

# Consumer Perceptions of Internet Banking Services

Ziqi Liao

Department of Finance and Decision Sciences

Hong Kong Baptist University

zqliao@hotmail.com

Michael Tow Cheung

School of Economics and Finance

The University of Hong Kong

mcheung@econ.hku.hk

## Abstract

This paper empirically explores a multiple regression model under which the attributes affecting consumer satisfaction in the existing Internet banking services can be reduced to a subset through analytical considerations. In particular, the core subset includes reliability, security, responsiveness and service improvement, in addition to the conventional concerns about perceived usefulness and ease of use. Therefore, banks should pay attention to these factors and consistently enhance their service operations.

## 1. Introduction

Internet banking enables individuals to obtain account data and perform such transactions as transfers and bill payments. However, compared with traditional over-the-counter banking, Internet banking does not offer face-to-face contact in what is essentially a one-to-one service relationship with the individual. Therefore, banks must deliver higher service quality in order to compete. As noted by Liao and Cheung [8], many problems exist to challenge the market acceptance of Internet banking, so that it is imperative for effective development planning that strategists and managers can clearly identify the determinants of service quality and their relative importance. Given the large number of attributes found to be empirically significant for service quality and the high decision cost this entails, Simon's principle of bounded rationality suggests that the opportunity set should be reduced in size [14]. To assist in this task, we propose the construction of a framework under which the attributes probably determining consumer satisfaction in existing Internet banking services can be reduced to a core subset through analytical considerations and related in a manner conducive to empirical estimation. An examination of our research model using present survey data suggest that in addition to analytical reasoning, strong statistical grounds exist to support such an approach.

## 2. Research Model

According to Parasuraman, Zeithaml and Berry, service quality is generally determined by such variables as tangibles, reliability, responsiveness, competency, courtesy, communication, credibility, security, access, and understanding the customers [11]. An operational multiple item scale for measuring consumer perceptions of service quality is presented in [12], under which the basic variables are distilled into such categories as tangibles,

reliability, responsiveness, assurance, and empathy. The result of this analysis is SERVQUAL, a multiple-item survey instrument for measuring service quality. It has been employed to assess service quality in a wide range of applications.

Service quality in B2C e-commerce depends on whether it is perceived to be easy and intuitive to use, to furnish timely and accurate responses to consumer requests, and to be secured when transmitting information [15]. Devaraj, Fan and Kohli [4] introduce constructs from three standard paradigms – the technology acceptance model (TAM), the transaction cost analysis, and the SERVQUAL – to measure consumer satisfaction in B2C e-commerce. Empirical significance has been indicated for the assurance dimensions of the SERVQUAL and for the TAM factors of perceived ease of use and perceived usefulness. E-service quality as perceived along seven dimensions can be measured in terms of a core e-service quality scale and a recovery scale [20]. Efficiency, reliability and privacy would underlie perceptions of service quality, which might become significant when consumers encounter problems.

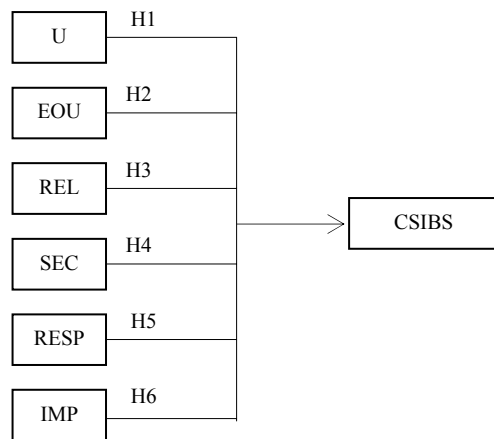
The large number of variables found to be empirically important for service quality presents the strategists and managers with an *embarrass des richesses*, which may actually work against efficiency. According to Simon's principle of bounded rationality [14], the high decision cost entailed by the large number of attribute instruments can be reduced if the size of an opportunity set is rationally reduced. Therefore, we suggest a framework to allow the variables of service quality to be reduced to a core subset. Moreover, given the framework's linear reduced-form structure the empirical impact of these core attributes can be readily estimated for comparison with marginal implementation costs to determine optimal directions in market development. As a first step in this procedure, the core framework (Figure 1) contains six perception-based constructs including perceived usefulness (U), ease of use (EOU), reliability (REL), security (SEC), responsiveness (RESP) and continuous improvement (IMP).

