Mobile banking services continuous usage – Case study of Finland

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Abstract

Finland is at the forefront of using new information systems, such as mobile banking (m-banking). The present study develops and tests a model of continuous usage intentions toward m-banking services for a sample of 273 Finnish m-banking users. Results confirm the hypothesized direct relationships between self-congruence and perceived value, perceived risk and perceived value, perceived value and continuous usage, and continuous usage and word of mouth. The frequency of usage of m-banking services and experience moderate the relationship between perceived value and continuous usage. We discuss the theoretical and managerial implications of the study results and present recommendations for future research.

1. Introduction

Due to increased competition and technological innovation in the retail financial service sector, banks have begun to employ financial information systems and alternative delivery channels (ADCs) to achieve a sustainable competitive advantage [47], invigorate customer relationship management [73], and enable consumers to make real-time financial decisions conveniently and independently of time and location [20].

The literature [60] regards m-banking as an innovative information system (IS) and communication delivery channel that delivers both financial (e.g., fund transfers) and non-financial (e.g., account balance requests) services to consumers through cell phones and tablets. A critical review of earlier literature on IS and consumer behavior investigating the consequences and the antecedents of IS such as m-banking has identified four distinct research streams: consumer pre-adoption resistance to IS [41]; consumer pre-adoption or acceptance of IS [19]; consumer post-adoption or continuous usage of IS [8]; and consumer pre- and postadoption of IS [36].

For the most part, the literature has investigated the pre-adoption antecedents or acceptance of m-banking [50];[60], and there is little empirical evidence regarding the consequences of m-banking or continuous usage. In addition, research on how individuals with different levels of experience in using IS such as m-banking react to different service-related characteristics is in a nascent stage [50]. Thus, the collective understanding of continuous usage behavior is at an early stage of development [25]. Research on postadoption consequences and continuous usage is particularly relevant for the banking industry because the cost of acquiring a new customer is five times greater than the cost of retaining an existing customer [79].

The present paper examines the post-adoption consequences that influence users of m-banking services in Finland to determine how to effectively increase continuous usage. To guide this effort, we develop and empirically test a literature-based theoretical model based on self-congruence (SC), perceived risk (PR), perceived value (PEVA), continuous usage (USE), and word-of-mouth (WOM). In the model, we control for the effects of gender, age, income, and usage share and assess the indirect effects of frequency and experience on USE.

Finland is at the forefront of adopting and using new banking technologies, services and products, such as Internet and m-banking. In 2014, the share of Internet banking users mirrored that of Internet users in general, with 86 percent of residents in Finland using the Internet for online banking and 85 percent using online services overall [65]. With respect to mobile devices, approximately 60 percent of users own a smartphone with access to the Internet, and 32 percent (approximately one-third) of Finnish households use at least one tablet [65]. However, a computer remains the most preferred device to pay bills, as 7 percent (less than one-tenth) of the adult population use smart phones or tablets to pay bills [17].

With respect to the vast online presence and an extensive usage of mobile phones, Internet banking services were first introduced in Finland in the mid-

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1990s [30], and m-banking services were introduced in 1996 [28]. Since then, banking institutions have collaborated with non-banking institutions commonly known as "service providers" or "third parties" to provide banking services over mobile networks in Finland [27].

The remaining sections of the paper are organized as follows: Section 2 discussed research model, latent variable and associated hypothesis; Section 3 presents the research methodology; Section 4 presents the study results; Conclusions, limitations and future research directions are presented in the last section.

2. Research model and hypotheses

The research model is illustrated in Figure 1. The model proposes that SC and PR have a direct effect on PEVA, which is hypothesized to positively affect USE. In the model, PEVA mediates the effects of SC and PR on USE. The model also proposes that USE eventually produces positive WOM. In addition, we test the moderating effects of frequency and experience on the relationship between PEVA and USE. Finally, the model controls for gender, age, income and share of usage (see Figure 1).

