Customer Satisfaction with Internet Banking Web Sites: An Empirical Test and Validation of a Measuring Instrument

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Measuring user satisfaction with information systems has attracted widespread research attention, given it is often used as an indicator of success. The Internet has allowed applications to be extended to customers of an organization, where interaction can take place through a web site, typically from home or office. The focus of attention with such applications is customer satisfaction. In this research, a 21-item, 7-factor instrument developed to measure customer satisfaction with web sites that market generic digital products and services was modified slightly, and then empirically tested and validated in the context of Internet banking specifically. A 19-item, 5-factor validated instrument emerged, the factors being Customer Support, Security, Ease of Use, Transactions and Payment, and Information Content and Innovation. The difference in number of factors as compared to the generic instrument was attributed to the unique nature of Internet banking web sites. These and other findings are discussed in the paper, and their implications examined.

Categories and Subject Descriptors: H5.2 [**Information Interfaces and Presentation**]
General Terms: Design, Human Factors, Measurement
Additional Key Words and Phrases: Customer information satisfaction, Internet banking

1. INTRODUCTION

Across the globe, retail banks were quick to identify the opportunities presented by the Internet, and as a consequence many established facilities for consumers to transact with their accounts via bank web sites. All the major players in the retail banking market in South Africa offer such services to consumers. Indeed, Internet banking has become a business necessity, rather than a means for banks to gain a strategic advantage [Scott, 2002].

The launch of these services has met with mixed success, as it has not, as predicted by pundits, totally revolutionised banking - it has, however, provided a convenient alternative channel for certain sectors of the retail banking clientele [Leonard 2002]. In South Africa, and indeed elsewhere, this represents, the more affluent and educated sector of society, given Internet users, in general are on the whole more affluent and/or educated than the general populace [de Villiers and van der Merwe 2001; Goldstuck 2001]. Thus in effect, Internet banking users are typically in the upper income bracket of an already affluent group. Amongst the 3 million or so Internet users in South Africa, the popularity of this banking channel is growing, with recent estimates of about one million retail bank accounts [E-business Handbook 2003; Goldstuck 2004]. Indeed, there is steady growth in numbers despite the recent widespread media reports of a few security breaches [Goldstuck 2004].

Much of the research focus on consumer Internet banking has been on adoption, and the factors influencing it [Brown et al. 2004]. Given the evidence of increasing rates of adoption among Internet users, it is appropriate at this juncture to now focus attention on levels of satisfaction with Internet banking amongst its adopters.

The aim of this research article, therefore, is to examine the information systems (IS) literature on user satisfaction, and to then develop, validate and test from this basis and perspective a measure for Internet banking satisfaction. The advantage of this approach is that this research will build on existing knowledge and understanding of information systems user satisfaction, and thus contribute to building up a cumulative body of knowledge in IS research. From a practical perspective the measure will provide a means of assessing the levels of satisfaction with Internet banking, identifying areas for improvement, and highlighting which factors are most important to overall satisfaction.

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2. CONCEPTUAL BACKGROUND

As with the subject of technology adoption, user satisfaction with information systems has been extensively researched [Zviran and Erlich 2003]. The importance of satisfaction is that it is often used as a surrogate measure for IS success in both research and practice. Indeed, Delone and Mclean [2003] highlight the importance of user satisfaction as a key component of IS success.

Zviran & Erlich [2003] in a review of the literature on IS user satisfaction note that there are a number of tools that have been developed over the years to measure it. The Bailey & Pearson [1983] 39-item instrument is the most widely cited, and has been the basis for further work and refinement [Ives et al. 1983; Doll and Torkzadeh 1988; Wang and Tang 2001]. Chin et al. [1988] in a similar line of research developed an instrument for measuring user satisfaction with the human-computer interface specifically.

