobile service or not in the given situation. A manipulation check was added in the survey at the end of the survey in order to check how the respondents perceived the risk and time convenience in the scenario on a 5 point Likert scale (1= Very low, 5 = Very high, and 1= Very

inconvenient, 5 = Very convenient). The distribution of the participants in the scenario is as follows: 23 percent in scenario 1, 22 percent in scenario 2, 29 percent in scenario 3, and 26 percent in scenario 4.

3.3.2   Remaining questions

To measure the benefits of mobile banking different constructs were indicated in the literature review: perceived time convenience, control, compatibility and image. All questions were measured on a five point Likert scale (1=strongly disagree, 5 = Strongly Agree). All the questionnaire items are based on previous research. Most of the items were rephrased to fit in this research. Furthermore, because overall risk often are based on various different perceived risk dimensions, this research conceptualized risk as a second-order construct, including two dimensions of risk in relation to mobile service transactions (Pavlou and Chellepa, 2001; Stone and Gronhaug, 1993): performance and security risk.

Ubiquity was also treated as a second-order construct, with three dimensions of ubiquity. Adapted from previous literature (Okazaki, 2013), the dimensions included portability, continuity, and immediacy. To find the underlying construct and to reduce the multi-item scale to one index variable, a factor analysis is carried out by applying principal component analysis (PCA). All values show correlation >0.3 and the one factor solution explains 71.25 percent of the total variance. Based on the five questions items that covered ubiquity, a new scale was computed, calculating the mean of the five items. The five item scale shows adequate internal reliability with a Cronbach's coefficient alpha of $\alpha = 0.867$. To have an adequate internal reliability, the Cronbach's coefficient alpha should be above $\alpha = >0.7$ (Pallant,2010). Futhermore, based on extensive literature search, a pool of thirtheen questions were created and tested in qualitative interviews. After the pre-test questionnaire, participants were asked to mark the items that they thought would measure identification. Based on those outcomes a pool of eight questions were remaining. Another PCA test was performed and all

values show correlation of >0.3 and the one factor solution explains 49% of the total variance. The eight item scale shows adequate internal reliability with a Cronbach's coefficient alpha of α= 0.847.

4. Data analysis

This chapter provides an overview of the performed analyses and results of the web-survey. The hypotheses are tested and their statistical outcomes are discussed. For testing the hypothesis, the significance level is set at α=0,05. The underlying analyses are performed by using Statistical Sofware Package SPSS 21.

4.1 Reliability and validity analysis

Although all constructs in this research based on other journal articles it is still important to test the reliability of the scale because most of the constructs are rephrased to fit in this research. One of the main issues of reliability concerns the scale's consistency. One of the most commonly used indicators of internal consistency is Cronbach's alpha coefficient (α) (Pallant, 2010), which ideally is above a 0.7 scale. In the questionnaire were some reversed question items to prevent from the halo-effect. In order to test the reliability, these question items are reversed. Furthermore, to assess the validity several factor analyses are performed. The factor analysis are carried out by applying principal component analysis (PCA) to find the underlying construct and reduce multiple-item scales to one index item. Prior to performing PCA, the suitability of data for factor analysis was assessed. In the previous chapter the reliability of identification and ubiquity are already discussed, the others will discuss below.

Time convenience

Time convenience consists of three questionnaire items. The correlations matrix shows correlations > 0.3 and the one-factor solution explains 82% of the total variance. Therefore, a

new scale is created, calculating the mean of the three items that make up the scale, and this new variable is covering time convenience. The scale has a good internal consistency, with a Cronbach alpha coefficient reported of 0.891.

Control

Concerning the perceived control scale, one item showed a value in the correlation matrix that violated the threshold value of 0.3. Also, the Cronbach alpha coefficient will increase from 0.794 to 0.883 if the first item is excluded from the scale. After a further look at the Monte Carlo PCA for parallel analysis showed that two eigenvalues of the parallel analysis were higher than the eigenvalues obtained in SPSS. Therefore, the first item is dropped from the scale and from the remaining two items a new scale was calculated. The reliability shows a good internal consistency with a Cronbach Alpha coefficient $\alpha = 0.883$.

Service compatibility

In the survey there are two questionnaire items about perceived service compatibility. Based on the correlation matrix the correlation are > 0.3 and a one-factor analysis that explains 85% of the total variance. Again, another scale is obtaining the mean of those two items. The Cronbach Alpha coefficient is reported of 0.831, which indicates again a good internal consistency.

Image

Also, perceived image had two items in the questionnaire. Based on the correlation matrix the correlation are > 0.3 and the one-factor solution explains 79% of the total variance. Again another scale is calculated. The Cronbach Alpha coefficient is reported of 0.738, which indicates a good internal consistency.