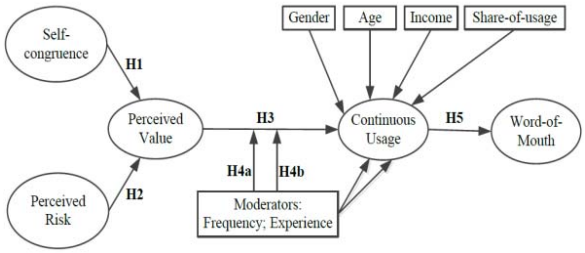

Figure 1: Research Model

2.1. Continuous or post-adoption usage of IS

Rapid innovations and advances in mobile IS and mobile technology in general have increased the importance of m-banking [46], and understanding consumers' behavioral intentions to continuously use m-banking services has been identified as a key research focus [60]. Prior research [36];[29] has identified m-banking as an important IS, examined how and why individuals use new IS in their decision making tasks, and demonstrated the significance of customer retention for banks and service providers. In the same vein, [3] claimed that IS continuance at the level of the individual user is central to the survival of many e-commerce firms, online retailers, and online financial service providers.

2.2. Self-congruence and perceived value

The terms SC, self-image congruence, self-congruity, and image congruence are used interchangeably in the consumer behavior literature [38]. However, previous empirical studies have failed to examine SC in the context of the USE of m-banking services. The failure to investigate the effects of SC in the service usage literature might represent a critical shortcoming [13].

SC theory is typically applied to explain the effect of self-image congruence on consumer behavior [63], and [13] noted that the theory proposes that consumer behavior is partially determined by the congruence resulting from a psychological comparison between the image of the typical product user and the individual consumer's self-concept. The extant marketing and IS research has primarily focused on the relationship between self-image congruence and consumers' pre-purchase evaluations [13];[21]. Relatively few studies have employed the concept of self-image to model post-consumption evaluations [64] and little is known regarding the extent to which SC or self-image congruence influences PEVA for m-banking services post-adoption or for the USE of m-banking services. Because SC has been found to influence user product or service preferences and usage intentions, we proposed the following hypothesis:

H1: Self-congruence (SC) exerts a positive effect on perceived value (PEVA) with respect to continuous usage intentions for m-banking services.

2.3. Perceived risk and perceived value

Research has investigated the effects of PR on various aspects of consumer behavior [23] related to technology adoption and USE in a number of settings, such as Internet banking services [78]; online banking services [1]; e-services [16]; m-banking services [47] and electronic commerce services [33].

Purchasing online or virtual banking services has generally been perceived to be riskier than purchasing traditional banking services. Consequently, PR is an important factor influencing end-user intentions to engage in Internet banking [48]. Earlier studies have vigorously debated the influence of PR on consumer purchase and usage intentions [1] and examined its relationship to different antecedents, few have investigated the relationship between PR and PEVA with respect to IS usage [7]. Based on the above considerations, we propose the following hypothesis:

H2: The perceived risk (PR) of m-banking services usage negatively affects its perceived value (PEVA).

2.4. Perceived value and continuous usage intentions

M-banking has emerged as a wireless service delivery channel that creates added value for customer financial transactions [39];[40]. M-banking services offer certain unique value features that distinguishes m-banking from conventional forms of banking, such as ubiquity and immediacy [80] featuring real-time information flow for banking and m-commerce transactions at any time and any place; instant connectivity and reachability [43] with respect to banking information; and localization or location-specific [36] features that enable the user to locate an ATM or bank branch. PEVA has been defined as consumer's overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given [66]. Previous studies on the continuous usage of IS have identified that PEVA significantly influences continuation intentions [9] and adoption decisions of consumers are largely based on PEVA [34]. Because PEVA influences consumer intentions and decision to use IS including m-banking banking services, we propose the following hypothesis:

H3: Perceived value (PEVA) exerts a significant positive effect on continuous usage intentions toward m-banking services.

