Consumer value segments in mobile bill paying

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Abstract

The purpose of the present study was to explore consumer value in mobile banking and in mobile bill paying especially. Today mobile communications technologies offer an opportunity for vast additional value for consumers' banking actions due to their always-on functionality and the option to bank virtually any time and anywhere. However, consumer value differs between individuals. It was measured in the context with five items namely privacy, accuracy, convenience, control and efficiency. An Internet questionnaire was developed and 82 usable responses from the users of mobile bill paying were collected. K-Means Clustering was used and five different value segments were identified. The results indicate that privacy and efficiency are the most valued items in mobile bill paying in general while individuals differing in their valuations. The study provides academics and bank managers with better understanding to consumer value in mobile banking and offers indications for value-based consumer segmentation.

Keywords: Consumer, value, banking, mobile banking, mobile communications

1. Introduction

Already in many developed countries the traditional branch-based retail banking, bill paying especially, has been bypassed by more technological service access methods like ATM and the Internet. In these societies mobile and wireless technology is already changing the way personal financial services are used by consumers. In the last decade, the development of mobile communications technology has been dramatic, including SMS, WAP and, most recently, 3G technologies. The high penetration figures of mobile phones indicates that the devices are an integral part of consumers' lives offering enormous potential for mobile service providers and making mobile solutions applicable for a variety of financial services. The first applications of mobile banking were introduced in Finland by Merita Nordbanken (currently Nordea) more than a decade ago, enabling customers to make payments and request account balances via mobile phone as an SMS service. Today mobile banking services enable customers to check the balance and transactions of their accounts, pay invoices (also abroad) and transfer funds between accounts, monitor the use of credit cards, check when invoices fall due, make buy-and-sell orders for the stock exchange and receive portfolio and price information. Mobile banking, defined as "a channel whereby the customer interacts with a bank via a mobile device, such as a mobile phone or personal digital assistant (PDA)" [1;2], offers vast additional value for consumers due to its always-on functionality and the option to bank virtually any time and anywhere. Indeed, it is argued that mobile banking services are valued by consumers mostly due to convenience, privacy, access to the service regardless of time and place and the overall effort-saving capabilities [3]. Laukkanen and Lauronen [4] have argued that customers perceive location-free access and the ability to react immediately to the service need as important aspects of the creation of convenience and efficiency in mobile banking service consumption. Moreover, they state that the feeling of control is an important contributor in mobile banking in general. In fact, mobile banking is considered to be one of the most value-added and important mobile services currently available [5].

However, mobile banking adoption is still in an initial stage the usage rates being in few percent. It seems that there are some inhibitors that slow down the use of mobile channels in banking transactions. Previous studies indicate that perceived financial cost [6] and perceived complexity [5] inhibit the use and adoption of mobile banking services. Furthermore, security issues are argued to be among the greatest concerns in the adoption of mobile banking [6;7]. On the other hand, some studies have argued that security issues are not perceived by customers to be major obstacles in mobile banking transactions [3;4]. Instead, it is argued that some consumers feel that a mobile connection via a personal mobile device is even more secure compared, for example, to public Internet access [4].

While electronic banking has been subjected to scholarly research, mobile banking has been neglected in this respect. The aim of this paper is to explore consumer value in mobile banking and in bill paying especially. An Internet questionnaire was developed and 82 acceptable responses were collected. The respondents were asked to evaluate their reasons for mobile bill paying. The items measured were privacy, accuracy, convenience, control

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and efficiency. The general importance scores to the items are reported in the paper. Moreover, the respondents were segmented into homogenous groups based on the perceived importance they attached to the items and finally analysis of variance (ANOVA) was used to examine the differences among means for different groups.

The paper begins with an introduction to consumer value and the concepts used in the study are defined. The data and method used are explained and the findings reported and discussed. Finally suggestions for future research are presented and possible limitations of the study considered.

2. Consumer value

Developing an effective long-term strategy as well as profitable products and services requires executives and marketing managers to have insight and comprehensive understanding of the consumer value the company's products and services create to their customers. The conceptualisation of the term "value" has roots in several academic fields and disciplines like anthropology, with its interests in lifestyles and cultural patterns, sociology, focusing on ideologies and customs, and psychology, examining values from the standpoint of attitudes and personal motives [8]. Furthermore, the concept of value reflects interest in social psychology, economics, marketing, and management [9]. It is important to note the difference between values (plural) and value (singular) as they apply in the marketing literature. Whereas values are defined as centrally held, enduring beliefs that guide human behaviour independently of product or service use situation [8;10] value is argued to refer to a preferential judgment by a consumer [11;12]. In this study, consumer value in mobile bill paying was measured with five items, namely privacy, accuracy, convenience, control and efficiency derived from prior qualitative research in which mobile banking customers were interviewed in depth using the means-end method.

