

# Diffusion of Technology in Banking Services: A Comparative Study of SBI & HDFC Bank

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## KEYWORDS

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## ABSTRACT

Technology has made banking more convenient, secure and personalized. Due to technology customers can now make transactions from anywhere and at any time using a mobile device or computer. Customers expectations of banking have significantly increased as banks strive for digitalization, and the pandemic has accelerated this trend. Hence, it is thought that the use of off-branch digital banking, as opposed to traditional banking, will be crucial to the expansion of the banking industry. This paper's objective is to analyze the level of satisfaction in terms of technology uses among SBI and HDFC bank customers in Punjab. As the researcher has to develop symmetry for comparative study a sample size of 400 customers (200 from each SBI & HDFC bank), was planned to be taken for the study with the help of pre-designed questionnaire based upon, Fred Davis created the technology acceptance model in 1989. So the constructs from the technology acceptance model (TAM) are taken into consideration in this study. Surveys were used to gather data and factor analysis was used to examine the results. According to the findings, customers of both SBI & HDFC Bank are similarly influenced by ease of use, perceived utility and perceived risk. But HDFC is marginally better at addressing or understanding the key factors driving customer's satisfaction. Hence HDFC reflects a stronger alignment with customer needs.

## Introduction

Quick advances in technology have led to a significant turmoil in the banking industry in recently especially post demonetization & pandemic COVID 19. Technology has completely changed the way banking institutions function and interact with their customers, from digital payments to digital ledger technology. The move toward digitalization is among the biggest effects of technology on the banking industry. Consumers now have access to a range of banking

services while relaxing on their PCs or cell phones thanks to the advent of mobile and internet banking. It is expected that almost all banks would have adopted the Internet by 2011 (Bradley 2003). This digital revolution has enhanced the whole client experience in addition to speeding up and improving the efficiency of banking processes. Innovations in technology play a major role in providing their diverse customer portfolios with tailored and diversified banking services at a lower cost (malini et.al 2017). Although technology has greatly benefited the banking industry, it has also created new difficulties, especially in the area of cyber security. Adoption of digital banking is adversely impacted by perceived risk (Al-Jabri et. al 2012).

Since banking is a customer-focused service sector, the most important criterion for evaluating any banking sector is customer satisfaction. Bank customer satisfaction is considerably affected by bank service performance as well (aripin 2023). In the present study, the level of satisfaction from the use of digital services by SBI & HDFC bank customers is compared. Data was collected from 400 customers (200 from each SBI & HDFC bank) in the state of Punjab with the help of pre-designed questionnaire based upon technology acceptance model.

## **Review of Literature**

**Hannan et. al (1984)** examined the connection between market dominance & the spread of automated teller machines in the banking sector. They also investigated that how market share was affected when the first market was introduced. The role of competitiveness in the diffusion of technology was tested using data in a manner that bypassed the issues of inter industry differences. Both the rate of new technology diffusion and the percentage of firms that have the innovations by the end of the study period were found to be benefited from competitiveness.

**Lee 2000** examined the degree of customer adoption of electronic banking systems, as well as the identification of both adopters and non-adopters the degree of customer adoption of electronic banking systems, as well as the identification of both adopters and non-adopters. In his study, according to the 1995 Survey of Consumer Finances, customers who are younger, wealthier and more educated and who are more likely to interact with qualified information sources generally embrace technology for online banking faster than their peers. Researcher found that the precise characteristics that distinguish adopters from non-adopters, however, fluctuate depending on the kind of banking technology.

**Gerrard & Barton (2003)** compared Technology adopters versus non-adopters services. According to their study adopters opinions about social desirability, confidentiality, accessibility and financial benefits were the same. According to the findings, Internet banking users believe the service is more convenient, simpler, more suited for people with the knowledge of computer, and more compatible with their needs. It was also discovered that adopters were more creative with money.

**Bradley (2003)** examined retail banking adoption of online banking, with a focus on the factors that encourage and hinder bank adoption. In the study it was anticipated that almost all banks would have adopted the Internet by 2011. The primary factors influencing banks adoption of internet banking were consumer demand, competitive pressures, technology accessibility and rival banks use of this service.