2.5. Moderating effects of frequency and experience

Researchers have proposed that frequency of use and similar constructs, such as user online activity, positively influence brand value and attitudes [70] and loyalty toward the associated brand [59]. For online systems, more frequent use of a service has been found to be positively related to continuous use of the service [62]. However, other studies [59] have found the effects of user activity to be mixed.

Experience has been found to be a strong predictor of attitudes toward technology [55], intentions to use mobile services [37] and so forth. The UTAUT2 model proposes that greater experience leads to greater familiarity with the IS and that better knowledge structures facilitate the use of an IS and thus reduce user dependence on external support [72]. The UTAUT2 model also proposes that experience has a moderating effect on the relationships between three antecedents of intention (facilitating conditions, hedonic motivation, and habit) and intention as well as on the relationship between intention and use. However, the UTAUT2 model does not test the moderating effect of experience on the relationships between performance expectancy and intention, effort expectancy and intention, and price value and intention. Because these three constructs capture similar aspects to our PEVA construct, they provide an opportunity to test these effects. Based on the above considerations, we propose the following two hypotheses:

H4a: Increasing the frequency of m-banking usage strengthens the positive influence of perceived value (PEVA) on continuous usage intention.

H4b: Greater experience in using m-banking services strengthens the positive influence of value (PEVA) on continuous usage intention.

2.6. Continuous usage intention and word of mouth

WOM communications significantly influence consumer decision making [44], and the increase in the use of IS has led businesses and marketing researchers to recognize the importance of electronic WOM (e-WOM) [12]. E-WOM is defined as 'any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet' [76, p.2]. Positive WOM contributes to positive images of a product or service that facilitate consumer decision-making processes and promote the offering. In contrast, negative WOM creates a negative image of a product, service or brand. However, marketers believe that the effects of negative WOM are stronger than the effects of positive WOM [15].

WOM significantly influences the adoption and use of IS [56];[57]. Some researchers have claimed that this relationship is based on positive attitudes and trust [44], and trust and attitudes such as customer satisfaction and loyalty have been found to significantly affect positive WOM for mobile instant text and voice messaging communication services [5]. Based on the above considerations, we propose the following hypothesis:

H5: M-banking continuous usage intentions exert a significant positive effect on word of mouth (WOM).

3. Research methodology

The data was collected from a sample recruited using purposeful sampling methods. The study

participants were experienced m-banking users who had engaged in m-banking for at least six months. Thus, the study sample was able to contribute to the theoretical understanding of the focus of the study.

3.1 Instrument development, validation and data collection

Because the research was conducted with a Finnish-speaking community, the survey items were first translated from English to Finnish by a researcher who was a native Finnish speaker. To ensure consistency, the items were back-translated into English by a different researcher. The survey instrument was tested in a pilot study with a sample of final-year students at a local university who had m-banking experience. Information from the pilot study results was used to modify the wording of a few items to improve clarity.

A professional marketing research firm was hired to collect data from experienced m-banking users, and the data were collected during a four-week period in late 2014. In all, 392 respondents participated in the study and completed the questionnaire. Of these 392 respondents, 273 met the sampling criterion of being experienced m-banking users. To assess response bias, the responses of the first 25 percent of respondents were compared to the responses of the last 25 percent of respondents; there were no significant differences between the responses of the two groups at the $p < 0.05$ level.

3.2. Measurement

The items measuring the five latent variables were drawn from previously validated instruments (See Annexure A). Items measuring SC were adopted from [63]. PR was measured using a scale developed by [31]. Items measuring PEVA were taken from [35]. Items for USE were taken from [79]. WOM was measured using items in [5] and [53]. The research model also includes the two moderating variables of frequency of m-banking usage and m-banking experience and the four control variables of gender, age, income, and share of m-banking usage. The moderator and control variables were measured using single-item scales, apart from share of m-banking experience, which was measured using two items. Frequency of use of m-banking services was measured by the item "When was the last time you used m-banking services on your smartphone or tablet?" on a five-point scale that ranged from 1 (1 to 3 days ago) to 5 (over one month ago). M-banking experience was measured by the item "How long have you been using an m-banking application?" on a six-point scale that ranged from 1 (less than three months), 2 (3 to 6 months), 3 (6 to 12 months), 4 (1 to 2 years), 5 (2 to 4 years), to 6 (more than 4 years) [71]. The items measuring the proportional usage of m-banking ("Please estimate how much of your banking (as a percentage) is conducted via an m-banking application" and "When recalling the last ten times you logged into wireless banking services, how many times did this involve an m-banking application?") were based on a ten-point scale and were taken from [14] share-of-wallet scale.