Risk

Perceived risk consists of 4 items in the survey. The correlation matrix shows correlations >0.3 and the one-factor solution explains 77% of the total variance. Another scale is formulated that calculate the mean of those 4 items. Furthermore, the reliability shows there is a very good internal consistency with a Cronbach coefficient Alpha of $\alpha = 0.899$

Complexity

Concerning the perceived complexity scale, some of the items in the correlation matrix showed values that violate the threshold value of 0.3. The first question already explains 79% of the total variance and the scree plot also indicate that only the first factor is reliable for measuring the scale complexity.

Service Value

The four items of the questionnaire that cover perceived value showed there is a good internal consistency with a Cronbach coefficient Alpha of $\alpha = 0.897$. Furthermore, the one-factor solution explains 71% of the total variance. Another scale is calculated.

Intention to use

The intention to use consists of four items in the questionnaire. The correlations matrix shows correlations > 0.3 and the one-factor solution explains 82% of the total variance. Therefore, a new scale is created, calculating the mean of the three items that make up the scale, and this new variable is covering intention to use mobile services. The scale has a good internal consistency, with a Cronbach alpha coefficient reported of 0.857.

4.2 Data screening

After screening the data for errors and missing values, descriptive analysis was performed. Descriptive analysis is performed to describe the characteristics of the sample but also to check for statistical techniques that will be used later on. The majority of the respondents with a total of 42 percent, indicated to use their laptops for mobile service transactions.

Almost 37 percent denote to use their smartphone to conduct mobile service transactions followed by 17 percent personal computer (PC) users. Only 3 percent use their tablets for mobile service transactions. Of the 168 respondents, more than 70 percent said that they have used mobile service transactions before. The respondents that have not used mobile service transactions before, most of them indicated that the risks are very high.

4.3 Scenarios

To test whether the perceived time convenience and perceived risk caused a difference on the perceived value of the service, two independent t-test are performed. The continuous variables 'Perceived Risk' and 'Perceived Time convenience' do not show a normal distribution (Kolmolgorov-Smirnov statistic $\alpha<0.5$, and the histograms do not show a normal distribution), however, with large enough samples (e.g 30+), the violation of this assumption should not cause any major problems (Pallant, 2010, p. 206). Also, in both tests equal variances can be assumed since Levene's test is not significant ($\alpha > 0.5$) (Pallant, 2010), therefore it is appropriate to perform an independent t-test. The first independent t-test was conducted to compare the perceived value on the first dimension [High Risk vs. Low Risk]. The results indicate that participants in the High Risk scenario (M=3.097, SD=1.1768) perceived the service significantly more risky than participants in the Low Risk scenario (M=2.656, SD=1.0344). The magnitude of the differences in the means (mean difference=0.441, 95% CI: 0.1031 to .7788) was small (eta squared = .042), following the interpretations guidelines of Cohen (1988). The second t-test was conducted to compare the perceived value on the second dimension [High Time convenience vs. Low Time convenience]. The results indicate that the participants in the High Time convenience scenarios (M=3.045, SD=1.3135) perceived the service significantly more convenient than the participants in the Low Time convenience scenario (M=3.979, SD=1.1366). The magnitude of

the differences in the means (mean difference=0.7525, 95% CI: 0.3793 to 1.1258) was moderate (eta squared = .087).

A one way anova between-groups analysis of variance was conducted to explore the impact of the scenario's on the perceived service value. One-way analysis of variance involves one independent (grouping) variable with three or more levels and one continuous variable. The grouping variables are the different scenarios and the dependent variable is intention to use the service. A normality test is performed in order to ensure that the scenarios are normal distributed. Except for scenario 4, all scenario's are normal distributed. However, with large enough sample sizes (e.g 30+), the violation of this assumption should not cause major problems (Pallant, 2010, p. 206). Therefore it was appropriate to use a one-way anova to explore the impact of the scenarios on the behavioral intention to use mobile transaction service. There was a statistical significant difference at the p < 0.05 in behavioral intention scores for the four groups: F (3, 164) = 10,847, p = 0.000. The effect size, calculated using eta squared, was 0.166, which indicate the actual mean scores between the groups is quit big (Cohen,1988). Post-hoc comparisons using Tukey HSD test indicated that the mean score for Scenario 1 (M=2.73, SD=1.01) was significantly different than Scenario 2 (M=3,48, SD=1,097), and Scenario 3 (M=3,44, SD=0,97) and Scenario 4 (M=3,95, SD=0,85). However, the other scenarios did not significantly differ from each other.

4.4 Hypothesis 1 – Benefits of mobile value creation

In order to test if perceived benefits of mobile service transaction are positive associated with mobile value creation, four constructs were discovered in the literature review. To test the relationships between perceived benefits (time convenience, control, compatibility, and image) and the perceived service value, a simple linear regression is performed. Furthermore, because the total benefits consist of four variables, a multiple regression is performed. The multiple-regression test shows how well the set of benefits variables predict the perceived

mobile service value. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity for all tests.