**Carr, M (2008)** explored potential future developments in online banking that might try to reach groups that was not at that time served by the electronic mainstream financial systems.

**Al-Jabri & Sohail (2012)** explored several elements impacting the uptake of mobile banking. According to this study adoption is found to be positively impacted by situational awareness, adaptability and perceived benefits. Acceptance and complexity have no noticeable impact on adoption, despite the conclusions of the existing literature. Further the adoption is adversely impacted by perceived risk.

**Sullivan & Wang (2013)** explained the variation in diffusion rates across geographic regions and decouple the connection between Internet banking adoption and changes in average bank size.

**Takieddine & Sun (2015)** investigated why do different nations have varying adoption rates for online banking? The research model's influencing factors were statistically tested using secondary data gathered from a sample of thirty-three European nations. The findings showed that Internet access acts as a final intermediary between the impacts of technological and social variables on the spread of online banking. Additionally, the results indicate that cultural background plays a significant mediating impact in the diffusion of Internet banking and Internet access among various country groups.

**Sinha (2016)** explored the reason of low India's rate of adoption of digital banking as compared to developed nations. Despite the advantages of off-branch banking, what is the reason of growth of electronic banking below expectations? According to the findings, customers in India are greatly influenced by perceived ease of use, perceived utility, perceived complexity and trust in technology and banks while using e-banking off-branch, although perceived risk was not a significant issue.

**Gonu et. al (2023)** explored whether quality of service could affect client contentment. The study used a descriptive survey design and a quantitative research methodology. Data was analyzed using PLS-SEM from 391 commercial bank customers. Customer orientation was found to be a strong indicator of banking customers satisfaction sector. Researcher also found that with the increase in service quality, there is increase in customer satisfaction also and quality of service contributes to the connection between client and service quality.

**Sheikh & Amin (2024)** investigated the factors that encourage Malaysian non-customers of Islamic banks their services for digital banking to embrace these services. The findings say that, according to diffusion theory of innovation, acceptance of digital many things affect banking, including such as perceived relative benefit, perceived compatibility and confidence in technology. The acceptance of digital banking, on the other hand, is unaffected by perceived complexity.

## **Research Gaps**

Post Demonetization and pandemic COVID 19, digital banking helped a lot to each type of customer to do banking as per his convenience at his place, but sufficient studies have not been carried out to measure the impact of modern banking services on these customers. Also the cited literature demonstrates that there is substantial work that has been done and is somewhat proven. However, a review of numerous studies shows that hardly any research has been done on how customers in Ludhiana city of Punjab, perceive the standard of online banking services in relation to SBI and HDFC banks.

### Objective of the Study

- To analyze the level of satisfaction in terms of technology uses among SBI and HDFC bank customers.

### Scope & Limitations of the study

The satisfaction level of SBI and HDFC bank customers with regard to technology use is the sole focus of the current study. Despite being extremely thorough, the study is subject to certain limitations, these are as follows-

1. This study's primary drawback is that the general public and private sector banks were not considered as the network of operations of all the banks is different. The study only consider leading bank i.e. SBI from public sector and HDFC from private sector bank.
2. It is impossible to totally rule out the possibility of bias in respondent responses because the study is based on primary data.
3. Because the study only employed 400 people from the large population, there can be discrepancies between the sample and population results.

### Research Methodology

The modified technology acceptance model (TAM), first created by Fred Davis in 1989 and used with SBI and HDFC bank customers, served as the foundation for the study. Four variables were measured by the questionnaire using a five-point Likert scale (Disagree–Agree): consumer happiness, perceived utility, perceived danger and perceived simplicity of usage.

. The study employed a survey-based questionnaire, which comprises gathering data from customers of two banks i.e. SBI & HDFC Bank. The sample for this research was 400 respondents 200 from each SBI & HDFC Bank; The sample method used was convenience sampling. For testing the reliability of the data first of all Cronbach Alpha is calculated on all the service quality dimensions. After extracting four factors, factor loading of each variable in SBI & HDFC Bank is compared. In order to determine the satisfaction level of each bank percentage of variance is analyzed.

