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Internet Retail Banking Systems: A Singapore Perspective

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Abstract

The perceptions of customers on the Internet retail banking systems implemented recently are empirically examined through a survey of selected Internet users in Singapore. The results show that expectations assigned to security and accuracy, transaction speed, user friendliness, and user involvement represent the attributes that most likely support the market success of the innovation. The present findings should provide useful information to assist in the development and marketing of commercially viable cyber banking systems.

Introduction

The banking industry is undergoing rapid change and ferment. Advanced information and telecommunication technology not only breaches geographic, industrial and regulatory barriers, but also creates numerous opportunities for financial institutions to introduce new products and services. In Singapore, banks have not been slow to realize that information technology would play an increasingly important role in achieving competitive advantage. Since the 1980s, many banks and financial institutions have effectively adapted to technological change and developed various technology-based services. These include automatic teller machines (ATM) with an expanding range of facilities, electronic share application facilities (ESA), home banking, telebanking, TV banking, Network for Electronic Transfers (NETS) and cash cards.

In the second half of 1997, local commercial banks such as Development Bank of Singapore (DBS), the Overseas Chinese Banking Corporation (OCBC), Post Office Savings Bank (POSB), and United Overseas Bank (UOB) started to introduce Internet banking services in Singapore. This latest computer-based self-service has been shown to be feasible on the supply side, but one can find little research published on its viability on the demand side.

This paper explores the perceptions of local customers on cyber retail banking services offered by the above-mentioned commercial banks in Singapore. The next section presents a brief review of the literature in relation to consumers' perception on innovative services, followed by a description of research method. Finally, the research findings are presented and discussed.

Literature Review

Some existing literature on consumers' response to innovations mainly focused on segmenting the individual groups on the basis of usage (Warren *et al.*, 1989), and demographics (Gilly and Zeithaml, 1985). These studies are useful in describing adopters and non-adopters, but they do not address the problem of identifying what attributes of a new product or service consumers deem to be important, and the extent to which the individual's evaluation of the innovation could encourage them to use it. The other area of research explores the reasons why consumers adopt or reject innovations (Labay and Kinnear, 1981). Among the factors discussed in various studies, we may note innate innovativeness and variety-seeking behavior (Hirshman, 1980), efficacy (Ellen *et al.*, 1991), and habit (Sheth, 1981). In examining the motivations behind the consumption of new financial products and services such as ATM facilities and telephone banking, Barczak *et al.* (1997) interpreted usage in terms of post-purchase behavior. The present paper explores the complimentary thesis, in which pre-purchase expectations are presented as fundamental to the consumer evaluations that underlie the adoption of technology-based innovations in banking services, and applies the thesis to study Internet banking in Singapore.

The most significant boost for competitive advantage is likely to derive from outward orientation towards the demand side of the market, as this would tend to increase customers' value (Woodruff, 1997), which suggests a five-step procedure towards this end. The first step is to discover what the targeted individual value, after which it is required to measure the order of importance among those value attributes and dimensions. The next two steps consist of assessing how well the organization is delivering value, and identifying the reasons that underlie performance. The last step is to estimate what the targeted customers would value in the future.

Since Internet banking is still in an introductory stage in Singapore, it might be appropriate for the suppliers to focus on the first two steps of Woodruff's approach. Once a bank is able to more clearly identify what the targeted group of customers value, the framework of Internet banking could be adjusted and tailored to fit customers' preferences, and hence would be more likely to gain market penetration. The second step of Woodruff's approach is to measure the intensity of which attribute is perceived to be relatively more important to potential

customers. For example, if system security emerges as a major concern, it would be optimizing for banks to allocate additional resources in this direction. By promptly enhancing more desired attributes to meet the demand of potential customers, the time required for Internet banking to secure market acceptance would likely be significantly reduced. Cost savings might also result as an additional benefit.

Traditional models of service quality based on disconfirmation (Parasuraman *et al.*, 1988) or consumption-based perceptions (Cronin and Taylor, 1992) are difficult to apply to individuals who have not yet experienced a new service. Thus, it would be difficult to meaningfully assess the reliability of use. Technology-based self-service systems such as Internet banking represent a special form of service delivery, in which the quality dimensions studied in traditional models might not apply. Dabholkar (1996) constructed a model of service quality, in which the expectations assigned to speed of delivery, ease of use, reliability, enjoyment and control determine expected service quality, which in turn might affect the individual's intention to consume.

In order to empirically measure customers' evaluation of service quality in Internet banking systems, the considerations mentioned in various existing articles are modified and introduced in this project. Major attributes studied include system security, transaction speed and accuracy, user friendliness and user involvement. With regard to an innovation of this nature, the only evaluations that individuals are able to rationally supply would be based on their expectations. Consumers usually apply a compensatory process to evaluate attributes of a technology based self-service system, and form expectations with regard to its usefulness (Dabholkar, 1994).

