Analysis the effects of Electronic Banking on Customer Satisfaction and Loyalty
(Case study: Selected Branches of Melli Bank in Tehran)

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Abstract
In light of the recent financial crisis and global economic recession, leaders of financial institutions are under additional pressure not only to maintain customer satisfaction while sustaining lower costs, but also to maintain market leadership. To lower costs and maintain market leadership, bank leaders in Iran have capitalized on superior service quality and information technology infrastructures. Internet banking is considered as an online revolution of the traditional banking services which offers customers the greatest expediency for performing banking transactions via the Internet. All banks, especially the large banks and mutual banks, have gradually increased their number of Internet banking services available to customers over the past decades. The most popular Internet banking services are viewing balances and transactions, fund transfers and payment of bills. Internet banking is either offered as a value added service of physical bank branches or a virtual bank where customers can only perform banking transactions through the Internet and it is important to mention that operating costs of a virtual bank are much lower compared to traditional banks. With above support, this study tries to appear the effects of electronic banking services on customer satisfaction and loyalty among customers of six independent branches of Melli bank in Tehran. The research was conducted among 358 e-service customers using a comprehensive questionnaire. To examine our conceptual model, we used the structural equations modeling (SEM) approach using LISREL software. According to the SEM approach, the unknown model parameters are chosen to make, in general, the model-reproduced covariance matrix as close as possible to the sample covariance matrix. We found that ease of service use, website design, speed of connectivity and transactions, information security; information content and support service have a significant effect on user’s satisfaction. Moreover, this satisfaction has a significant effect on loyalty to bank and willingness to continue relations with e-banking service. Our findings can lead financial institutions managers to understand all basic needs for customer loyalty and satisfaction in an electronic environment.

Keywords: Electronic banking, E-service, Customer satisfaction, Loyalty, Melli Bank
Introduction

There is a steady increase in Internet banking acceptance since the year 2000 (Liao & Cheung, 2002). As Internet access exceeded 1.596 billion people globally in the first quarter of 2009 (Internet World Stats, 2009), an increasing number of banks worldwide have increased their business investments in Internet technology driven by the expectation that the Internet technology would provide better opportunities to establish a distinctive strategic position compared to other traditional forms of banking services (Evans & Wurster, 1997). Internet banking is particularly well-practiced in the developed countries such as Korea, Spain, and Austria, where more than 75 percent of all banks offer transactional services via the Internet (Maenpaa, 2006). The development of the Internet as a service and marketing channel has breached the geographical and industrial barriers, creating new products, services and market opportunities (Liao & Cheung, 2002).

Internet banking is developed to help banks deliver services and products better, faster, and cheaper. It enables customers to browse essential bank products and services seven days a week through their personal computers (Polatoglu & Ekin, 2001). It allows consumers to perform banking transactions over the Internet anywhere and anytime (Polatoglu & Ekin, 2001). There are three basic types of Internet banking services, the informational, communicative and transactional Internet banking services (Bank Indonesia, 2004; Reserve Bank of India, 2007). Informational internet banking is a basic type of Internet banking that provides comprehensive bank products and services information (Bank Indonesia, 2004; Reserve Bank of India, 2007). It provides background and history of the bank, organizational structure, affiliated entities in the banking group and available corporate, retail and specialized banking facilities (Bank Indonesia, 2004; Reserve Bank of India, 2007). This type of Internet banking does not involve any execution of transactions (Bank Indonesia, 2004; Reserve Bank of India, 2007). The bank provides Internet users with basic information through hyperlinks (Bank Indonesia, 2004; Reserve Bank of India, 2007). Although the security risk associated with informational Internet banking services are relatively small (The Office of the Comptroller of the Currency [OCC], 1999), the web site can still be susceptible to unauthorized modifications. Adequate controls must therefore be available to prevent unauthorized modifications (OCC, 1999).

Communicative Internet banking is the second type of Internet banking that allows customers to have some interactions with bank system such as to submit their applications and queries for different Internet banking services, but it does not allow money transactions between accounts (Reserve Bank of India, 2007). Similar to informational Internet banking, it does not involve execution of transactions (Bank Indonesia, 2004; Reserve Bank of India, 2007). Since the web server of communicative Internet banking is linked with the internal network of a bank, it is at a higher security risk compared to informational Internet banking services (OCC, 1999). Adequate controls have to be available to prevent unlawful intrusion to the internal network of a bank (OCC, 1999). Virus detection is also an important issue for the communicative Internet banking services (OCC, 1999).