As noted by Wang and Tang [2001], the instrument developed by Ives et al. [1983] was relevant to a traditional data processing environment, whilst that developed by Doll and Torkzadeh [1988] was specifically designed to measure end user computing satisfaction within organisations. Thus, they are not entirely appropriate for measuring satisfaction in business to consumer e-commerce environments, where the users are customers of the organisation, and are accessing the system, in most cases remotely, typically from home or their place of work. Wang and Tang [2001] therefore developed and empirically validated a 21- item, 7-factor instrument for measuring information satisfaction with web sites that market digital products and services. In keeping with the idea of building a cumulative body of knowledge in IS research, they based their work on the prior work of Bailey and Pearson [1983], Ives et al. [1983], and Doll and Torkzadeh [1988], as well as drawing from marketing literature. The instrument was designed so as to be generalised across a wide variety of digital products and services, and is shown in Table 1 below.

Customer Support
CS1. You are satisfied with the customer support provided by the web site
CS2 You are satisfied with the after-sales service provided by the web site
CS3 The website understands your problems and requests
CS4 The website responds to your requests fast enough
Security
SE1 The website provides for the security of your transaction data and privacy
SE2 You feel safe in your transactions with the website
SE3 The website is secure
Ease of Use
EOU1 The website is user friendly
EOU2 The output format is easy to read
EOU3 The website is easy to use
Digital Products/Services
DPS1 You are satisfied with the products or services provided by the website
DPS2 The digital products or services provided by the website meet your needs
DPS3 The website provides high-quality products or services
Transaction and Payment
TP1 You are satisfied with the payment system provided by the website
TP2 You are satisfied with the transaction procedures
TP3 The website provides clear transaction and price information
Information Content
IC1 The website provides information that exactly fits your needs
IC2 The website provides accurate information
IC3 The website provides information that you trust
Innovation
IC4 The website provides up-to-date information
DPS4 The website provides innovative products or services

Table 1: *Customer Information Satisfaction Instrument for Web Sites that market Digital Products/Services [Wang & Tang, 2001]*

Internet banking would qualify as a digital product/service, and thus the instrument should in principle be applicable to it. With Internet banking, the following typical secure Internet banking services are provided for account holders:

1. Balance enquiry
2. Statement of bank account
3. Account/Bill payments
4. Beneficiary set up
5. Short-term recurring payments
6. Stop and Debit order payments
7. Open and Manage Investment accounts
8. Cheque book request
9. Email branch or customer contact centre (secure messaging)
10. Funds transfers
11. Increase/Decrease overdraft

Items may be added or subtracted from this list, depending on the bank being used. Considering these banking services as a whole, the seven factors in Table 1 above would be equally relevant to Internet banking, demonstrating the content validity of the instrument.

3. RESEARCH PROCEDURE

The research was of a positivistic, quantitative nature, which was appropriate for the purpose – to test and empirically validate a measure of customer information satisfaction with Internet banking. A questionnaire was developed containing the 21-item measure of satisfaction developed by Wang and Tang [2001], but modified where necessary to suit the context of Internet banking. Each item employed a 7-point Lickert scale, fully anchored by Strongly Disagree at one end to Strongly Agree at the other. Additional data was gathered about respondent banking habits, Internet banking services used, and other demographic variables.

The section on banking habits and Internet banking services was piloted amongst customer service personnel at several banks to ensure accurate information was gathered. The section on Internet banking satisfaction was not piloted, as the whole aim of the research was to test the Wang and Tang [2001] instrument particularly, so no changes were to be made to it, save for contextualising it to Internet banking.

In order to gather data, MBA and other postgraduate students from two of the leading business schools in South Africa were approached. Such students fit the profile of typical Internet users, who are generally young, tertiary-educated and/or affluent [Goldstuck 2001]. Given most of them are employed in managerial and professional positions they are also likely to be users of Internet banking.

A total of 350 questionnaires were reproduced and distributed, and 168 were returned. Of the 168 returns, 135 (80.4%) indicated that they used Internet banking, and so formed the sample for further analysis.

3.1 Respondent Demographic Profile

As can be seen in Table 2 below, the majority of respondents were male (69%), which is reflective of the typical profile in South African managerial and professional ranks. They were typically in the 25 to 36 year age bracket (84.4%), employed full time (89.9%), and had monthly incomes above R 15,000 (75.7%). 86.4% had some form of higher education qualification.