Research Methodology

This project was conducted through a survey of Internet users and interviews of bank officers responsible for cyber banking. One thousand questionnaire forms were distributed to Internet users in selected areas in Singapore. The questionnaire requested respondents to evaluate the impact of various attributes in relation to the perceived quality of Internet retail banking systems, based on a seven-point scale, with "1" representing "not important" and 7 representing "extremely important".

Regular Internet users seem to be more likely to appreciate the impact of electronic business. They might be able to supply meaningful expectations in response to questions regarding the innovation. Therefore, the particular sample should be appropriate. Data were collected after assuring respondents of the usual volitional and confidentiality conditions. As a result, three hundred

and twenty three questionnaire forms have been collected from those Internet users surveyed. 36% of them made use of banking services 1-5 times per month, 42% did so 6-10 times per month, while 22% reported a frequency as high as 11-20 times a month. The empirical data collected directly from Internet users was used for analysis.

Results and Discussion

As Internet transactions are not processed face-to-face over the counter at a bank, both security and accuracy should become a matter of prime concern. The fact that transactions are conducted over a public network explains why access authorization and confidentiality were deemed to be very important by 97% of the respondents, of which 72% believed an upper limit restriction to be set. The result suggests that those local banks would be well advised to advertise the presence of security provisions like message encryption and digital signatures, in as non-technical a manner as possible.

According to one of the bank officers interviewed, Internet banking systems should adhere to four fundamental security principles. First, with the help of smart cards with digital certificates, banks would be able to identify the authorized account holder(s) and grant access upon the entry of a valid PIN. At present authentication is supported by Netrust (Singapore Certification Authority), which acts as a third party in Internet transactions and establishes the user's identity. Second, confidentiality of transactions and related information must be preserved, with the aid of techniques such as encryption. Third, it is vital to maintain the integrity of all transactions and information, and the fourth principle is non-repudiation. To ensure that no party involved in a transaction can deny its existence, banks would have to introduce security measures such as digital signature technology. Singapore Computer Emergency Response Team (SingCERT) has been established as a one-stop center for coordinating action in the event of security incidents (IT Focus, 1997).

The transaction speed is also an important quality attribute, because 92% of respondents felt that a quick response time from the bank is important. Customers seem to place great emphasis on the real-time confirmation of banking transactions, because it promotes a greater sense of security. Actually 89% of respondents considered Internet banking to be faster than branch banking.

An easy-to-follow instruction was considered to be important by 76% of the respondents. In addition, 82% felt that it is important for Internet banking systems to be easy to learn. As with any technologically advanced products or services, the so-called "ease of use" is likely to be a determinant to the customers' acceptance of the

systems. The more difficult Internet banking is to learn, the more attractive the 'low-tech' alternatives offered by branch banking would appear. Customers generally expect the provision of user-friendly interfaces such as icons, which would simplify operations and allow an individual to execute transactions with a few clicks by using a mouse. It is essential to make customers to match the systems configuration of supplier banks with little difficulty.

Furthermore, the respondents generally perceived convenience to be important to quality service in Internet banking. 24-hour access, for example, was singled out by 91% of our respondents in this respect. Since most banks in Singapore close in the late afternoon and on Sundays, individuals would much prefer executing transactions in the comfort of home at anytime. Not surprisingly, the wider and the more readily available the range of facilities offered in these directions, the more consumers would consider Internet banking systems to be attractive.

Finally, permitting users with more control is likely to increase their sense of security. It is desirable that the systems allow users to proceed operations at a comfortable pace, which will not be prompted by the computer at every turn. It is also desirable that individuals are allowed to have more time to double-check their entries and reconsider a particular transaction.

Though Internet banking is a novelty in Singapore, 83% of respondents expected the cyber banking service to be useful, and indicated that they have an intention to use the systems continuously. However, some respondents who did not express their intention cited reasons such as concern about security and the uncertainty of the service. This points to the need for banks to more vigorously pursue to assess consumers' value.

Conclusion

The expectations of customers to system security and accuracy, transaction speed, user friendliness, user involvement and convenience represent the major attributes that would most likely impact the demand for Internet banking services in Singapore. Local commercial banks launching Internet banking services envisage the development of cyber banking as an innovative channel for service delivery, and expect a significant enhancement of competitiveness through this means. It has been found that technologically adventurous individuals would be attracted to utilize the innovative banking services. However, the competitiveness of cyber retail banking services should depend not only on exploiting technical change, but also on identifying and maximizing the value of customers that the resulting innovation may contain

Further research could be pursued to re-examine the present results at a time when more individuals have become familiar with the idea and paraphernalia of cyber banking transactions. It would also be meaningful for marketing purposes to explore the relationship between perceived quality and the consumer's intention to bank on the Internet, and to test the effects of demographic differences.

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