Transactional Internet banking is the third type of Internet banking that allows the customers to transfer funds, make payments, and update personal information (OCC, 1999). The server and the internal network of the bank's outsourcers pose the highest security risk and deserve the strongest controls (OCC, 1999). Security and safety, confidentiality and privacy issues of the customers' accounts are critical. The accuracy and integrity of transaction records need to be ensured at all time (Bank Indonesia, 2004; Reserve Bank of India, 2007). The purpose of the
A quantitative correlation study was to determine if a set of technology-based banking service dimensions have an association with customer satisfaction and loyalty in Melli bank. A quantitative research method with a correlation design that made use of a survey was appropriate for the study. A quantitative method was appropriate because the primary objective of the study was to describe possible relationships and correlations between variables. The research study provided original contributions to fill two main knowledge gaps. First, the study contributed to current and future research by comparing and contrasting related literature. Second, the study provided a practical application to measure customer satisfaction and loyalty in Melli bank. Moreover, the current study included an assessment model that might help bankers and researchers investigate customer perceptions of e-service. The research findings from the study made it feasible for bankers in Iran to be able to identify infrastructures of service quality and allocate resources to prevent and improve customer perceptions and behaviors toward continuing relations with bank.

**Literature review**

Daniel (1999) defined Internet banking services as major information services of a bank to serve its customers via the Internet. Internet banking permits consumers to carry out usual banking transactions on a computer which is equipped with Internet connection (Fox, 2006). Among the most commonly used Internet banking services include transferring funds between accounts, checking the balance in one’s bank account and bill paying (Fox, 2006). Basel Committee Report on Banking Supervision (1998) defined Internet banking services as the provision of various banking products and services like bank account management, electronic bill payment and financial advice over the Internet. Mukherjee and Nath (2003) defined Internet banking as a type of banking activity through which consumers can perform banking transactions such as checking account balances and making payments via telecommunication network. Encarta MSN (2007) defined Internet banking as services of banks in which the customers can pay bills and check account information by the use of the Internet. With respect to Internet banking, a common confusion exists between the terms “Internet banking” and “personal computer banking”. “Internet banking” involves the use of banking services via the World Wide Web (Bernstel, 2000). It requires consumers to log on to the bank’s web page by using web browser with the actual software that resides on the bank’s server (Bernstel, 2000). Unlike “personal computer banking” whereby customers are required to fill in details offline before sending over the bank’s private network, Internet banking does not require users to access to the banks’ private network (Bernstel, 2000). Internet banking has been found successful to reduce the operation expenses by allowing customers to access directly to their banking transactions without the need to visit to physical branches (Liu, 2008). Large banks that spend large sum of money in running physical branches tend to enjoy the largest benefits to adopt Internet banking services (Liu, 2008). Internet banking transforms the business models of the financial institutions (Liu, 2008). The emergence of Internet banking has changed the way financial institutions conduct their business in several main areas such as distribution, production, payment and trading (Llewellyn, 1997). Banks that offer Internet banking services have become serious competitors to traditional banks, which rely more on their interpersonal interactions, especially in cities (Llewellyn, 1997). With the benefits of fast and simple and trouble-free application processes, minimal technical errors, a wide range of funding options and minimal account deposit requirements, Internet banking has been successful in generating higher consumer satisfaction (Methlie, 1998). By referring to the
literature above, this study defines Internet banking as the use of the Internet to conduct informational, communicative and transactional banking activities, such as relocating funds, paying bills, settling mortgages payment, viewing checking account balances and information enquiries. Internet banking relies heavily on information technology and the Internet to provide services to its stakeholders (Pyun, Scruggs, & Nam, 2002; Scott & Walsham, 1999; Siaw & Yu, 2004). Change is fostered by information technology, changing employee demographics, performance gaps, government regulations, and global economic competition. The success or survival of online companies depends on their ability to adapt to rapid external and internal changes. Overcoming resistance to change promotes organizational effectiveness (Cooper & Wolfe, 2005; Cooke & Kroeze, 2004; Coté & Morgan, 2002). Organizational development techniques help people adapt to change. Strategic planning involves many steps. The process starts off by defining goals, the scope of the products and services, assessing the internal resources and the external environment, analyzing the internal arrangements, assessing competitive advantage, developing a competitive strategy, communicating the strategy to stakeholders, implementing the strategy, and finally, evaluating the outcome (Robbins & Coulter, 2005; Rosenfeld & Morville, 2002).