### Data Analysis

**Table 1**  
**Reliability Analysis of factors**

Factors	Cronbach alpha	
	SBI	HDFC
Ease of use	0.848	0.881
Perceived usefulness	0.805	0.868
Perceived risk	0.893	0.891
Customer's Satisfaction	0.845	0.802

Source: computed through SPSS

The above table measured the reliability Cronbach's alpha was used and the results varied from 0.802 to 0.891 in case of HDFC Bank while in SBI it ranged from 0.805 to 0.893, which exceeds the benchmark value of 0.70 (taber, 2018).

**Table 2**  
**Bank-wise Factor analysis of Perceived Usefulness**

Variable/Factors	Factor Loading	
	SBI	HDFC
Internet Banking is accessible from anywhere	0.814	0.860
Internet Banking is available anytime (24*7)	0.774	0.807
Use of Internet Banking is cost effective	0.771	0.794
Internet Banking saves time	0.720	0.754
<b>Percentage of Variance</b>	<b>46.660</b>	<b>46.657</b>

Source: computed through SPSS

The rotational component matrix displays the factor loadings, which illustrate the connection between the latent factor and the observable variables. The above table illustrates the similarities and differences in the factor structure between two banks. This shows the degree of association between each variable.. The above table shows that, in both the banks, accessibility of Internet Banking from anywhere & secondly 24\*7 is the most important variable with the highest factor loading i.e. 0.814, 0.774 in SBI & 0.860, 0.807 in HDFC Bank. The importance of other variables such as cost effectiveness and time saving feature of internet banking are considered equally by the customers of SBI & HDFC Bank. Customers of both the banks feels that digitalization is cost effective and also saves time but HDFC bank customers are more convinced by the usefulness of technology services than SBI customers. Since perceived usefulness explains about the same percentage of variance in both SBI & HDFC bank, i.e. 46% which means that **customers of both the banks accept the usefulness of technology services in the same way**. In other words, this indicates that the usefulness of technology in both SBI & HDFC is perceived similarly by customers in both banks.

**Table 3**  
**Bank-wise Factor analysis of perceived risk**

Variable/Factors	Factor Loading	
	SBI	HDFC
I risk having my account compromised if I use online banking.	0.784	0.764
Using Internet Banking services subjects my banking account to potential fraud	0.738	0.748
Using Internet Banking services subjects my banking account to financial risk	0.698	0.843
I think Internet Banking services put my privacy at risk	0.652	0.689
<b>Percentage of Variance</b>	<b>10.549</b>	<b>11.346</b>

Source: computed through SPSS

The above table compares how similar or different the variables are to the factor structure perceived risk, between two banks, the rotated component matrix presents the factor loadings, which shows the relationship between the factors that were observed and the latent factor. This indicates the degree to which each variable is connected to the factor. According to the table, for SBI customer highest potential risk of using e banking is Hacking of account due to its highest factor loading, followed by the possibility of fraud and then financial risk. But according to HDFC customers highest potential risk of using e banking is financial risk with highest factor loading, possibility of hacking and then potential fraud. Here both the bank customers assess internet banking least risky to their privacy as it receives least factor loading which is 0.652 in SBI and 0.689 in HDFC bank.

The above table also compares the amount of variance that can be explained by each factor in both SBI & HDFC bank. In SBI perceived risk explain 10.5% of total variance but in HDFC it is 11.3% of total variance. Since the difference (about 0.8%) is small, hence we can say that the two banks are similar in how well they capture the factors influencing perceived risk. **In other words, this indicates that the risk of e banking services in both SBI & HDFC is perceived similarly by customers in both banks.**

**Table 4**  
**Bank-wise Factor analysis of ease of use**

Variable/Factors	Factor Loading	
	SBI	HDFC
Site maps help to search path of doing transaction	0.844	0.758
The Internet Banking website's material is simple to read and comprehend.	0.828	0.788
Internet Banking website is easy to use	0.756	0.794
<b>Percentage of Variance</b>	<b>7.788</b>	<b>7.658</b>

Source: computed through SPSS

According to the table, for SBI customer digital services are easy to use because site maps help to search the path of doing transaction with highest factor loading and website is easy to understand. But HDFC customer feels website easy to use and understand as it has the highest factor loading as compared to other variables. Hence the customers of both the banks perceive ease of use in similar way.