## 3. Hypotheses

To justify the concentration on perception-based variables in the core framework, we draw attention to the following research. According to the Theory of Reasoned Action, a close relationship exists between attitudes, beliefs and behavior, with behavioral intention being the

immediate predecessor of behavior [13]. The TAM applied this insight to explain the acceptance of new technology [3]. Under this paradigm, attitude is defined as an individual's positive or negative feelings about performing a target behavior, which would then affect intentions to use, usage and acceptance. Generalizing recent results obtained in an Internet context [7] [9], we therefore submit the maintained hypotheses that individual perceptions of several major attributes have direct impacts on consumer satisfaction of Internet banking services (CSIBS).

Figure 1 Research Model



Firstly, the choice of attributes to enter our research model follows from considerations based on established research. According to the TAM, attitudes towards a new technology issue from a rational analysis of its perceived usefulness and perceived ease of use [3]. Transferring this idea to Internet banking, perceived usefulness would therefore emerge as a core determinant of consumer attitudes towards service quality. It is supported by recent publications, which suggests that usefulness in the gathering of information and as manifested by variety of product choice [1] [7] are especially important considerations. The above observations suggest the following hypothesis to evaluate the impact of perceived usefulness.

H1. *Perceived usefulness positively influences the consumer satisfaction.*

Secondly, perceived ease of use is a significant factor affecting individual acceptance under the TAM. To measure perceived ease of use in Internet banking, four dimensions have been suggested to be especially relevant – ease of recognition, ease of navigation, ease of gathering information, and ease of purchase [1] [7] [19]. The above observations suggest the following hypothesis to evaluate the impact of perceived ease of use.

H2. *Perceived ease of use positively influences the consumer satisfaction.*

Thirdly, reliability is an important factor in relation to service quality [11] [19]. In the present case, individual concern would particularly focus on whether the bank is able to perform services and to function dependably and

accurately online. Availability and accessibility when help is required would also affect individual perceptions about how reliable is a bank's online delivery channel [4]. The above observations suggest the following hypothesis regarding the effect of perceived reliability.

H3. *Perceived reliability positively influences the consumer satisfaction.*

Recent research has suggested that the majority of Internet users are seriously concerned about security and privacy, especially with regard to the acquisition and dissemination of personal data [2] [10]. In general, security is understood in terms of physical security, financial security and privacy and to the protection of individual data against unauthorized disclosure or unauthorized modification or destruction, while privacy refers to the rights of individuals and organizations to determine for themselves when, how, and what extent personal data is to be transmitted to others [16]. As applied to Internet banking, these concerns are usually summarized by the idea of transaction security, directly in the form of safe and accurate transfers of money or payment-credit information and indirectly in the form of transaction risk [7]. The above observations suggest the following hypothesis.

H4. *Perceived security positively influences the consumer satisfaction.*

Responsiveness is generally understood in terms of ability on the part of vendors to supply appropriate information to consumers with minimal time lag when problems occur, to make available mechanisms for handling returns, and to provide guarantees to meet popular requests [19]. As applied to service quality in Internet banking, responsiveness can be measured in terms of promptness to service requests. The above observations suggest the following hypothesis to evaluate the effect of perceived responsiveness.

H5. *Perceived responsiveness positively influences the consumer satisfaction.*

Finally, continuous improvement in service quality refers to the vendor's ability to meet the changing needs and requirements of consumers over time [17]. In Internet banking, continuous improvement is especially important with regard to the sustainability of services. This observation suggests the following hypothesis to evaluate the impact of continuous improvement.

H6. *Continuous improvement positively influences the consumer satisfaction.*

## 4. Methods and Findings

A questionnaire was designed to solicit information on individual perceptions regarding Internet banking services. It included a number of items in relation to usefulness, ease of use, reliability, security, responsiveness, and continuous improvement, which was distributed to individuals with experience of Internet banking in Hong Kong. Respondents were requested to submit assessments based on a seven-point Likert scale.

Cronbach's  $\alpha$  was computed to examine the internal

reliability of a procedure to measure the attributes (U, EOU, REL, SEC, RESP, IMP) in terms of multiple items. As displayed in Table 1, the  $\alpha$  values indicate satisfactory internal consistency with reference to the standard criterion of  $\alpha \geq 0.7$  [9]. The results of correlation analysis further indicates the existence of statistically significant relationships among (U, EOU, REL, SEC, RESP, IMP) (Table 2), thereby supporting our suggestion that these attributes can be integrated within a core framework.