Simple linear regression

The simple linear regression was performed four times to test all the variables separately. The results show that the hypotheses are largely confirmed. At a significance level of level of α= 0.05, the results show a positive and significant effect for time convenience (beta= 0.61, p=0.000), control (beta=0.41, p=0.000), service compatibility (beta=0.453, p=0.000), image (beta=0.196, p=0.000). Those results support hypothesis 1 and show that time convenience, control, compatibility, and image, are positively associated with perceived service value. However, these results should used with caution since the variables do not meet the normality assumptions.

Multiple regression

Since the total benefits of mobile services consists of four variables, a multiple regression was performed to test how well the four variables predict the perceived mobile service value. No tolerance values were smaller than 0.10 are found, nor Variance inflation factors (VIF) above 10, thus the model shows no multicollinearity. The normal P-P plot shows a reasonable straight line and the scatterplot is roughly rectangular distributed. One outlier was found that was less than -3.3. However, with large samples it is not uncommon to find outliers (Pallant,2010). The Mahalanobis distance does not exceed the critical value, and the Cook's distance is below 1, which indicates that this outlier does not cause any major problems. 62,8% of the variance of the dependent variable is explained by the four variables (R-square= 0.628). However, the R-square tends to be optimistic, therefore the Adjusted R-square is taken into account (Pallant, 2010). The Adjusted R-square of 0.379 indicates that 37,9% of the variance can be explained by these independent variables, the model reaches statistical significance (p=0.000). Whereas in the simple regression analyses all variables seemed to be

significant associated with perceived value, the multiple-regression shows that only time convenience made a unique statistically significant contribution (beta=0.508, p=0.000). The results show for control (beta=0.117, p=0.147), compatibility (beta=0.066, p=0.733), and image (beta=0.032, p=0.626) no statically significant contribution. These results indicate that hypotheses H1b, H1c, and H1d are not supported. However, time convenience makes a statically contribution which indicates that H1a is supported.

4.5 Hypothesis 2 – Costs of mobile value creation

In order to test if perceived costs of mobile service transaction are positive associated with mobile value creation, two constructs were discovered in the literature review. To test the relationships between perceived costs (risk, and complexity) and the perceived service value, a simple linear regression is performed. Furthermore, because the total benefits consist of four variables, a multiple regression is performed. The multiple-regression test shows how well the set of benefits variables predict the perceived mobile service value. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity for all tests.

Simple linear regression

The simple linear regression was performed two times to test the variables separately. The results show that the hypotheses are largely confirmed. At a significance level of level of α= 0.05, the results show a negative and significant effect for complexity (beta= -0.357, p=0.000), and risk (beta=-0.483, p=0.000). Those results support hypothesis 1 and show that risk and complexity are negatively associated with perceived service value. However, these results should used with caution since the variables do not meet the normality assumptions.

Multiple regression

The above findings indicate that both variables are negatively associated with perceived service value. Since perceived costs are consisting of two constructs, a multiple regression

was performed to test how well the two variables predict the perceived mobile service value. No tolerance values were smaller than 0.10 are found, nor Variance inflation factors (VIF) above 10, thus the model shows no multicollinearity. The normal P-P plot shows a reasonable straight line and the scatterplot is roughly rectangular distributed. No outliers above 3.3 or less than -3.3 are found in the scatterplot. In line with these findings, the Mahalanobis distance did not exceed the critical value. The Adjusted R-square of 0.243 indicates that 24,3% of the variance can be explained by these independent variables, the model reaches statistical significance (p=0.000). In line with the previous findings of the simple linear regression analysis, both of the variables seem to be negatively associated with perceived service value. Risk made a unique statistically significant contribution (beta=-0.405, p=0.000), as well as complexity (beta=-0.159, p=0.042). Therefore these are in support of H2a and H2b indicating that risk and complexity are negatively associated with perceived mobile service value.

4.6 Hypothesis 3 – Mediation

Hypothesis 1 and hypothesis 2 provide evidence for influencing the perceived value of the mobile service. The perceived service value might in turn influence the intention to use the mobile service. A mediator is a variable that is suggested to be responsible for the effect of an independent variable on a dependent variable (Muller, Judd, & Yzerbyt, 2005). In this research an indirect mediation test is used because it is able to estimate effects of one predictor and does not assume the variables are normally distributed (Preacher & Hayes, 2004). First a test proposing perceived service value mediates total benefits and intention to use the mobile services is performed. Therefore, a new scale is created, calculating the mean of the four variables, and this new variable is covering total benefits. The new index variable has a good internal consistency, with a Cronbach's alpha coefficient reported of 0.736. Furthermore, the effect of the independent variable, total benefits, on the mediator (a=0.4785)