This study investigated the scope of current Internet banking services (Bruene, 2002; Southard & Siau, 2004). The scope can also include other businesses in which an Internet banking portfolio operates or plans to operate. For example, Google had a narrow scope of providing a fast and quality online search engine. Assessing the internal resources of Internet banking addressed the questions of adequate and available resources to plan and implement the strategy. In any company, resources are limited which makes different business units compete for scarce resources that include financial, human, machinery, technology, knowledge, and expertise. The banking industry headquarters was concerned with assessing the external environment in 2005. This knowledge was shared with Internet banking staff. Competition exists among various financial institutions because of the lower entry barriers imposed by new regulations and technology. Lower entry barriers enable non-banking institutions such as E-Bay and Yahoo to offer financial services. No organization operates in a vacuum competition, regulatory, economic, political, social, technological, and global forces must be considered (Savitz, 2005). The banking industry had no power over external forces, but banking industry can be proactive by scanning the external environment and taking the necessary steps to mitigate their impact on the bank and its activities (Kaplan & Norton, 2004; Venkatesh & Davis, 2000). Human resources management in a knowledge economy can be a key success factor (Kaplan & Norton, 2004). The banking industry recognizes four types of stakeholders or customers, namely: employees, customers, the community, and shareholders. Internet banking should analyze the internal arrangement or alignment by answering these questions: are employees motivated to strive for corporate goals? Does the bank prepare employees for future promotions and leadership roles? Do employees possess the required knowledge and training? Does the culture empower employees? Is technology available? Does the bank assess the competitive advantage in areas of quality, cost, or both? This study investigated data to determine if Internet banking has developed a competitive strategy using increasing the customers satisfaction and loyalty. In order for Internet banking to create stakeholder value, the banking industry must manage and align its core business objectives with the new Internet banking technology through judicious financial performance (FP), stakeholder value (CV), internal processes (IP), and intangible assets (IA) (Kaplan & Norton, 2004; Vera & Crossan, 2004; Weiss, 2003). In this case study, as in many management situations, multiple and occasionally conflicting objectives are found.
This study was based on the BSC conceptual framework with minor modifications for assessing and auditing the innovative capabilities of banking industry. Internet banking channel is convenient compared to bank branches because stakeholders can access their account at any time (Siaw & Yu, 2004). The quality of Internet banking includes ease in signing on the system, of performing the transactions, and getting to a live person in case of access problems. A website interface that is user friendly was determined in earlier studies to lead to stakeholder adoption of new technologies (Siaw & Yu, 2004; Tan & Teo, 2000). Banks must provide accurate account information of stakeholders’ financial transactions. Stakeholders expect Internet banking transactions to be accurate and free of errors. If there is an error, it should not take too long to correct the error after it is reported. Internet banking acceptance relies closely on the management of consumer relationship (Goi, 2005). Even though Internet banking is regarded as one of the most powerful delivery channels in the global financial sector, there is no point for banks to invest in Internet banking if the service is neither wanted nor accepted by their customers (Goi, 2005). As the average profits brought by a loyal customer is 2-5 times compared to a new customer (Anderson & Sullivan, 1993; Bhattacherjee, 2001), Internet banking competition no longer relies solely on pricing strategy (Jun, Cai, & Kim, 2002). Good marketing and customer relationship management help customers to realize the importance of Internet banking services (Bhattacherjee, 2001). Hence, strong customer relationship management using internet is a competitive advantage to the banks.

Research Methodology & Results

The setting of this study, in order to examine ten hypotheses in banking industry, is a survey based case study of six independent branches of Melli Bank in Tehran. Based on the literature review, five-point Likert scales were identified or modified to measure each of the constructs. Quantitative interval-scaled data were obtained for both dependent and independent variables. Within the context of the current study, independent variables are those variables which are not influenced by any other variable. In contrast, a dependent variable is defined as one that is influenced by another variable in the model. The research was conducted among 358 e-service customers using a comprehensive questionnaire. To examine our conceptual model, we used the structural equations modeling (SEM) approach using LISREL software.