**Table 1 Reliability Test**

Attribute	Number of items	$\alpha$
Usefulness (U)	7	0.8526
Ease of Use (EOU)	12	0.9158
Reliability (REL)	6	0.8396
Security (SEC)	6	0.9193
Responsiveness (RESP)	6	0.8906
Continuous Improvement (IMP)	5	0.8574
Consumer Satisfaction of Internet Banking Services (CSIBS)	4	0.8593

**Table 2 Correlation Analysis**

	EOU	REL	SEC	RESP	IMP	CSIBS
U	.573	.475	.527	.530	.650	.638
EOU		.693	.725	.798	.790	.834
REL			.769	.703	.709	.779
SEC				.750	.754	.809
RESP					.825	.820
IMP						.838

Note: The correlation efficiencies are significant at the 0.01 level.

**Table 3 Regression Analysis**

Attribute	Standardized Coefficients	<i>t</i>	Sig.
Constant		.835	.406
U	.120	2.424	.017
EOU	.253	3.632	.000
REL	.179	2.876	.005
SEC	.183	2.683	.008
RESP	.148	1.966	.052
IMP	.174	2.179	.031

Note:  $F = 101.81$ ,  $p < 0.001$ , Adjusted  $R^2 = 0.833$

As shown in Table 3, the results of regression analysis with consumer satisfaction in Internet banking services (CSIBS) as dependent variable and (U, EOU, REL, SEC, RESP, IMP) as independent variables suggest that overall the relationships of the core framework are statistically significant ( $F = 101.81$ ,  $d.f. = 6, 115$ ,  $p < 0.001$ , adjusted  $R^2 = 0.833$ ). In addition, the six variables are statistically significant, allowing us to conclude that hypotheses H1 - H6 are all supported by the empirical evidence. The impact of perceived ease of use (EOU) has been found to be the highest ( $b = 0.253$ ,  $p = 0.00$ ), followed by clustering of the remaining attributes in terms of similar impact – perceived security (SEC) ( $b = 0.183$ ,  $p = 0.008$ ), perceived reliability (REL) ( $b = 0.179$ ,  $p = 0.005$ ), and perceived continuous improvement (IMP) ( $b = 0.174$ ,  $p = 0.031$ ), perceived responsiveness (RESP) ( $b = 0.148$ ,  $p = 0.052$ ), and perceived usefulness (U) ( $b = 0.12$ ,  $p = 0.017$ ).

## 5. Discussion

Our empirical results suggest that it is statistically justified to reduce the number of determinants of the consumer satisfaction from Internet banking services to six as depicted in the core framework of Figure 1. Given the hypotheses proposed in the previous section, managerial implication follows that the core framework can be used to prioritize directions in market development and to reduce the associated decision costs. Several observations also follow, which may be of interest to frontline marketing managers responsible for the promotion of Internet banking services.

Firstly, perceived ease of use has a significant impact. Internet banking users tend to consider ease of navigation to be particularly important when judging ease of use. It would therefore be beneficial for banks to ensure that the contents of the bank website be concise and easy to understand. There is an increasing awareness of the danger of counterfeit bank websites and the resulting disincentive effects [18]. Our observation adds another reason why Internet banks should expedite efforts to break efforts to defraud through fake websites.

Secondly, Internet security continues to be a matter of significant concern. However, it has been suggested that as individuals become more accustomed to online transactions security fears tend to fall over time [17]. This may explain why there is a sizeable difference between the largest ( $b = 0.253$ ) and second-largest ( $b = 0.183$ ) impact multiplier among the core attributes. It has also been argued that privacy would become less important over time [5].

The impact of perceived reliability highlights to the bank managers the importance of satisfying consumer expectation regarding accurate records and mistake-free services along the lines explored by [4]. It is particularly important not to forget this caveat in the midst of increasing efforts on the part of the banks to compete by offering special rewards and discounts.

The considerable impact of perceived continuous improvement suggests that in the midst of increasing standardization of banking products and services, consumers are paying attention on what the bank can achieve in the direction of differentiation [6]. In particular, consumers would expect Internet banking to be able to improve quality to meet changing needs and preferences. Because individuals attach importance to prompt responses, a wider use of advanced telecommunications can increase perceptions that the bank is responsive to consumer requests. Prompt and attentive communications can therefore improve service quality to a significant extent. Detailed analysis of the survey data suggests that users of this service consider variety to be particularly important when judging usefulness. It follows that the banks can usefully enhance consumer satisfaction by providing more innovative banking services.

## 6. Conclusion

The use of Internet banking is likely to become an increasing trend. Therefore, it is imperative for commercial banks to provide high quality service online. Although a large number of attributes might be related to Internet banking, we would submit that the high decision cost entailed by such a situation can be reduced if the size of the opportunity set is reduced. To this end, a framework is proposed to reduce the determinants of service quality in Internet banking to a core subset on the basis of analytical considerations, after which their empirical impacts can be readily estimated to allow the comparison of implementation costs and the determination of optimal policy directions.