4. Results

In the study sample, 53.5 percent of the respondents were female and 46.5 percent were male; 28.9 percent were between the ages of 35 to 49 years, and 25.6 percent were between the ages of 50 to 64 years. Over half of the respondents (62 percent) had an individual monthly gross income of 2001 to 6000 Euros. The sample represents quite well Finnish adult population in terms of gender (51% are female), age (35-49: 19%; 50-64: 21%) and income (average income 2330 EUR) [65].

Approximately half of the survey respondents (47.3 percent) stated that they performed more than 5 out of 10 banking transactions (51 percent) using m-banking applications, while approximately one fifth (18.3 percent) reported that they rarely used m-banking applications for banking transactions. When respondents recalled the last ten times they had accessed wireless banking services, they reported using mobile applications for approximately half the sessions, on average (mean = 5.29 on a ten-point scale).

The data were analyzed using SmartPLS 3.0 [58]. To assess the reliability and validity of the measures, we calculated factor loadings, composite scale reliability (CR) and average variance extracted (AVE). The factor loadings (≥ 0.807), composite reliabilities of the scales (≥ 0.872) and AVEs (≥ 0.695) exceeded the cut-off values.

Reference [18] suggested that the value of the square root of AVE in each latent variable with multiple item constructs can be used to establish discriminant validity when this value is larger than other correlation values among the latent variables. Discriminant validity was exhibited in the present analysis because the square root of the AVE was higher than the correlation between any two latent constructs [18]. Each of the latent variables met these criteria, supporting discriminant validity.

Due to the importance of assessing common method bias, we followed the procedure

recommended by [51] to determine common method bias because prior research [45] has favored the use of this method. The procedure specifies a common method construct (termed the method construct) whose indicators include all the indicators used in the latent variables in the research model. Our analysis found that the average factor loading was 0.78 and that the average variance explained by the common method construct was 0.02, indicating that common method bias did not significantly affect our study results.

The results supported all the direct relationships in the path model (see Figure 1). The analysis confirmed that SC was a significant determinant of PEVA ($\beta = 0.505$; $p < 0.01$) and that PR was also a significant determinant of PEVA, although the effect was not as strong ($\beta = -0.264$; $p < 0.01$). The analysis also confirmed relationships between PEVA and USE intention ($\beta = 0.502$; $p < 0.01$) and between USE intention and WOM ($\beta = 0.751$; $p < 0.01$). Thus, the data supported all the hypotheses regarding direct effects (H1, H2, H3, H5). We calculated the coefficient of the determinants (R2) value for each endogenous latent variable. As Figure 2 indicates, the R2 of the endogenous latent variables confirmed that our research model accounted for 40.6 percent of the variance in PEVA, 64.5 percent of the variance in m-banking USE intention, and 56.4 percent of the variance in WOM.

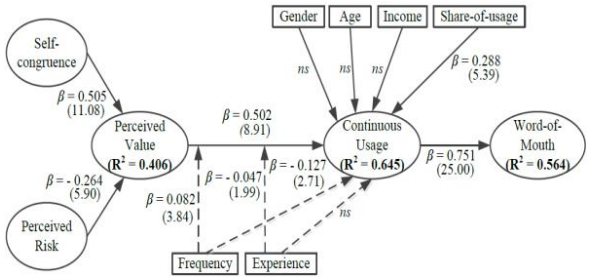

Figure 2: Results of PLS Analysis

With respect to the moderating effects of experience and frequency, we found that frequency of using m-banking services significantly strengthened the relationship between PEVA and USE intention (moderating effect = 0.082; $p < 0.01$). Thus, the more frequently users accessed m-banking applications, the stronger the link was between PEVA and continuance intention. Experience exhibited the opposite effect (moderating effect = -0.047; $p < 0.05$); less experience with m-banking was related to stronger effects of PEVA on continuance intention.