3.2 Banking Habits

Appendix 1 shows the first section of the questionnaire, where details were gathered about respondent banking habits. Customers from all the major retail banks were represented (Question 1), with on average respondents having about 3 accounts each (Question 2). The most popular were cheque accounts (89.6% of respondents had this) and credit card accounts (68.9% of respondents), followed by home mortgage accounts (40.7% of respondents), savings accounts (37.8% of respondents), and vehicle finance accounts (34.1% of respondents).

Question 4 (Appendix 1) asked respondents to rate the extent to which they used any of the 5 main banking channels. A scale of 1 to 7 was provided, where 1 represented 'Never', and 7 'To a great extent'. Interestingly, the Internet was the most extensively used banking channel (mean of 5.8 on the scale of 1 to 7), used even more than the ATM (mean of 5.1), banking hall (mean of 2.4), telephone banking (mean of 1.5), and cell phone banking (mean of 1.3) respectively.

Question 7 (Appendix 1) asked respondents to rate the extent to which they used 11 typical Internet banking services, again on a scale of 1 to 7, where 1 represented 'Never', and 7 represented 'To a great extent'. From the list shown in Table 3, it can be seen that the most extensively used Internet banking services were account/bill payments (mean of 5.4 on the scale of 1 to 7), funds transfers (mean of 5.4), balance enquiries (mean of 4.9), and mini statements (mean of 4.1). Thus on average, amongst the respondents it appears financial transactions and payments are conducted more often than simple enquiries, such as requests for balances and statements.

Gender	**Count**	**Percent**
Male	89	69.0
Female	40	31.0
Age		
18 – 24	1	0.8
25 – 30	54	42.2
31 – 36	54	42.2
37 – 42	14	10.9
43 – 47	5	3.9
Occupation		
Employed	116	89.9
Part-time student	7	5.4
Full-time student	5	3.9
Other	1	0.8
Monthly Income		
< R 2,000	3	2.4
R 2,001 - R 4,000	1	0.8
R 4001 - R 7,000	3	2.4
R 7,001 - R 10,000	4	3.1
R 10,001 - R 15,000	8	6.3
R 15,0001 - R 20,000	32	25.2
R 20,000 +	64	50.4
Prefer not to answer	12	9.4
Highest Level of Education		
High School	5	4.0
Matric/`A' level	5	4.0
Some Tertiary Education	8	6.3
Diploma/Certificate	23	18.3
Degree/Honours	70	55.6
Masters	15	11.9

Table 2: *Respondent Demographic Profile (excluding missing values)*

	Mean	**Min**	**Max**	**StdDev**
Balance Enquiry	4.9	1.0	7.0	1.6
Mini Statement	4.1	1.0	7.0	1.8
Account Payments	5.4	1.0	7.0	1.5
Transfers	5.4	1.0	7.0	1.4
Set up beneficiary	3.8	1.0	7.0	1.9
Increase/Decrease overdraft	1.8	1.0	7.0	1.4
Short-term recurring payments	2.8	1.0	7.0	2.1
Stop order payments	2.5	1.0	7.0	1.9
Investment accounts	1.7	1.0	7.0	1.4
Request cheque book	1.6	1.0	7.0	1.2
Email branch (Secure Messaging)	1.7	1.0	7.0	1.1

Table 3: *Internet Banking Services – Extent of Use*

4. INSTRUMENT VALIDATION

In order to validate the instrument, validity and reliability tests were performed, correlation coefficients between the realised constructs were examined, and their relationship to a global measure of satisfaction was assessed.

4.1 Construct Validity

To assess the validity of the Internet banking satisfaction instrument, factor analysis was employed [Wang and Tang, 2001]. Using varimax rotation and eigenvalue set to 1, if items load on their own factor with coefficient greater than 0.5, and on all other items with coefficient less than 0.4, then construct validity is demonstrated. Wang and Tang [2001] identified seven factors in their instrument, however, because this study was focused on Internet banking satisfaction specifically, there was no presumption that a seven-factor structure would again emerge. Thus, the analysis was exploratory, more than confirmatory.