is significant (p=0.000), likewise, the effect of the mediator on the dependent variable (b=0.5463, controlling for the IV) is significant (p=0.001). Hence, the total effect (c=0.6181, p=0.000) and the overall indirect effect (c'=0.3567, p=0.000) are also found to be significant. Therefore, this model meets all the criteria for mediation (Baron & Kenny, 1986). The overall indirect effect is calculated by subtracting coefficient c' from coefficient c, or by multiplying coefficient a by coefficient b, resulting in an indirect effect of 0,2614. Additionally the output of indirect mediation test provides the 95% bootstrapped confidence intervals to test true indirect effect. From this output is assessed whether 0 lies within the interval range. More specifically, these intervals show whether it is possible (with 95%) confidence) that the true indirect effect would be 0, which means basically no mediation. In this case the bootstrapped confidence interval is [0.1260-0.4230], which exclude the 0 and therefore the mediation is significant.

The second proposing perceived value service mediates total benefits and intention to use the mobile services is performed. Therefore, a new scale is created, calculating the mean of the two variables, and this new variable is covering total costs. The new index variable has a good internal consistency, with a Cronbach's alpha coefficient reported of 0.736. Furthermore, the effect of the independent variable, total costs, on the mediator (a=-0.3273) is significant (p=0.000), likewise, the effect of the mediator on the dependent variable (b=0.5737) is significant (p=0.000). Furthermore, the total effect (c=-0.4541, p=0.000) and the overall indirect effect (c'=-0.2663, p=0.000) are also found to be significant. Therefore, this model meets all the criteria for mediation (Baron & Kennedy, 1986). The overall indirect effect is calculated by subtracting coefficient c' from coefficient c, or by multiplying coefficient a by coefficient b, resulting in an indirect effect of -0.1878. The negative values indicate that the total costs has a negative influence on the perceived value of the mobile service, which in turn has a negative effect on intention to use the mobile service. The bootstrapped interval

confidence is [-.3081; -.0879], which again exclude the 0 and therefore the mediation is significant. These findings support Hypothesis 3 that perceived service value mediates the perceived costs, benefits, and the intention to use the service.

4.7 Hypothesis 4 – Moderator Ubiquity

Hypothesis 1 and hypothesis 2 provide evidence that they are associated with the perceived service value. To test if ubiquity has any influence on the perceived benefits and perceived service value, and on perceived costs and perceived service value, a moderation test is performed. Ubiquity is in this case the moderator. A moderator is any variable that affects the association between two or more variables; moderation is the effect the moderator has on the association (Dawson, 2013). Because the independent variables are continuous variables, the interaction effect was tested by performing linear regression analysis. Before calculating the moderation, the variables of perceived benefits (time convenience, compatibility, control and image) were reformed into mean-centered variables. The mean of all variables was subtracted from it, so the new Z variable has a mean of zero. Then a new term was calculated by multiplying the variables by the new Z variable ubiquity. The dependent variable, perceived service value, was left in raw form (Dawson, 2013). To ensure no assumptions are validated, the tolerances values were checked to be above 0.10 and the Variance Inflatation Factors (VIF) values above 10 to ensure there is no multicollinearity. Furthermore, the normal probability plot (p-p) was reviewed if the points lie in a reasonable diagonal line, and the scatterplot was checked of the standardized residuals were roughly rectangular distributed. The outliers were inspected by looking the Mahalanobis distances. Since control, compatibility, and image not significantly associated with perceived service value, they are excluded from the analysis. Therefore, only three hierarchical multiple regression for time convenience, risk and complexity were performed. First, the moderation of perceived ubiquity was tested on perceived time convenience and perceived value. The Z-variables of time

convenience and ubiquity were entered in step 1, explaining 45,9% of the variance in perceived service value. After entering the moderator in step 2 the total variance explained by the model was 48,2%, $F_{(3, 164)}= 8.349$, $p < 0.001$. The moderator is statistically significant and positively interacts with time convenience (beta= 0.178, p=0.004)

Second, the moderation of perceived ubiquity was tested on perceived risk and perceived value. The Z-variables of risk and ubiquity were entered in step 1, explaining 40,3% of the variance in perceived service value. After entering the moderator in step 2 the total variance explained by the model was 42,5%, $F_{(3, 164)}= 6.359$, $p < 0.001$. The moderator is statistically significant and negatively interacts with time convenience (beta= -0.158, p=0.013). Third, the moderation of perceived ubiquity was tested on perceived complexity and perceived value. The Z-variables of complexity and ubiquity were entered in step 1, explaining 40,9% of the variance in perceived service value. After entering the moderator in step 2 the total variance explained by the model was 44,3%, $F_{(3, 164)}= 9.842$, $p < 0.001$. The moderator is statistically significant and negatively interacts with complexity (beta= -0.183, p=0.002). These results support that ubiquity moderates the benefit time convenience, and the costs risk and complexity.