5. Discussion and conclusions

Due to the enormous growth in the use of portable devices and anytime, anywhere banking practices, some researchers have predicted that consumers will prefer the convenience and novelty of m-banking [50]. Consequently, financial institutions have included m-banking among their strategic objectives [49]. Because financial institutions must offer online and m-banking services to be competitive [75], it is essential to identify the types of users who are likely to adopt m-banking services and the extent to which their continuous usage of these services might change.

The goal of the present research is to develop and test a conceptual model to improve our understanding of the consequences of USE of m-banking services in a mature market. Our theoretical model appears to be the first to examine the direct and indirect effects of SC, PR, PEVA, frequency and experience on USE intention and the effects of USE intention on WOM. The results of the analysis support five of our six hypotheses, which suggest that the research model accurately describes the nomological network [13] surrounding consumer USE intentions toward m-banking services.

Our analysis contributes to current theory by assessing the effects of SC (i.e., self-image congruence) on m-banking adoption. [13] argued that because innovative products play an important role in developing self-image, the antecedent of self congruence defines and exhibits innovative aspects of the user's personality. The finding that SC is significantly related to PEVA addresses a critical gap in the extant literature, which does not seem to have analyzed the effect of SC on m-banking USE. The few studies investigating the effects of SC have generally focused on consumer post-adoption behavior in the tourism/cruise ship [21] and automobile [24] sectors, finding strong positive relationships between SC and satisfaction [64], innovativeness [13], and brand loyalty [38].

We find a significant but moderate relationship between PR and PEVA (H2), which is consistent with the findings reported by [8] and which partially supports the results reported by [22] and [10]. Following [8], our finding suggests that m-banking users in developed countries are technophiles (i.e., individuals who adopt, use and are enthusiastic about new and advanced technologies) who focus on the obvious benefits of using m-banking services rather than on m-banking security issues. An earlier Finnish study [4] found that potential risks were not taken into account in marketing and developing innovative m-banking services. Previous research has

extensively analyzed PR and its relationship with PEVA. For example, previous research has viewed PR as an antecedent that directly and negatively influences consumer PEVA and purchase intentions [7].

Our results indicate that PEVA was significantly associated with increased m-banking continuous usage (H3) and that PEVA was a significant antecedent of the intention to use for consumers in a mature market. Consequently, our findings confirm that PEVA influences consumer USE intentions toward m-banking. Our finding also suggests that understanding what users' value can promote the establishment of long-term user relationships [11]. The significant relation between these two latent variables is consistent with empirical findings in the literature on USE in other IS, such as social networking sites [2], e-learning systems [6]; [11], and online banking [69].

Our analysis also reveals the critical influence of USE on WOM. This finding was expected because the convenience and the ease of use of m-banking services [60] allows consumers to access banking information more easily, which increases consumer satisfaction and thus contributes to positive WOM and customer retention. This finding is especially relevant for the financial sector because a 5 percent improvement in customer retention can generate an 85 percent increase in service provider profitability [5].

Prior research [61] has examined frequency of use because the frequency of use of e-services such as Internet and m-banking, which is positively related to satisfaction [1]. The results of our analysis contribute to this literature by confirming that user activity is a significant antecedent to continuous use. The frequency with which users accessed their mobile applications was significantly and positively associated with the extent to which PEVA predicted USE. However, although previous research has identified experience as a critical factor influencing individual attitudes and intentions to use a technology [31], our study finds that the moderating effect of frequency of use of m-banking services on the relationship between PEVA and USE was stronger than the moderating effect of experience. The moderating effect of experience on the relationship between PEVA and continuous use was negative, which might be due to the novelty-seeking tendency proposed by the UTAUT2 model [72]. The UTAUT2 model proposes that the importance of certain antecedents of use such as hedonic motivation diminishes with increasing experience. For m-banking, our finding might indicate that newer, less-experienced users of the service focused more on the novelty of the application, which might have motivated them to use it.