2.1. Privacy

Surveys and experiments have shown that privacy is ranked by consumers as the primary concern in Internet activity [13;14]. Legal theorists and courts have largely based their privacy legislation to Brandeis and Warren's [15] statement of privacy as the *right to be left alone*. The marketing literature discusses consumer privacy in the sense of a consumer's control over information disclosure and the environment in which a consumer transaction occurs [16]. It is argued that in electronic bill paying customers perceive privacy when they can pay their bills in a peaceful environment at home without interruption or harassment from others [17]. In this paper privacy was seen as a consumer's ability to use the service alone and in private.

2.2. Accuracy

Consumer-perceived accuracy can be seen as the consumer's true value or the quality of nearness to the truth. Those consumers seeking accuracy in their service consumption are worried about mistakes and want to be confident that mistakes will not occur. Earlier studies have found that some consumers do their banking transactions by themselves so that they can feel in command of their own account [17]. In this study perceived accuracy in mobile banking was considered as consumer's enhanced ability to ensure the accuracy of the service.

2.3. Convenience

The concept of convenience appeared for the first time in the marketing literature in 1923, when Copeland introduced his product typology consisting of convenience goods, shopping goods and speciality goods [18]. Traditionally in the marketing literature convenience has meant that something can be done so that either time or physical/mental resources are lost or saved [19;20]. This view was extended by the dimensional view of convenience [19;21]. Dimensions were *time utilisation* - the effective use of the time available, *accessibility* - the ability to use service wherever and whenever wanted, *handiness* – the ability to save physical effort, *appropriateness* - the ability of a service to fulfil the specific need of a consumer, and *avoidance of unpleasantness* - certainty that a service does not cause unpleasant surprises. Eastin [22] found that perceived convenience is actually the strongest predictor of online banking usage. In mobile banking Laukkanen and Lauronen [4] found that time utilization, accessibility and appropriateness creates convenience for consumers. In this study convenience was seen as consumer's ability to easily and conveniently use the service.

2.4. Control

The psychological construct, locus of control [23], has received attention in personality research since its introduction in the mid 1960's. The construct contains a consumer's beliefs about his role in determining personal life goals. It is considered a generalised expectancy regarding the contingency between personal actions and their outcomes [24]. Individuals with internal locus of control generally expect that their actions will produce predictable outcomes whereas individuals with external locus of control believe that happens in their lives are determined by luck, change or powerful others. Internet offers an enhanced opportunity for consumers to have

control of the environment. Hoffman et al. [25] argue that consumers with internal locus of control differ from those with external locus of control in online environments. They found that 'Internals' are more experienced and more frequent users of the Internet using it primarily for goal-directed activities, whereas 'Externals' use the Internet more for experiential activities like entertainment and chat. Earlier studies have also recognised the importance of perceived control in Internet bill paying [17]. In this study control was seen as consumer's ability to control their own banking actions.

2.5. Efficiency

Efficiency has roots in the classic economic consumer choice behaviour model: the consuming unit attempts to maximise the utility subject to the constraints of income and relative price of goods. Consumer value discussion has conceptualised efficiency as the perceived benefit customers receive in relation to the sacrifice or cost [11;12]. For example, when a consumer perceives that mobile bill paying produces flexibility by reduced sacrifice compared to his earlier way of paying, the perception of efficiency is formed. This efficiency perception means that the consumer perceives cognitively the ratio of benefits and sacrifice. Holbrook [11;12] categorises consumer value by dimensions of extrinsic versus intrinsic value, active versus reactive value, and self- versus other-oriented value. He stated that efficiency is clearly extrinsic, active and self-oriented value. This pertains to the means-end relationship, some attribute or quality is a means in accomplishing some higher and further purpose. In this study efficiency was considered as consumer's ability to efficiently use the service.

3. Materials and methods

An Internet questionnaire was developed. The questionnaire was placed on the log-out page of a large Scandinavian bank's online service in Finland, thereby only reaching users of online banking services. The questionnaire was open for 48 hours from noon to noon between May 30th and June 1st 2005. Altogether 82 usable responses were collected among the users of mobile bill payment service.

The aim of the study was to explore how consumer value differs between individuals. The questionnaire collected data on respondents' perceived value in order to see if there were customers in the market who were privacy oriented, accuracy oriented, convenience oriented, control oriented or efficiency oriented. A five-point Likert scale was used to measure the level of agreement with each statement. Table 1 details the scale items used in the survey.