4.8 Hypothesis 5 – Moderator Identification

Hypothesis 1 and hypothesis 2 provide evidence that they are associated with the perceived service value. To test if identification has any influence on the perceived benefits and perceived service value, and on perceived costs and perceived service value, a moderation test is performed. Identification is in this case the moderator. Before calculating the moderation, the identification was reformed into a mean-centered variable. The mean of the variable was substracted from it, so the new variable has a mean of zero. Then a new term was calculated by multiplying the new Z variables of identification and perceived benefits. Again, to ensure no assumptions are validated, the tolerances values were checked to be above 0.10 and the

Variance Inflatation Factors (VIF) values above 10 to ensure there is no multicollinearity. Furthermore, the normal probability plot (p-p) was reviewed if the points lie in a reasonable diagonal line, and the scatterplot was checked of the standardized residuals were roughly rectangularly distributed. The outliers were inspected by looking the Mahalanobis distances. Since control, compatibility, and image not significantly associated with perceived service value, they are excluded from the analysis. Therefore, only three hierarchical multiple regression for time convenience, risk and complexity were performed. First, the moderation of perceived identification was tested on perceived time convenience and perceived value. The Z-variables of time convenience and identification were entered in step 1, explaining 41,8% of the variance in perceived service value. After entering the moderator in step 2 the total variance explained by the model was 41,8%, $F_{(3, 164)}= 0.049$, $p = 0.825$. The moderator is not statistically significant (beta= 0.013, p=0.825). Therefore, identification does not moderate time convenience and perceived service value. Second, the moderation of perceived identification was tested on perceived risk and perceived value. The Z-variables of risk and identification were entered in step 1, explaining 25,9% of the variance in perceived service value. After entering the moderator in step 2 the total variance explained by the model was 26%, $F_{(3, 164)}= 0.277$, $p < 0.600$. The moderator is statistically not significant (beta= 0.043, p=0.600). Hence, identification does not moderate risk and perceived service value. Third, the moderation of perceived identification was tested on perceived complexity and perceived value. The Z-variables of risk and ubiquity were entered in step 1, explaining 17,9% of the variance in perceived service value. After entering the moderator in step 2 the total variance explained by the model was 18,7%, $F_{(3, 164)}= 1.712$, $p < 0.001$. The moderator is statistically significant and negatively interacts with time convenience (beta= -0.183, p=0.002). These results show that hypothesis 5 is not supported and identification not moderates the costs and benefits of mobile services.

4.9 Overview results

In the following table an overview is given of the findings:

Hypothesis testing		Beta	Results
H1	Time-> value	0,508	Supported
Benefits	Control-> value	0,117	Not significant
	Compatability-> value	0,066	Not significant
	Image -> value	0,032	Not significant
H2	Risk -> value	-0,405	Supported
Costs	Complexity -> value	-0,159	Supported
H3	Benefits -> value -> intention		Supported
Mediation	Costs -> value -> intention		Supported
H4	Ztime*Zubiquity	0,178	Supported
Moderator	Zrisk*Zubiquity	-0,158	Supported
	Zcomplexity*Zubiquity	-0,183	Supported
H5	Ztime*Zidentification	0,013	Not significant
Moderator	Zrisk*Zidentification	0,043	Not significant
	Zcomplexity*Zidentification	-0,183	Not significant

5. Discussion

The manipulation check of the scenario's revealed that participants in the high time convenience group showed a higher perceived time convenience then the participants in the low time convenience group. Also, the manipulation revealed that participants in the high-risk group perceived risk higher risk than the low risk group. However, only the first scenario (high risk and low time convenience) differed significantly from the other groups. A possible explanation could be that for mobile service delivery, consumers are more concerned with the time-related gains they can obtain (Kleijnen, 2007), rather than risks. Another explanation could be that the participants already familiar with the mobile transaction service possibilities with their mobile devices (Hourahine and Howard, 2004), and thus are aware of the possible risks. Almost 70% of the sample indicated that they have used mobile transaction services before.