Based on our conceptual model, we will test ten hypotheses:
1. Ease of service use has a significant effect on customer satisfaction from e-banking.
2. Website design has a significant effect on customer satisfaction from e-banking.
3. Speed of connectivity and transactions has a significant effect on customer satisfaction from e-banking.
4. Information security has a significant effect on customer satisfaction from e-banking.
5. Information content has a significant effect on customer satisfaction from e-banking.
6. Support service has a significant effect on customer satisfaction from e-banking.
7. Customer satisfaction has a significant effect on loyalty.
8. Customer satisfaction has a significant effect on willingness to continue relations with e-banking.
9. Access to technical infrastructures has a significant effect on customer satisfaction from e-banking.
10. Access to cultural-social infrastructures has a significant effect on customer satisfaction from e-banking.
11. Access to human resource infrastructures has a significant effect on customer satisfaction from e-banking.
Structural equation models require a fairly large sample size for effective analysis (Tabachnick & Fidell, 1996). General structural equation models (SEM) are comprised of two interrelated components, a measurement model and a structural model. The measurement model specifies relationships between observed variables (manifest variables) and latent variables (Medsker, Williams, & Holahan, 1994), while the structural model explains the relationships among latent variables. Anderson and Gerbing (1988) advocated a two-step approach starting with the measurement model. The measurement model builds on a priori theoretical foundation to describe or explain the relationship between the underlying latent factors and the empirical measures. Confirmatory factor analysis (CFA) is used to evaluate the measurement model with respect to the degree to which the data are consistent with the proposed model. Thus, testing whether the observed variables represent the latent variables well and the overall fit of the measurement model needs to be done prior to testing the proposed structural model (Anderson & Gerbing, 1988).

It is very common to consider the re-specification of a baseline measurement model when the initial model fails to fit the data adequately. Re-specification of the model, however, is controversial in that a re-specified model with an improved fit to the data may not be the best-fitting model in the sense that it capitalizes on chance co variation in the sample data and thus, compromises the generalize ability of the model (MacCallum, Roznowski, & Necowitz, 1992). To avoid this problem, a robust approach to model generation is a cross-validation method, which cross-validates the model results with two independent sample sets. That is, having two sub-samples randomly split, where one sub-sample (calibration sample) is used to assess the model and the other sub-sample (validation sample) is employed to determine the predictive effectiveness of that model. The likelihood that the model capitalized on chance is reduced considerably with cross-validation. A number of fit statistics are applied to assess the goodness-of-fit of the model. Measures of fit include the goodness-of-fit index (GFI), the adjusted goodness-of-fit (AGFI), the comparative fit index (CFI), the normed fit index (NFI), the Tucker-Lewis coefficient (TLI) which is also called the Bentler-Bonett non-normed fit index (NNFI), and the root mean square of approximation (RMSEA). Values over 0.9 on the four indexes GFI, AGFI, TLI, and NFI indicate reasonable fit (Jöreskog & Sörbom, 1996). The CFI is the least affected by sample size and values of CFI over 0.9 indicate a reasonable fit and values over 0.95 represent a good fit (Holmes-Smith, 2001). RMSEA represents the discrepancy per degree of freedom, which is measured in terms of the population, not only in the sample used for estimation. RMSEA is relatively robust to sample size and values between .00 and .05 indicate a close fit, values between .05 and .08 indicate reasonable fit, and RMSEA greater than 0.08 reflects a poor fit (Browne, 1993). Following figures show study SEM model:
Figure 1: SEM model with standard coefficients
Table 1: Hypothesis test results

