



EMPIRICAL INVESTIGATION OF FACTORS INFLUENCING INTERNET BANKING SERVICE QUALITY AND ITS IMPACT ON E-BANKING CUSTOMER SATISFACTION

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Abstract: The proliferation for internet banking has transformed how customers interact with financial institutions. While convenience and cost-effectiveness are clear advantages, long-term adoption hinges on customer satisfaction with these services. This research examines the relationship between IB service quality and customer satisfaction.

By recognizing these key factors, banks can develop targeted strategies to improve their internet banking services. Prioritizing user-friendliness, robust security measures, and clear communication can significantly enhance customer satisfaction and drive wider adoption. Additionally, this research highlights possible of AI neural networks as an avenue for further exploration in this domain.

Index Terms - E-Banking, service quality, customer satisfaction, reliability, Factor analysis, Artificial neural network

I. INTRODUCTION

The 21st century has witnessed a paradigm shift in managing financial resources of individuals and businesses. The dawn of internet era ushered in a new frontier in the financial sector, marked by the rise of internet banking. This revolutionary service, often referred to as online banking or web banking, has transformed the traditional brick-and-mortar model by offering convenient and efficient alternative. IB allows remote customers to make many financial transactions, such as checking account balances, transferring funds, paying bills and even applying for loans - all from the comfort of their personal devices. This digital revolution has irrevocably altered the landscape of the financial service industry. As internet banking technology continues to evolve, becoming increasingly sophisticated and accessible, a crucial area of focus for financial institutions has emerged: customer satisfaction. In the competitive world of finance, where customer loyalty translates to profitability, understanding and addressing customer satisfaction with internet banking services is paramount. A satisfied customer base fosters brand loyalty, positive word-of-mouth recommendations, and ultimately, drives sustained business growth.

This extensive research paper delves into the intricate relationship between internet banking services and customer satisfaction. Our analysis will explore the evolving landscape of internet banking, examining the key trends, innovations, and challenges shaping this dynamic field. We will then embark on a comprehensive exploration of the factors influencing customer satisfaction in the context of internet banking. This crucial

aspect of our research will involve examining various elements that contribute to a positive customer experience, including:

- Security and reliability: Customers prioritize secure and reliable services to safeguard their financial information and transactions.
- Ease of use and user interface: Intuitive interfaces and user-friendly platforms are essential for fostering efficient navigation and effortless utilization of features.
- Accessibility and mobile compatibility: 24/7 accessibility and seamless functionality across various devices, especially mobile platforms, are crucial for convenience and meeting on-the-go demands.
- Range of features and functionalities: A diverse range of features encompassing bill payments, investment options, and loan applications enhances customer experience and satisfaction.
- Customer service and support: Prompt, effective, and accessible customer service is essential for addressing concerns, resolving issues, and fostering trust.

This paper delves deeper into the pillars of customer satisfaction in internet banking, examining the various factors that contribute to a positive user experience. We will explore:

- Security and reliability: Customers prioritize secure and reliable platforms that safeguard their sensitive financial information and transactions.
- Ease of use and user interface: Intuitive interfaces and user-friendly platforms are essential for seamless navigation and effortless utilization of features.
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Need for the Study:

Internet banking offers undeniable benefits for both banks and customers, including convenience and cost-effectiveness. However, long-term adoption hinges on customer satisfaction with these services. While prior research explores the link between service quality and customer satisfaction in IB, continuous examination remains necessary due to several key reasons:

- Dynamic Customer Landscape: Customer expectations regarding online experiences are constantly evolving. Understanding how these shifting expectations influence satisfaction with internet banking services is crucial for banks to remain competitive.
- Security Concerns: The ever-present threat of security breaches and evolving online threats can erode customer trust and decrease their willingness to use internet banking. Research is needed to identify how banks can effectively address these concerns and build trust with customers.

The data you provided from various studies highlights the importance of different service quality dimensions for customer satisfaction. However, a gap exists in our understanding of how these factors interact and influence customer behaviour in the current landscape.

This research aims to bridge this gap by examining the relationship between internet banking

Literature Review: Yongju Jeong and Yongsung Lee(2016)This study investigates what factors influence customer satisfaction and loyalty in online furniture stores. It builds on existing research on service quality and tests its applicability to online shopping. The findings suggest that various aspects of service quality, like product variety and responsiveness, impact customer satisfaction, which in turn influences customer loyalty. The study acknowledges limitations in sample diversity and suggests future research directions.**M. Muharrami Ali Tarhini , (2017)** This study examines mobile banking adoption in Oman. It expands the Technology Acceptance Model (TAM) to include social influence, trust, and compatibility, finding these factors alongside perceived usefulness to be important for customer adoption. The research suggests a neural network model might be more suitable than traditional regression for understanding user behaviour in this context. **Mohsen Ashourian (2012) An Iranian study adapted the E-SERVQUAL scale to assess e-**