Empirical tests suggest that as a first step, significant empirical grounds exist to introduce individual perceptions regarding usefulness, ease of use, reliability, security, responsiveness, and continuous improvement into the core framework. Future research effort could be directed towards assessing the marginal significance of considering additional attribute. According to Simon's principle, the optimal size of the core framework would depend on the outcome of an empirical exercise, as compared to the increment in decision cost entailed by the framework enlargement. In addition, further research could be usefully applied towards disaggregating the data to distinguish between preferences and perceptions on the part of individuals who are currently using Internet banking and Internet-seasoned potential users who may be attracted to such services.

## Acknowledgement

The support of Hong Kong Baptist University is gratefully acknowledged.

## References

- [1] Aladwani, A.M. "The development of two tools for measuring the easiness and usefulness of transactional websites," *European Journal of Information Systems*, 2002, 11 (3), 223-234.
- [2] Culnan, M.J. & Armstrong, P.K. "Information privacy concerns, procedural fairness, and impersonal trust: An empirical investigation," *Organization Science*, 1999, 10 (1), 104-115.
- [3] Davis, F. D., Bagozzi, R.P. & Warshaw, P.R. "User acceptance of computer technology: A comparison of two theoretical models," *Management Science*, 1989, 35 (8), 982-1003.
- [4] Devaraj, S., Fan, M. & Kohli, R. "Antecedents of B2C channel satisfaction and preference: Validating e-commerce metrics," *Information Systems Research*, 2002, 13 (3), 316-333.
- [5] Franzak, F., Pitta, D. & Fritsche, S. "Online relationships and the consumer's right to privacy," *Journal of Consumer Marketing*, 2001, 18 (7), 631-649.
- [6] Koufaris, M. "Applying the technology acceptance model and flow theory to online consumer behavior," *Information Systems Research*, 2002, 13 (2), 205-223.
- [7] Liao, Z. & Cheung, M.T. "Internet-based e-banking and consumer attitudes: An empirical study," *Information and Management*, 2002, 39 (4), 283-295.
- [8] Liao, Z. & Cheung, M.T. "Challenges to Internet e-banking," *Communications of the ACM*, 2003, 46 (12), 248-250.
- [9] McKinney, V., Yoon, K. & Zahedi, F. "The measurement of Web-consumer satisfaction: An expectation and disconfirmation approach," *Information Systems Research*, 2002, 13 (3), 296-315.
- [10] Miyazaki, A.D., Fernandez, A. "Internet privacy and security: An examination of online retailer disclosures," *Journal of Public Policy & Marketing*, 2000, 19 (1), 54-61.
- [11] Parasuraman, A., Zeithaml, V.A. & Berry, L.L. "A conceptual model of service quality and its implications for future research," *Journal of Marketing*, 1985, 49 (4), 41-50.
- [12] Parasuraman, A., Zeithaml, V.A. & Berry, L.L. "Servqual: A multiple item scale for measuring consumer perceptions of service quality," *Journal of Retailing*, 1988, 64 (1), 12-41.
- [13] Park, H.S. & Levine, T.R. "The theory of reasoned action and self-construal: Evidence from three cultures," *Communication Monographs*, 1999, 66 (3), 199-218.
- [14] Simon, H.A., Egidi, M., Marris, R. & Viale, R. *Economics, Bounded Rationality and the Cognitive Revolution*. Aldershot: Edward Elgar Publishing Co., 1992.
- [15] Singh, M. "E-services and their role in B2C e-commerce," *Managing Service Quality*, 2002, 12 (6), 434-446.
- [16] Udo, G. J. "Privacy and security concerns as major barriers for e-commerce: A survey study," *Information Management & Computer Security*, 2001, 9 (4), 165-172.
- [17] Yang, Z., Peterson, R.T. & Huang, L. "Taking the pulse of Internet pharmacies," *Marketing Health Services*, 2001, 21 (2), 4-10.
- [18] Yousafzai, S. Y., Pallister, J.G. & Foxall, G.R. "A proposed model of e-trust for electronic banking," *Technovation*, 2003, 23 (11), 847-860.
- [19] Zeithaml, V.A., Parasuraman, A. & Malhotra, A. "Service quality delivery through website: A critical review of extant knowledge," *Academy of Marketing Science Journal*, 2002, 30 (4), 362-375.
- [20] Zeithaml, V.A. "Service excellence in electronic channels," *Managing Service Quality*, 2002, 12 (3), 135-138.