5.1 The mobile service value creation model

A model was set up to test value creation in mobile services. In line with previous research, the model showed strong evidence that perceived service value mediates the costs/benefits trade-off with the intention to use mobile services (Kleijnen, 2007). The findings show that consumers with higher value perceptions are more likely to use mobile services. Relative advantage has been indicated as a strong predictor of using mobile services (Plouffle, 2005; Koenig, 2010; Chen,2013). This research adds on the existing literature that time convenience, in context of mobile transaction services, consumers are most concerned with the time-related gains they can obtain. Indeed, the results of the scenarios support that time convenience plays an important role when urgent mobile transactions have to be made. In contrast, compatibility does not seem a significant antecedent of value. An interesting finding, knowing that 70% of the participants have used mobile transaction services before. However, only 55% are actually using their mobile device (smartphone, tablet) for using mobile

transaction services. This might explain that mobile transaction services are not that compatible to consumers needs yet. Furthermore, the service is relatively new in The Netherlands, where most of the sample was obtained, and thus might need some certain amount of recurring learning before consumers get confident and satisfied using mobile services (Rao, 2007). Furthermore, perceived image also has not a significantly associated with perceived value. This might be explained by the descriptions of the sample. Most of the participants were Dutch and German, two countries that score high on individualism (Geert Hofstede, 2005). Since culture influence consumer behavior (Soares, Farhangmehr, & Shoham, 2007), being an individualist might contribute that consumers do not attach significance to the status of individuals that use mobile services.

Perceived costs seem to have a significant negative influence on the perceived service value. Existing research reveal that risk is the main factor why consumers are cautious of using mobile services, especially mobile transaction services (Bhimani,1996; Zhou, 2008). Indeed, of the 30% participants that did not used mobile transactions services before, 82% indicated that they had concerns regarding privacy and security concerns. These findings are in line with existing research, where security is regarded as the most serious disadvantage of mobile banking (Littler, 2006). Moreover, complexity has also significant negative effect on value perceptions. An explanation could be that some learning is required before using the mobile service (Rao, 2007). Hence, cognitive effort also plays an important role in understanding the mobile service process, which may be perceived by customers a barrier (Kleijnen et al., 2004).

5.2 Moderators

Perceived ubiquity was included in the model as a moderator. The results show that perceived ubiquity significantly helps to explain value perceptions. Thus far, no research examined the effect of perceived ubiquity in their model to explain the behavioral intentions to use mobile

services. Except for service compatibility, control, and image (which did not were significant associated with perceived service value), all interactions with the drivers and barriers are significant. The findings in this research significantly help explain value perceptions. However, the second moderator identification that was included in the model, did not show significant results. A possible explanation could be that consumers don't see the mobile services as part of their identity. Furthermore, the sample existed mostly of (young) Dutch participants. Shavitt et al. (2009) indicates that identities differ from each culture.

6. Conclusion

This chapter will elaborate on the main theoretical and managerial contributions. Furthermore, limitations and suggestions for further research are declared.

6.1 Theoretical contribution

To gain a better understanding of mobile services, prior research has often embraced the technology acceptance model (TAM) of Davis (1989), to explain consumer technology adoption. This research focused on the perceived service value that mediates the perceived costs/benefits trade-off and the intention to use. The findings in this study contribute to the research on value creation in a mobile service context. In line with previous studies, this study shows that perceived benefits influence the perceived value positively and the perceived costs influence the perceived value negatively (Kleijnen et al., 2007). Previous research has indicated that relative advantage as a benefit for using mobile services (e.g,(Koenig-Lewis et al., 2010; Zhou, 2011). This research adds on exiting literature about relative advantage concluding that time convenience is perceived as one of the most important benefits for using mobile transaction services. Furthermore, in line with previous research, risk is perceived as one of the main costs of using mobile services, especially mobile transaction services (Gerrard, Cunningham, & Devlin, 2006; Littler & Melanthiou, 2006; Suki, 2013). Mobile banking, and its related transaction services, has been particularly great among young people (Calisir & Gumussoy, 2008). However, the findings of this study contribute that young people still have their risk concerns, taking into considerations that the sample of the study merely consisted of young participants. Hence, this studies also contributes

Furthermore, value theorists acknowledge that personal traits interact with costs and benefits in the value formation process (Holbrook, 1999) Therefore, this research included identification as a moderator that influence the relationship between costs/benefits of the

mobile service en the perceived mobile service value. The findings did not make a significant contribution.

6.2 Managerial Implications

The managerial goal of this study is to provide a better understanding of the specific drivers and barriers in the mobile service value creation process that leads to behavioral intention to use mobile services. In addition, two moderators were added to the conceptual model to investigate possible moderating effects. Previous research has found that it would extremely difficult to assess consumers' perceptions, and responses to mobile services without taking into consideration perceived ubiquity into consideration (Okazi and Mendez, 2013). Building on existing literature on this phenomenon, a more complete view on the effect is provided by testing perceived ubiquity in the mobile service value creation process. The findings can be used for measuring each dimension of perceived ubiquity for desktop PCs, tablets, and handheld devices. Measuring the ubiquity for each of those devices can help marketers to create a multichannel strategy or optimal firm channel allocation decisions. Furthermore, by measuring the perceived ubiquity for tablets, PCs, and smartphones, will give a better insight which device better fits with each mobile service or application.