During the first iteration of factor analysis, five factors emerged. However, items DPS1 (You are satisfied with the products or services provided by the Internet banking web site) and DPS2 (The digital products or services provided by Internet banking meet your needs) cross-loaded on two factors, and were therefore dropped. The factor analysis was repeated without these two items, and once again yielded 5 factors, each with items that loaded greater than 0.67 on their own factors, and less than 0.4 on all others, thus meeting the criteria of validity. The results of this factor analysis are shown in Table 4. Four of the factors were as found by Wang and Tang [2001] – Customer Support, Security, Ease of Use, and Transactions and Payment, respectively. The fifth factor consisted of one item from the Wang and Tang [2001] Digital Products/Services factor (DPS3), three of the items from their Information Content factor (IC1, IC2, IC3), and two from their Innovation factor (DPS4, IC4). This new factor will thus be referred to as Information Content and Innovation, as it conveys the fact that information content is an important aspect of the innovation known as Internet banking.

CS1	Satisfied with the customer support	0.08	0.02	***0.76***	0.27	0.20
CS2	Satisfied with the after-sales service	0.18	0.16	***0.80***	0.29	0.12
CS3	Problems and requests understood	0.19	0.19	***0.80***	0.10	0.23
CS4	Responds to requests fast enough	0.18	0.21	***0.69***	0.05	0.32
SE1	Security of transaction data and privacy	0.10	***0.91***	0.21	0.08	0.05
SE2	Feel safe in transactions with web site	0.17	***0.92***	0.10	0.17	0.09
SE3	Web site is secure	0.14	***0.91***	0.14	0.10	0.12
EOU1	Web site is user friendly	0.26	0.15	0.37	0.14	***0.81***
EOU2	Output format is easy to read	0.21	0.09	0.18	0.20	***0.84***
EOU3	Web site is easy to use	0.26	0.06	0.28	0.16	***0.83***
DPS3	Provides high quality products or services	***0.68***	0.25	0.35	0.22	0.19
DPS4	Provides innovative products or services	***0.73***	0.19	0.33	0.14	0.11
TP1	Satisfied with payment system	0.18	0.15	0.26	***0.80***	0.25
TP2	Satisfied with transaction procedures	0.37	0.20	0.20	***0.77***	0.18
TP3	Clear transaction and price information	0.27	0.08	0.19	***0.82***	0.10
IC1	Information exactly fits needs	***0.74***	0.11	0.13	0.38	0.13
IC2	Accurate information	***0.81***	0.06	0.10	0.16	0.12
IC3	Information that can be trusted	***0.77***	0.07	0.14	0.10	0.28
IC4	Up-to-date information	***0.84***	0.08	-0.01	0.15	0.14

Table 4: *Factor Analysis*

4.2 Reliability Tests

In order to assess reliability, the Cronbach alpha was determined for each construct (factor) identified previously. If the Cronbach alpha is greater than 0.7, the construct is deemed to be reliable [Teo et al. 1999]. Table 5 shows that all constructs met the reliability criteria, as the lowest alpha was 0.86.

Factor	No. of Items	Cronbach alpha
Customer Support	4	0.86
Security	3	0.94
Ease of Use	3	0.92
Transaction and Payment	3	0.87
Information Content and Innovation	6	0.91

Table 5: *Reliability Tests*

4.3 Correlations

The correlation matrix in Table 6 shows that all factors are significantly correlated at $p < 0.05$. This highlights the fact that they are all components of the same satisfaction measure. According to Teo et al. [1999], if the square of a correlation coefficient is less than 0.5, then the correlating factors can be considered to be distinct constructs. In this case, all the coefficients, when squared were less than 0.5, confirming that these components are all related, yet distinct.

In addition to these factors, on the questionnaire was an independent 1-item global measure that asked respondents about their overall satisfaction (OV) with Internet banking. Once again, it can be seen from Table 6 that all components of the measure correlated with the global variable, thus further validating them. The factors correlating the most highly with Overall Satisfaction (OV) were Information Content and Innovation (IC), and Ease of Use (EOU), with the lowest correlation being with Security (SE).