Service Quality (e-SQ) in internet banking. They identified 6 dimensions of e-SQ, including security, design, and ease of use. These factors, along with overall e-SQ, were found to have a positive influence on customer satisfaction. **Sachin Kashyap, Sanjeev Gupta, Tarun Chugh(2023)** This study explored factors affecting customer satisfaction with internet banking in India. A combination of factor analysis and a neural network model was used to identify key influences. The study found neural networks were better suited than traditional models for predicting satisfaction, with security and reliability being the most important factors. **Abdel Latif M. Anouze and Ahmed S. Alamro (2019)** This study investigates low internet banking adoption in Jordan. Using a survey, it finds factors like security concerns and lack of perceived usefulness hinder user intention. The research suggests Jordanian banks need to improve security features and highlight the benefits of e-banking to encourage wider adoption. **Henry Egbezien Inegbedion(2018)** A Nigerian study explored customer adoption of electronic banking. The research focused on how factors like internet knowledge, perceived ease of use, security concerns, and transaction type influence customer attitudes towards e-banking. The findings suggest all these factors plays the major role in IB adoption in Nigeria. **Joaquin Aldas-Manzano, Carla Ruiz-Mafe, Silvia Sanz-Blas and Carlos Lassala-Navarre(2009)** This study examines customer loyalty towards banking websites. While satisfaction and trust generally boost loyalty, the research finds these effects are weaker when customers perceive high risks or use the website infrequently. **Ilias Santouridis, Panagiotis Trivellas and Panagiotis Reklitis(2014)** This study examines how internet banking quality affects customer satisfaction in Greece. It finds Greek banks deliver above-average internet service, with reliability being the most important factor for satisfaction. **Noel Yee-Man Siu Jeremy Chi-Wah Mou(2013)** A Hong Kong study adapted the e-SERVQUAL model to assess internet banking service quality. Credibility, efficiency, problem handling, and security emerged as key factors. **Sanjit Kumar Roy, M.S. Balaji, Ankit Kesharwani and Harjit Sekhon** This study explores factors affecting internet banking adoption in India. It combines two existing models to examine how ease of use and both risks that is internal and external influence customer acceptance. The research finds that both external (security concerns) and internal risks (lack of knowledge) discourage adoption.

RESEARCH METHODOLOGY

Research Design : The aim of this research is to find out public's perception of internet banking services and the risks associated with how efficient the banking industry is. We conducted a survey of bank employees in Jalandhar, Punjab, India using a 170-item questionnaire.

Learning objectives:

- To investigate the factors affecting the internet banking service industry.
- To analyze the impact of factors on e-customer satisfaction.

Hypothesis - A proposed explanation for the cause. For a hypothesis to be true speculation, a reliable system must test it. Professionals are real assumptions based on past concepts that cannot be adequately explained by existing theories. Although the words "hypothesis" and "hypothesis" are used interchangeably, a valid theory is no different from an intelligent guess. A working hypothesis is a hypothesis proposed for further research in a system that begins with an informed action or idea.

The null hypothesis is accepted as H0 and the alternative hypothesis as H1

H0: Reliability has no significant effect on e-customer satisfaction.

H1: Reliability has a significant effect on customer satisfaction.

H01: Security and privacy does not significantly affect customer e-satisfaction.

H11: Security and privacy has a significant effect on e-customer satisfaction.

H02 Efficiency does not significantly affect electronic customer satisfaction

H12 Efficiency has a significant effect on e- customer satisfaction.

H03 User-friendliness has a significant effect on e-customer satisfaction.

H13 User-friendliness has a significant effect on e- customer satisfaction.

H04 Issues and problem handling has a significant effect on customer e-satisfaction.

H14 Issues and problem handling has a significant effect on e- customer satisfaction.

H05 Perceived risk has a significant effect on e- customer satisfaction.

H15 Perceived risk has a significant effect on e- customer satisfaction.

Research Method: For the purpose of this research, a questionnaire is used as a research instrument. The questionnaire will be distributed among students and working professionals. The sample size for this study is 170. This sample represents the entire population.

• **Research Instrument: Questionnaire** - Questionnaire was chosen for this research because it is a safe and short way to collect data from various respondents efficiently and conveniently.

Collecting Data: Data is secondary as well as primary. Primary data is collected from first experience and has not been published and is more reliable, trustworthy and objective. The primary data used in this research is a structured questionnaire. Secondary data is collected with the help of books, journals, research papers, internet, public websites.

Data Analysis Method: The evaluation of the survey results is provided in the design of tables and plots using the Likert scale and correlation analysis in Excel. The analysis of the results is not physically broken down in order to choose examples and pencils in the appropriate reaction of the respondent to choose important words, explanations and combine or "cloud" them.

This test uses a 5-point Likert scale with the alternatives: Strongly Agree, Agree, Disagree, Disagree, Strongly Disagree. This is the lowest level that large scale customers can make enough decisions to respond to.