Furthermore, using a possible multichannel strategy, managers should take into account that perceived risks still play an important role for not using certain mobile services. Though it is assumed that young consumers perceive less risk than elder consumers, this research shows that it still plays an important role to not adapt to mobile services, especially mobile transaction services. However, time convenience is one of the main benefits of using mobile services. Mangers should carefully take this carefully into consideration. For example, managers could improve their response and delivery time to consumers and gain a competitive advantage.

6.3 Limitations and suggestions for further research

Though the findings provide insights of a value creation model and the moderating effect of perceived ubiquity, there are some limitations that need to be considered. Besides, there are still some remaining questions that point to specific areas for further research.

The current study has limited results concerning the explanation of identification with mobile devices on the intention to use mobile services. Further research should be directed to the identification effect in order to verify if this can explain the intention to use mobile services. In addition, perceived ubiquity could explain the different perceptions of mobile services and desktop services (Okazi and Mendez, 2013), this explanation is not considered in this study. Furthermore, because of reliability issues, not all variables consist of three or more items. A more extensive study to the constructs can be added to particular constructs. In addition, mobile transaction services are driven particularly by utilitarian value (Nysheen & Thorbjernsen, 2005), rather than hedonic value. An interesting extension of this research would test the mobile value creation model and the moderating effects with a mobile service that is particularly hedonic driven. Those services could be mobile communication and entertainment services (Nysveen & Thorbjernsen, 2005). To continue, another limitation that it only measures the behavioral intention of the consumers, rather than the actual behavior. Studies report mixed results where some researchers find evidence for close correlation (e.g., (Morris, 2000; Venkatesh & Davis, 2000), while others reported a weak link (Wang, Lin, & Luarn, 2006). An interesting extension of this research would be investigating this link. Finally, another possible extension of this research could be to investigate more specific costs and benefits of mobile service creation. This study limited only focus on six antecedents, an extension could investigate more interesting value drivers for mobile services.

In conclusion, this study contributes to a better understanding what the specific drivers and barriers are in mobile service value creation. Furthermore, the moderating role of perceived

ubiquity helps explaining the mobile service value creation. Notwithstanding the limitations, this study suggests that perceived ubiquity moderates lead to higher service value perceptions, which in turn leads to intention to use mobile services. This study finds no support for identification with mobile devices would make consumers more prone to use mobile services.

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APPENDIX I - QUESTIONNAIRE

Dear Participant,

Thank you for participating in this survey. It will only take 10 minutes to fill out this survey. The purpose of the survey is to investigate the motivations for using mobile banking services. In this survey, mobile banking refers to the use of a smartphone to perform online banking transactions (such as bill payments). Additionally, mobile banking will only refer to mobile service transactions in this survey. The survey starts with a situation that you will evaluate based on the mobile banking service. The second part of the survey contains statements about mobile banking and the survey will end with general questions. Your information will be treated in a strictly confidential and anonymous way. Please read and answer the questions carefully.

Thank you for your cooperation!

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Situation 1:

Imagine you are in the supermarket and using their wifi to check your email on your smartphone. You receive an email from your housemate that you have to pay your electricity bill today otherwise you have no electricity for the next month. You decide to use your smartphone and the wifi of the supermarket to pay this bill. Because you use your smartphone to pay the bill it will take 13 minutes to complete the transaction.

Based on the above situation evaluate your intention to use mobile service transactions on the following scale:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
It is likely that I transfer the money in this situation	O	O	O	O	O
It is impossible that I transfer the money in this situation	O	O	O	O	O
I definitely would use the service in this situation	O	O	O	O	O
It is certain that I transfer the money in this situation	O	O	O	O	O

Situation 2:

Imagine you are in the supermarket and using their wifi to check your email on your smartphone. You receive an email from your housemate that you have to pay your electricity bill today otherwise you have no electricity for the next month. You decide to use your smartphone and the wifi of the supermarket to pay this bill. Because you use your smartphone to pay the bill it will take 1 minute to complete the transaction.

Based on the above situation evaluate your intention to use mobile service transactions on the following scale:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
It is likely that I transfer the money in this situation.	○	○	○	○	○
It is impossible that I transfer the money in this situation.	○	○	○	○	○
I definitely would use the service in this situation.	○	○	○	○	○
It is uncertain that I transfer the money in this situation.	○	○	○	○	○

Situation 3:

Imagine you are at home using your own wifi to check your email on your smartphone. You receive an email from your housemate that you have to pay your electricity bill today otherwise you have no electricity for the next month. You decide to use your smartphone (and your own wifi) to pay this bill. Because you use your smartphone to pay the bill it will take 13 minutes to complete the transaction.