	Mean	**CS**	**SE**	**EOU**	**TP**	**IC**	**OV**
CS - Customer Support	4.7	1.00	***0.39***	***0.60***	***0.53***	***0.48***	***0.51***
SE – Security	5.0		1.00	***0.30***	***0.34***	***0.36***	***0.32***
EOU - Ease of Use	5.4			1.00	***0.49***	***0.53***	***0.62***
TP - Transactions and Payment	5.0				1.00	***0.58***	***0.49***
IC - Information Content and Innovation	5.0					1.00	***0.64***
OV - Overall Satisfaction	5.4						1.00

Table 6: *Correlation Matrix and Means (all $p < 0.05$)*

4.4 Mean Scores

The mean scores in Table 6 show that in general, there is broad-based satisfaction with Internet banking, in terms of Customer Support, Security, Ease of Use, Transactions and Payment, Information Content and Innovation, and indeed in terms of Overall Satisfaction. For the five components of satisfaction, the lowest mean was for customer support (4.7), which on a scale of 1 to 7 is still good, and the highest mean was for Ease of Use (5.4). This may explain the strong growth currently being experienced in the retail banking sector.

4.5 Impact of Internet Banking Satisfaction on Usage Extent

Given that the 5 components of satisfaction are also distinct constructs, it was possible to test their impact on the extent of Internet banking usage, as data on this had also been gathered (see Table 3). The 5 components were thus regressed on to the aggregate extent of use score by employing multiple linear regression analysis, and as can be seen from Table 7, the two factors significantly influencing usage were Customer Support and Security. Thus, satisfaction with these factors encourages greater use.

Independent Variables	**Beta**	**p-level**
Customer Support	***0.26***	***0.0241***
Security	***0.19***	***0.0434***
Ease of Use	-0.17	0.1347
Transactions and Payment	0.07	0.5506
Information Content and Innovation	-0.07	0.5407

Table 7: *Multiple Linear Regression with Extent of Usage as Dependent Variable*

5. DISCUSSION AND IMPLICATIONS

The analysis has shown that Internet banking web sites possess some characteristics similar to other websites marketing digital products and services. Thus, in the context of customer satisfaction, support, security, ease of use, and transactions and payments are still areas of distinct importance. The difference lies in the nature of the products and services. For an online shopping site, dedicated to selling music, for example, customers may conduct transactions in order to specifically purchase the product of music. For Internet banking, on the other hand, the transactions are different. Payments may be made, for example, for monthly telephone accounts, or a monthly retail clothing account. Some banks may also provide a means for secure online shopping. Here the bank is acting as an intermediary for goods and services purchased from other parties. Thus, the separate categories of digital products/services, information content, and innovation are no longer so distinct. The most important aspect of these is the information content regarding bank accounts and transactions, and the quality and innovativeness of services provided to manage finances and transact. This combined factor is shown to be central to overall satisfaction, as is the ease of use of the web site.

With regards to satisfaction with security, it is interesting to note that there was no widespread dissatisfaction, despite the media attention given to some security breaches in 2003. The data for this study was coincidentally gathered just after the reporting of these cases. The correlation matrix shows security to have the lowest correlation with the

overall global measure of satisfaction, the strongest correlations being with information content and innovation, and ease of use. On the other hand, the regression analysis shows security to be a major influence on usage, together with customer support. Thus security concerns have some impact on satisfaction, but more significantly they affect ultimate usage of Internet banking.

6. LIMITATIONS AND FUTURE RESEARCH

The study has been limited to a survey of Internet banking users among MBA and other postgraduate management students at two leading business schools in South Africa. 80.4% of respondents were Internet banking users, confirming that this group generally possesses characteristics of the typical user. However, the profile is not entirely representative of South African Internet banking users. The primary aim of the study was nevertheless to validate and empirically test a measure of Internet banking satisfaction, and not to specifically assess the perceptions of satisfaction amongst a representative sample. As a consequence, representivity was not central. The main criterion was essentially that the respondent must have used Internet banking before.

The items in Table 3 denote the major uses for Internet banking, but may not be entirely exhaustive, as different banks may provide different sets of services. Thus, future research might investigate a complete and exhaustive set of tasks by consulting all the providers of Internet banking in South Africa.

135 useable responses were received, which is much less than the 520 received by Wang and Tang [2001]. Thus, there is a possibility that with a larger sample, the seven-factor structure identified by Wang and Tang [2001] may still have emerged. Their study furthermore was conducted in Taiwan. This opens up the possibility that the difference in number of factors has been due to the national context, with variables such as culture possibly coming into play. Future research could then repeat the study using a larger sample, and/or compare findings between countries. Differences could be explained in terms of culture or other national characteristics.