In summary, although previous research has identified a number of antecedents and consequences of behavioral intentions to adopt and use m-banking services [46] in developed and developing countries, the present study substantially contributes to the literature on m-banking by providing a more detailed and comprehensive understanding of m-banking USE.

Outcomes of the present study have implications for financial service providers such as banks, financial institutions, microfinance institutions and telecom industry that seek to promote USE of m-banking services continuous usage among new and existing customers. Our findings suggest that m-banking continuous use is significantly influenced by PEVA and that PEVA is a vital prerequisite for successful long-term relationships between users and banks providing m-banking services.

Because banks, financial institutions and telecom companies are eager to capture and "lock in" customers, the ability to offer cutting-edge and innovative banking applications and value-added services in a mature market such as the Finnish market also enables financial service providers to secure customer loyalty and increase customer satisfaction and retention [26].

Our findings support [43] recommendation that financial service providers profile customers based on usage orientation (i.e., individual or organizational), motivation, and behavioral patterns of m-banking service usage (i.e., temporal and spatial usage characteristics). Following this recommendation should enable financial service providers to improve marketing and operational strategies, improve understanding of consumer behavior, and improve the effectiveness of m-banking system management.

Our analysis finds a significant relationship between USE and WOM. To increase satisfaction, develop positive WOM and ensure the sustainable usage of products and services such as m-banking, financial service providers must meet consumers' growing m-banking needs, particularly in the key areas of accessibility, functionality, user application ratings and alerts/notifications.

The present study is not without limitations. Future research should examine the direct effects of different dimensions of perceived value such as monetary value, convenience, social value, emotional value, conditional value and epistemic value [54] on USE intentions toward m-banking services. Moreover, [13] noted that increasing our understanding of the contribution of SC to the USE

of an innovative product or service enables banks and other service providers to design specifically targeted and customized promotion appeals emphasizing the symbolic features that maximize new product diffusion.

Because the present study was conducted in a single country with a relatively small sample, the generalizability of our findings is limited. Consequently, comparative investigations of the USE of m-banking services in a range of developed and developing countries are needed to increase the generalizability of our research findings. In addition, because the study sample was predominantly recruited from "urban" areas [65], our study results might not extend to "rural" areas, where the continuous usage of individuals may differ [75]. However, the model developed in our study of USE might be applied to investigations of USE in other IS, such as Internet banking. Future research on the adoption and USE of m-banking services should also acknowledge the crucial role of SC and examine this factor as well as the relationship between PEVA and USE intention. Because previous studies have not investigated the moderating effect of frequency on USE intentions toward m-banking, future research should investigate this issue.

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Appendix

Self Congruence [63]

- People similar to me use m-banking.
- I can identify with people who prefer m-banking to other forms of banking.
- The image of a typical user of m-banking is highly consistent with how I see myself.

Perceived risk [31]

- I would worry about how reliable m-banking application would be.
- I would be afraid m-banking application would not provide me with level of benefits that I expected.
- I would be concerned about security risks in m-banking application.

Perceived value [35]

- Using m-banking application is an enjoyable experience.
- The overall value of my experience using m-banking application is outstanding.
- M-banking application represents good use of my time and money.

Usage [79]

- I intend to continue using m-banking application rather than discontinue its use.
- My intentions are to continue using m-banking application than use any alternative means.
- If I could, I would like to discontinue my use of m-banking application (reverse coded).

Word of mouth [5];[53]

- I will recommend m-banking application to other consumers.
- I will point out the positive aspects of m-banking application if anybody criticizes it.
- I tell positive things about m-banking application.
- I recommend m-banking application to those who seek my advice about such matters.
- I encourage friends and relatives to use m-banking MB application.