Based on the above situation evaluate your intention to use mobile service transactions on the following scale:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
It is likely that I transfer the money in this situation.	○	○	○	○	○
It is impossible that I transfer the money in this situation.	○	○	○	○	○
I definitely would use the service in this situation.	○	○	○	○	○
It is uncertain that I transfer the money in this situation.	○	○	○	○	○

Situation 4:

Imagine you are at home using your own wifi to check your email on your smartphone. You receive an email from your housemate that you have to pay your electricity bill today otherwise you have no electricity for the next month. You decide to use your smartphone to pay (and your own wifi) this bill. Because you use your smartphone to pay the bill it will take 1 minute to complete the transaction.

Based on the above situation evaluate your intention to use mobile service transactions on the following scale:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
It is likely that I transfer the money in this situation.	○	○	○	○	○
It is impossible that I transfer the money in this situation.	○	○	○	○	○
I definitely would use the service in this situation.	○	○	○	○	○
It is uncertain that I transfer the money in this situation.	○	○	○	○	○

Question 2: The following statements are not based on the previous situation but on the mobile transaction services in general.

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Using mobile transaction services saves me time.	○	○	○	○	○
Using mobile transaction services is convenient for me.	○	○	○	○	○
Using mobile services would make transactions less time consuming for me.	○	○	○	○	○
I feel flexible when I use mobile transaction services.	○	○	○	○	○
I have control over the transaction when I use mobile banking.	○	○	○	○	○
Using mobile transaction services is entirely within my control.	○	○	○	○	○
Using the mobile channel is compatible with the way I usually perform my transaction services.	○	○	○	○	○
The use of mobile transaction	○	○	○	○	○

services is in line with my service needs.					
I use mobile banking because a lot of my friends use mobile transaction services.	❍	❍	❍	❍	❍
Using mobile transaction services makes me look trendy.	❍	❍	❍	❍	❍

Question 3: The following statements are about the costs of using mobile transaction services.

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
I have confidence in the security of my mobile transactions.	○	○	○	○	○
I am uncomfortable making use of mobile payments.	○	○	○	○	○
I am worried about the security of financial transactions via my mobile device.	○	○	○	○	○
The transmission of data over my mobile phone is unsafe.	○	○	○	○	○
Learning how to use mobile services for transactions is difficult.	○	○	○	○	○
It will be uncomplicated to use mobile transactions.	○	○	○	○	○

Question 4: Please answer the following questions to the best of your ability:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
I won't leave the house without my mobile phone.	○	○	○	○	○
My mobile device makes me look stylish.	○	○	○	○	○
It annoys me when I have left my home and realize I have forgotten my phone	○	○	○	○	○
I say positive things about the brand of my smartphone.	○	○	○	○	○
A mobile device is a fashion item.	○	○	○	○	○
I have a favorable attitude towards the brand of my smartphone.	○	○	○	○	○
The brand of the smartphone that I am using is the best smartphone brand.	○	○	○	○	○
If I lose my phone I panic.	○	○	○	○	○

Question 5: Please answer the following questions to the best of your ability:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Mobile transaction services allow me to access information at the most convenient moment for me.	❍	❍	❍	❍	❍
If I cannot wait to transfer money to another account, I will use mobile banking services.	❍	❍	❍	❍	❍
Using mobile transaction services are practical because I can use them without any difficulty wherever I am.	❍	❍	❍	❍	❍
Using mobile transaction services outside my home or my workplace is not a problem for me.	❍	❍	❍	❍	❍
I find it convenient to use mobile transaction services because they don't make me dependent on any fixed installation (PC).	❍	❍	❍	❍	❍

Question 6: Please evaluate the value of the mobile transaction service on the following dimensions. Using mobile transaction services is very:

	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Functional	○	○	○	○	○
Practical	○	○	○	○	○
Useful	○	○	○	○	○
Efficient	○	○	○	○	○
Productive	○	○	○	○	○

Question 7: In the beginning of the survey you received a situation in which you had to pay an electricity bill with your smartphone. Based on this scenario please fill in the following questions:

	Very low (1)	Low (2)	Neither High nor low (3)	High (4)	Very High (5)
How did you perceived the risk in the scenario?	○	○	○	○	○

	Very inconvenient (1)	Inconvenient (2)	Neither convenient nor inconvenient (3)	Convenient (4)	Very convenient (5)
To what extent you think it was time convenient to use your mobile phone?	O	O	O	O	O

Question 8: What is your gender?

O Male
O Female

Question 9: What is your age?

Question 10: What is your nationality?

O Dutch
O German
O Other

Question 11: Have you ever used mobile service transactions before?

O Yes
O No

Answer If Have you ever used mobile service transactions before? No Is Selected
Why not?

Question 12: On what type of device are you doing most of the time your financial transactions?

○ Smartphone
○ Tablet
○ Laptop
○ PC (Personal Computer)
○ Other

Question 13: Do you have any comments or questions regarding this survey?

Thank you for your participation. Your response has been recorded. If you have any questions regarding this survey please send an email to t.vanhuenen@student.maastrichtuniversity.nl.