The Wang and Tang [2001] instrument focuses primarily on customer information satisfaction. The instrument could thus be extended by consulting also the work on user satisfaction with the human-computer interface [Chin et al. 1988]. This may result in an instrument that more holistically addresses customer satisfaction.

Satisfaction is a major component of IS success, but is nevertheless not the only component [Delone and McLean 2003]. Future research might also look at developing and testing a comprehensive model of Internet banking success using this study as a basis for understanding the information satisfaction dimension.

The assumption that has been made is that applications such as Internet banking are information systems that have been extended outside of the organisation to customers. In marketing, these are described as self-service technologies. Research in this domain is conducted with very little reference to the IS discipline (e.g., Meuter et al, 2000). An area for future work therefore is to integrate knowledge from these areas to come up with a richer understanding of Internet banking customer satisfaction.

The satisfaction instrument that has emerged could be compared with other instruments being used by banks, market research practitioners or e-commerce researchers. The comparisons could identify areas not covered by the instrument, or could point to gaps in the practitioner instruments. For instance, the effects of system speed, system reaction during peak times, and non-availability during maintenance periods may all affect customer satisfaction, and are not fully addressed in the instrument. The instrument could also be compared with other instruments so as to assess its utility and simplicity of use.

7. CONCLUSION

The number of Internet banking accounts in South Africa has recently surpassed the one million mark and continues to rise quite rapidly [Goldstuck, 2004]. Although this does not represent critical mass in terms of the overall population, it does represent a significant portion of Internet users [about 3 million according to Goldstuck 2002]. Thus, rather than focusing attention on adoption, and factors likely to increase the rate of adoption, research should now turn to assessing the level of satisfaction amongst these many adopters. The aim of this paper was therefore to report on an empirical test and validation of an instrument for measuring Internet banking satisfaction. The basis for this instrument was one developed by Wang and Tang [2001] to measure customer satisfaction towards web sites that market digital products and services. Internet banking falls into this category and so the Wang and Tang [2001] instrument was deemed a suitable tool to start with. It was ultimately found that there were five interrelated, yet distinct factors that made up customer Internet banking satisfaction – Customer Support, Security, Ease of Use, Transactions and Payments, and Information Content and Innovation. This differs from the seven factors found by Wang and Tang [2001], but is probably due to the unique nature of Internet banking, as compared to other e-commerce web sites. The 19-item, 5-factor instrument that has emerged provides a rich yet parsimonious way of measuring customer satisfaction with Internet banking web sites, and should prove useful to researchers and practitioners wishing to assess levels of satisfaction.

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REFERENCES

BAILEY, J. AND PEARSON, S. 1983. Development of a tool for measuring and analysing computer user satisfaction, *Management Science*, 29, 5, 530 – 545.

BROWN, I., HOPPE, R., MUGERA, P., NEWMAN, P. AND STANDER, A. 2004. The impact of nat ional environment on the adoption of Internet banking: Comparing Singapore and South Africa, *Journal of Global Information Management*, 12, 2, 1 - 26.

CHIN, J., DIEHL, V, AND NORMAN, L. 1988. Development of an instrument for measuring user satisfaction of the human-computer interface. *Proceedings of the SIGCHI conference on Human factors in computing systems*, Washington, USA, ACM Press, New York, NY, 213 – 218.

DE VILLIERS, C. AND VAN DER MERWE, J. 2001. An investigation into the adoption of electronic commerce by South African consumers– who they are and what they think. *Research Report*. University of Pretoria, http://informatics.up.ac.za/tuksjvdm1.doc. Accessed: 5th August, 2002.

DELONE, W. AND MCLEAN, E. 2003. Information systems success: a ten-year update, *Journal of Management Information Systems*, 19, 4, 9-30.

DOLL, W. AND TORKZADEH, G. 1988. The measurement of end-user computing satisfaction, *MIS Quarterly*, 12, 2, 259-274.

E-BUSINESS HANDBOOK 2003. *The e-Business Handbook. The 2003 Review of Innovation at Work in South African Business*, Trialogue, Cape Town.