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Effect volume</th>
<th>Significance</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of service use effect on customer satisfaction</td>
<td>0.15</td>
<td>3.86</td>
<td>Accept</td>
</tr>
<tr>
<td>Website effect on customer satisfaction</td>
<td>0.15</td>
<td>3.80</td>
<td>Accept</td>
</tr>
<tr>
<td>Speed of connectivity and transactions effect on customer satisfaction</td>
<td>0.28</td>
<td>6.64</td>
<td>Accept</td>
</tr>
<tr>
<td>Information security effect on customer satisfaction</td>
<td>0.13</td>
<td>3.15</td>
<td>Accept</td>
</tr>
<tr>
<td>Information content effect on customer satisfaction</td>
<td>0.14</td>
<td>3.01</td>
<td>Accept</td>
</tr>
<tr>
<td>Support service effect on customer satisfaction</td>
<td>0.17</td>
<td>3.63</td>
<td>Accept</td>
</tr>
<tr>
<td>Customer effect on willingness to continue relations with e-banking</td>
<td>0.61</td>
<td>14.52</td>
<td>Accept</td>
</tr>
<tr>
<td>Customer satisfaction effect on loyalty</td>
<td>0.72</td>
<td>19.25</td>
<td>Accept</td>
</tr>
<tr>
<td>Access to technical infrastructures effect on customer satisfaction from e-banking</td>
<td>0.02</td>
<td>0.47</td>
<td>Reject</td>
</tr>
<tr>
<td>Access to human resource infrastructures effect on customer satisfaction from e-banking</td>
<td>0.04</td>
<td>0.99</td>
<td>Reject</td>
</tr>
<tr>
<td>Access to cultural-social infrastructures effect on customer satisfaction from e-banking</td>
<td>-0.02</td>
<td>-0.56</td>
<td>Reject</td>
</tr>
</tbody>
</table>
Discussion & Conclusion
On a practical level, the recommendations provided in this study help the bank management and marketing practitioners to attract more existing consumers to continue using Internet banking services. By offering personalized Internet banking services which tailor to suit Internet banking products and services to specific user preference of customers in developing countries, bank management and marketing practitioners face stiff competition worldwide can still be victorious by improving customer attitude towards using Internet banking. By making sure that the customers can easily be reached through the creation of email discussion list, asking customer opinions to improve a particular Internet banking product and building customers" profiles through the use of transaction log to recommend the most suitable Internet banking services and products based on customers" previous purchasing activities over the Internet, bank management and marketing practitioners can resolve the Internet banking risks. By offering free Internet banking trainings and demonstrations to assist users with frequent physical branches visit, it helps the management and marketing practitioners may reduce the Internet banking risk of insufficient organizational support.

An empirical study on the impact of “Internet-only” branchless banks is proposed. A study of this nature would provide more information than the current study. It is difficulty in the current study to delineate the cost of Internet banking operations from the other information technology services. Another possible topic of research would be weighing balance between Internet banking and the customer concerns for privacy and online phishing. Another possible proposal is for banks to adopt a two-factor password model. If banks adopt a two-factor authentication model may be that might mitigate the negative effects of phishing and online security. Other questions of future research could include, when will banks open up their websites to welcome wireless and mobile customers? In the coming years will the current Internet banking distribution channel shift more to newer innovative models or portal models? Besides traditional advertising media such as newspaper, television and radio, web advertisements such as Internet banner advertisements, e-mail advertisements, online press release advertisements and search engine advertisements can also be used to promote the convenience, easy to access and efficiency of Internet banking services. Web advertisements are cheaper than advertisements in traditional media. For example, using Universal Resource Locators (URL) as an advertising tool in online search engine is free of charge (Turban, King, Viehland, & Lee, 2006). Anyone can submit a URL to be listed in the search engine so that its content and link can be searched electronically. Another key advantage of web advertisement is that it offers richer content such as text, graphics and animation can be effectively combined in web advertisement to enhance consumer’s understanding (Turban et al., 2006). In addition, web advertisement can reach a wider target of customers and can be updated at any time with minimal cost (Turban et al., 2006). The researcher recommends the bank management and web developer, particular those who serve the Iranian customers, to consider the four major points before adopting web advertisement. First, the target audience should be Iranian Internet banking users. Second, the traffic to the Internet banking site needs to be estimated so that a powerful server should be in place to handle the increased online traffic volume. Third, bank management should conduct necessary budget assessment and fourth, if possible, bank management could consider co-branding in the advertisement.
According to Clow and Baack (2004), many web advertisements and promotions are successful because they bring together two or more powerful partners. In order to promote the convenience and efficiency of Internet banking, it would be a value-added point if banks can work together with insurance companies in the advertisements of online insurance policies such as automobile insurance and health insurance, at a substantial discount.
References


Savitz, E. J. (2005, June) Look who is storming the net: Wal-mart is not the first name that comes to mind when you think internet retailing but it will be. SmartMoney, 46-48.