The goal was firstly to identify the most important reasons for consumers to use mobile phone for bill paying and secondly, to identify similar consumer segments so that marketing managers and service providers can better develop and tailor their marketing programs to different consumer segments. K-Means clustering, currently the most popular partitioning method [26], was used in order to group the objects into homogenous groups.

Table 1. Scale items for measuring consumer value

	Strongly disagree				Strongly agree
I use mobile phone for bill paying since it enhances…					
…my ability to use the service in privacy (privacy)	1	2	3	4	5
…my ability to secure the accuracy of the service (accuracy)	1	2	3	4	5
…the ease and convenience of service consumption (convenience)	1	2	3	4	5
…my ability to control my banking actions (control)	1	2	3	4	5
…my ability to efficiently use the service (efficiency)	1	2	3	4	5

4. Results

The descriptive statistics indicated that consumers value mobile bill paying mostly due to the efficiency and privacy it generates to the service consumption (see Table 2). Mean scores showed that perceived efficiency has the highest mean value followed by privacy, convenience and control the scores being 3.56, 3.35, 3.34 and 3.32 respectively. Accuracy yielded the lowest mean (2.65), indicating that consumers do not use a mobile phone for bill paying to ensure the accuracy of the service but instead more due to the reasons mentioned above.

Mode, the most frequently occurring score, suggested that most respondents strongly agreed with the statement that they use mobile phone for bill paying since it increases their ability to use the service in privacy. However, privacy yielded the highest standard deviation (1.44) indicating substantial differences between the respondents' responses. Efficiency, on the other hand, resulted in the lowest standard deviation (1.15) indicating the importance of efficiency in bill paying for the majority of the respondents.

Table 2. Descriptive statistics of the data

Item	Mean	Mode	Std. deviation
Privacy	3.35	5	1.44
Accuracy	2.65	3	1.17
Convenience	3.34	4	1.33
Control	3.32	4	1.27
Efficiency	3.56	4	1.15

It seems that efficiency is highly valued in mobile bill paying by all users. It also seems that perceived privacy is the most important factor in the service consumption for most of the respondents but for some consumers it is of only marginal importance. Therefore, it can be concluded that consumer value seems to differ between individuals. The clustering was used in order to group the respondents into homogenous groups based on their responses. Table 3 describes five different consumer groups for mobile bill payment service. Analysis of variance (ANOVA) was used to examine the differences between the groups. The analysis indicated that the groups differed significantly from each other in all the items measured.

The results suggested that consumers differ at least in their privacy versus efficiency valuations. Those respondents who valued privacy seemed not to pay great attention to efficiency and vice versa. The first group, labelled G1, represents respondents who valued privacy, the mean score being 4.69, as the most important reason to use mobile phone for bill paying. Moreover, this group, representing 39 % of all respondents, gave high scores throughout the line, indicating an overall satisfaction to the service.

Table 3. Consumer value segments

Item	G 1 N=32	G 2 N=12	G 3 N=21	G 4 N=11	G 5 N=6	Sig.
Privacy	4.69	3.67	2.57	1.91	1.00	p<0.0005
Accuracy	3.56	2.00	2.33	2.00	1.33	p<0.0005
Convenience	4.31	2.17	4.00	1.64	1.33	p<0.0005
Control	4.25	3.67	2.62	2.00	2.50	p<0.0005
Efficiency	3.97	2.83	4.10	1.64	4.50	p<0.0005

The second group, G2, could be labelled "privacy and control oriented" since they gave the highest scores to these items. This group of customers seems to use a mobile phone for bill paying due to the enhanced ability to use the service in privacy and enhanced control over their banking actions. Earlier studies have suggested that ability to use the service wherever wanted increases the feeling of control in mobile banking [4]. Furthermore, the feeling of independence and being in charge of one's banking actions have been found to be important to online banking consumers [17]. The arguments seems logical since location free access enables consumers to search for a private location and do the banking actions any time anywhere, increasing the feeling of control over their banking actions. The group G2 seems to attach most value to these elements of the service.