GOLDSTUCK, A. 2001. South Africa - How many use web sites and who are they? *Balancing Act News Update.* 71, http://www.balancingact-africa.com/news/back/balancing-act_71.html. Accessed: 18 January, 2002.

GOLDSTUCK, A. 2002. *The Goldstuck Report: Internet Access in South Africa, 2002*. World Wide Worx, Pinegowrie.

GOLDSTUCK, A. 2004. *Online Banking in South Africa 2004*. World Wide Worx, http://www.theworx.biz/bank04.htm. Accessed: 14th May, 2004.

IVES, B., OLSON, M., AND BAROUDI, J. 1983. The measurement of user information satisfaction. *Communications of the ACM*. 26, 10, 785 – 793.

LEONARD, R. 2002. Prepare for the future of online banking. *IT in Banking. ITWeb*, http://www.itweb.co.za/sections/industryinsight/itinbanking/leonard020611.asp. Accessed: 7th November, 2002.

MEUTER, M. L., OSTROM, A. L., ROUNDTREE, R. I. AND BITNER, M. 2000. Self-service technologies: Understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, 64, 50 – 64.

SCOTT, I. 2002. Internet banking. The future is not what it used to be. *ITWeb*, http://www.itweb.co.za/sections/features/internetbanking/feature020610.asp . Accessed: 20th June 2002.

TEO, T., LIM, V. & LAI, R. 1999. Intrinsic and extrinsic motivation in Internet usage, *Omega, International Journal of Management Science*, 27, 25-37.

WANG, Y. AND TANG, T. 2001. An instrument for measuring customer satisfaction towards web sites that market digital products and services. *Journal of Electronic Commerce Research*, 2, 3, 1 – 28.

ZVIRAN, M. AND ERLICH, Z. 2003. Measuring IS user satisfaction. *Communications of the Association for Information Systems*. 12, 81 – 103.

APPENDIX 1: SURVEY INSTRUMENT (SECTION A: INTERNET BANKING HABITS)

Please select the appropriate responses that best describe your Internet banking habits.

1. Which bank do you currently use?

ABSA		Standard Bank		Nedbank		FNB	
NBS		Old Mutual Bank		Other			

2. What account do you hold at your bank?(Please mark all that apply)

Saving account		Current/Cheque account		Credit card account		Vehicle finance	
Home Mortgage account		Overdraft account		Fixed Deposit account		Personal loan	
Unit Trust		Other					

3. Which of the following banking services do you use mostly?(Please mark all that apply)

Deposits		Withdrawal		Balance enquiry		Transfers	
Account Payment		Order Cheque book		Share Trading		Online Shopping	
Other							

4. To what extent do you use the following banking channels?(Please mark all that apply)

	Never	Rarely	Occasionally	Sometimes	Often	Regularly	To a great extent
Banking hall	1	2	3	4	5	6	7
ATM	1	2	3	4	5	6	7
Cellphone banking	1	2	3	4	5	6	7
Telephone banking	1	2	3	4	5	6	7
Internet banking	1	2	3	4	5	6	7

5. I access the Internet primarily from: (Please mark all that apply)

Home		Office		Internet cafe		School	
Public library		Other					

6. On average, how much time do you spend on Internet banking per session?

Less than 5 minutes		5-15 minutes		16-25 minutes		26-35 minutes	
More than 35 minutes							

7. To what extent do you use the following ***Internet*** banking products/services? (Please mark all that apply)

	Never	Rarely	Occasionally	Sometimes	Often	Regularly	To a great extent
Balance enquiry	1	2	3	4	5	6	7
Mini Statement	1	2	3	4	5	6	7
Pay accounts	1	2	3	4	5	6	7
Transfer money	1	2	3	4	5	6	7
Set up beneficiary	1	2	3	4	5	6	7
Increase or decrease overdraft	1	2	3	4	5	6	7
Short-term Recurring payments	1	2	3	4	5	6	7
Stop and debit order payments	1	2	3	4	5	6	7
Open and manage Investment accounts	1	2	3	4	5	6	7
Request chequebook	1	2	3	4	5	6	7
Email branch or customer contact centre	1	2	3	4	5	6	7