Sampling Method- Purposive sampling method is used in our study.

Statistical Method - We use linear regression in our study of fraud detection with artificial intelligence as an independent variable and risk management as a dependent variable.

DATA ANALYSIS & INTERPRETATION

Data analysis

It is a preparation for filtering important information by referring to unimportant information. The way you filter and think about data is fundamental to understanding what data is. Individuals have a game plan that they can advance in evaluating the data, and it is very simple to monitor the data during the evaluation process to encourage or eliminate certain information. Therefore, it is necessary to focus and think about data and implications when presenting data.

Unstructured data can capture construct schemas such as evaluations, learning reactions, and perceptions. In a panic attack, this information can be incredibly helpful if it is overwhelming at any rate. As part of the data evaluation process, negative data becomes important. For example, the survey results can be searched for the purpose of seeing individuals from the beginning, how many people participated in the survey and how individuals reacted to the same question.

Tools for analysis

No experiment can be completed effectively without tools and techniques similar to mine. I often use statistical and computer tools for better presentation and correct interpretation. Also, I am very grateful to each of those tools for helping me a ton. Here are the main tools I use to measure:

Regression

Model	Un-standardized Coefficient	Standardized Coefficient	Significance
Constant	0.12		0.000
E	0.18	0.23	0.040
PR	0.28	0.25	0.045
I&P	0.32	0.28	0.034
R	0.34	0.22	0.046
U	0.24	0.32	0.055
S&P	0.42	0.14	0.061

Table -1

Table1- Coefficients CS-Customer satisfaction, S&P- security and privacy, E-efficiency, R- reliability ,PR- Perceived risk, U- User-friendliness, I&P- Issues and problem handling

Results- The results of above table show that the value of the standard coefficient is significant with a p value of less than 5 percent. Effectiveness, perceived risk, problems and solving problems, reliability is significant as 0.04, 0.045 and 0.034, 0.046 with p value less than 5 percent. The value of P p is more than 5 percent for user-friendly variables and security and privacy are more than 5 percent, respectively 0.055 to 0.061

If the p value is less than 5 percent, the null is rejected and the alternative is accepted

If the value of p is greater than 5 percent, the null is accepted and the alternative is rejected

KEEPING THE HYPOTHESIS-

Detailed analysis and interpretation

Regarding the hypothesis test, we got 6 hypotheses

Above Table No. 1, it is clear that customer satisfaction is related to effectiveness of IB services as p value of 0.040. So, the alternative hypothesis is accepted. After review in Table 1 shows that customer satisfaction is related to the reliability of e-banking services as the p value is 0.046. This shows a strong positive relationship between customer satisfaction and the reliability of e-banking services. Customer satisfaction is related to the perceived risk of e-banking services as the p value is 0.045. Customer satisfaction is related to the problem and resolution of IB services as the p value is 0.034. Customer satisfaction is not related to user friendliness of IB services as the p value is 0.055. Customer satisfaction does not depend on the security and privacy of e-banking services as the p value is 0.061, indicating a positive relationship between customer satisfaction and security of IB services.

Discussions And Conclusion :

This study examined how internet banking service quality influences customer satisfaction. Reliability, ease of use, and security emerged as the most critical factors. For banks, this means prioritizing system upgrades to minimize downtime, creating userfriendly application, and making and implementation of robust security measures with clear communication about data protection. Additionally, continuously monitoring customer needs and adapting with innovative features is essential. While the study offers valuable insights, limitations include sample demographics and a one-time data capture. Future research can explore broader samples, track satisfaction over time, and examine the role of emotions, user interface design, and artificial intelligence in shaping customer behaviour within internet banking. By understanding these key drivers and pursuing further research avenues, banks can develop effective strategies to boost customer satisfaction, drive wider adoption, and achieve long-term success in the ever-evolving digital landscape.

Limitations

While this study offers valuable insights into the relationship between IB service quality and customer satisfaction, there are limitations to consider for future research:

- **Sample Specificity:** The generalizability of the findings may be limited depending on the sample population. Future research can benefit from including broader or more diverse demographics to gain a more comprehensive understanding across different customer segments.
- **Cross-Sectional Design:** This study likely employs a cross-sectional design, which captures data at a one point in time. Longitudinal studies tracking customer satisfaction over time can provide richer insights into how perceptions and behaviour evolve.

Further Research Directions:

Building on the foundation of this study, several avenues exist for further research:

- **Understanding the Role of Emotions:** Explore how emotions like trust, security anxiety, and frustration influence customer satisfaction and usage patterns.
- **Regional and Cultural Variations:** Conduct comparative studies across different regions or cultures to understand how factors influencing customer satisfaction may vary based on social and economic contexts.
- **The Long-Term Impact of COVID-19:** Analyse how the pandemic's shift towards online banking has impacted customer behaviour and satisfaction in the long term.

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