The third group, G3, represents over one fourth of all respondents. In their valuation convenience and efficiency clearly emerged as the most important factors of mobile bill paying, while factors like privacy, accuracy and control received scores below the average. Earlier studies in electronic banking have identified convenience as an important element of the service. It is argued that convenience orientation by customers can be associated with desiring less personal service and a greater use of electronic self-service technologies [27]. Laukkanen and Lauronen [4] argue that time savings derived from using the mobile phone instead of alternative service access methods in bill paying create both efficiency and convenience for consumers. This supports Holbrook's suggestion that at least when the ratio of benefits and sacrifice in consumer decision making deals with time, consumers perceive efficiency as convenience [11;12]. However, it has been argued that whereas efficiency in electronic banking is related to concrete cognitive comparison between benefits and sacrifices, convenience, for its part, can also arise from the purely affective internal experience of the consumer [28;29]. In mobile banking the pure feeling of convenience could be related, for example, to a consumer's awareness of his ability to easily use the service wherever wanted without any relation to time or monetary savings. It seems that G3 represents a group of consumers who use mobile phone for bill paying due to the savings in time and effort but also due to the pure feeling of convenience the channel generates for service consumption.

In G4 the respondents gave low scores to every item measured in the study. It seems that either the measured items did not cover the reasons they use mobile phone for bill paying or they were in general dissatisfied with the service. However, the results indicated that in mobile bill paying they valued most their ability to ensure the accuracy of their service consumption and the feeling of control over their banking actions. Earlier studies have found relation between accuracy and feeling of control. It is noted, for example, that some consumers use Internet and other self-service methods for bill paying since they need to have the control in their own hands and therefore, let nobody else to do the transactions [17].

The group G5 could also be called "efficiency oriented". This group represents the smallest group in the study but indicates that there is a group of customers who use mobile phone for bill paying purely due to the efficiency it provides for service consumption. Generally efficiency is seen as a ratio between inputs and outputs like mileage per gallon in the case of a car. These

"efficiency oriented" customers, like respondents in G5, are only interested in paying their bills using the lowest amount of time and effort possible. In the coming days technological developments, like 3G, enabling much greater data capacity and effective delivery, will add value especially to these "efficiency oriented" consumers' service consumption.

5. Conclusions

The aim of the study was to explore consumer value in mobile bill paying and investigate if and how individuals differ in their mobile banking valuations. The results highlighted consumers' perceived importance of privacy and efficiency in the service but suggested differences in these valuations between individuals. Five different value segments were identified, the valuations differing substantially between the groups. It seems that consumers use a mobile phone for bill paying for different reasons. Some value the privacy and the control the channel provides for the service consumption and others the efficiency and the convenience or purely the efficiency of the service. It can be concluded that the development of mobile technology, like 3G, will also offer different kinds of value for different individuals. Those who only value the efficiency in mobile bill paying will most probably benefit most from the enhanced connection speed.

Privacy and efficiency were the two main consumer value items distinguishing consumers into different segments. It would be interesting to analyse how these two value items predict consumer behaviour in the e-banking or e-business as a whole. Do consumers prefer mobile bill paying due to the enhanced privacy or efficiency compared, for example, to Internet bill paying? Or, have personal electronic services, in general, succeeded in producing these value items for consumers? Consumers may already have needed more privacy and efficiency in various services for a long time. However, marketers may not have been able to offer these value items to consumers until now.

Earlier studies have emphasised the meaning of convenience as a predictor in mobile banking. It has also been suggested that the accessibility dimension of convenience produces the feeling of control in mobile banking [4].

The results of the current study shed more light on the value relations that predict mobile banking. Relations were discovered between privacy, convenience, control and efficiency. In group G1 respondents preferred all these items as predictors of mobile bill paying. In group G2 privacy and control seem to form a pair of interrelated value items explaining the behaviour, whereas in group G3 convenience and efficiency are united forming an opposite pair to explain bill paying compared to privacy and control.

The results suggest a new relation between privacy and control. If the feeling of privacy and the feeling of control are interrelated elements in the wider scene of mobile services, this relation could offer challenging opportunities for future research as well as for marketers. The relationship between convenience and efficiency has also been revealed in earlier studies [11;12]. These two value items can be clearly separated from the pair of privacy and control. It would be fruitful to analyse further if there was a background factor behind these value items that would make the difference between these two pairs more understandable.

6. Research limitations and suggestions for future research

The Internet survey exposed the study to some possible limitations. A pop-up questionnaire, placed in the Internet service of a bank, was used, which impeded the opportunity to eliminate multiple responses by the same customers. However, this likelihood was reduced by arranging in advance for the questionnaire to open up only for every fifth visitor and by limiting the period of the survey to 48 hours. On the other hand, some customers may bank on weekdays and some at weekends and moreover, customers of different banks may differ in their behavioural and demographic patterns. These aspects exposed the study to a potential bias and therefore generalisation of the results to the whole population may be risky.

Future research should pay more attention to consumer value and value-based segmentation. Comparative research could be conducted, for example, between different services and service channels in order to gain more information about differences in consumer value in electronic service environment.

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