Since ease of use explains about the same percentage of variance in both SBI & HDFC bank, i.e. 7% which means that **customers of both the banks perceive ease of use of technology services in the same way.** In other words, this indicates that the technology services are easy to use in both SBI & HDFC bank and is perceived similarly by customers in both banks.

**Table 5**  
**Bank-wise Factor analysis of Customer's Satisfaction**

Variable/Factors	Factor Loading	
	SBI	HDFC
Security of digital transaction in your bank	0.853	0.862

Reliability & confidence in your bank	0.806	0.847
Website pertaining to usability and design	0.782	0.837
<b>Percentage of Variance</b>	<b>7.955</b>	<b>9.839</b>

Source: computed through SPSS

According to the above table customer's satisfaction in digital services of both the banks are more or less same. According to the above table customers of SBI & HDFC bank feel that Security of digital transaction is the most important variable to determine the satisfaction level with the factor loading of 0.853 in SBI & 0.862 in HDFC Bank followed by Reliability & confidence and then website related to design & ease of use with 0.782 in SBI & 0.837 in HDFC Bank.

The difference in variance (9.8% vs. 7.9%) is relatively small but as HDFC shows higher variance which indicates that **HDFC is marginally better at addressing or understanding the key factors driving customer's satisfaction** or in other words higher variance of HDFC reflects a stronger alignment with customer needs. Hence HDFC might have a more targeted approach to improving satisfaction.

### Findings & Discussion

- The majority of the respondents i.e. 36% are in the age group below 35 years, 36.3% are in the age group of 36-50, it is particularly noteworthy that 27.8% respondents are of the age group above 50. The sample consists of more males (56.5%) than females (43.5%). There are more respondents who are single (59.3%) than married (40.8%). Sixty-nine percent of those surveyed have academic, postgraduate or doctoral degrees. The percentage of respondents without an academic degree is just 31%. It appears that the sample is biased in favor of the population's graduated portion.
- About 39.5% of the respondents are in government and private job, 35.3% are in business, 25.3% are others including students, retired and homemakers. 30.8% of the respondents are having the income more than 50,000 and 29% are having income below 30,000 and the maximum 40.3% are having income in between 30,000-50,000.
- The findings of the study prove that customers of both SBI & HDFC Bank agree that digitalization is useful because it is accessible from anywhere anytime, thus saves time and moreover it is cost effective.
- Customers of both the banks accept the usefulness of technology services in the same way.
- According to the findings of the study IB website is easy to use and understand. Site maps are helpful in searching path to do transactions.
- For SBI customer searching the right path for the transaction is more important in perceived ease of use, while for HDFC customers understanding and easy use of website is more important.
- As ease of use explains about the same percentage of variance in both SBI & HDFC bank, i.e. 7% which means that customers of both the banks perceive ease of use of technology services in the same way.
- For SBI customer highest potential risk of using e banking is Hacking of account while to HDFC customers highest potential risk of using e banking is financial risk.

- Since the difference (about 0.8%) is small, the findings suggest that risk factor is marginally more prominent in SBI services, which may necessitate careful consideration in order to reduce, whereas in HDFC it is less problematic.
- Customers of SBI & HDFC bank feel that Security of digital transaction is the most important variable to determine the satisfaction level with the factor loading of 0.853 in SBI & 0.862 in HDFC Bank followed by Reliability & confidence and then website related to design & ease of use with 0.782 in SBI & 0.837 in HDFC Bank.
- As HDFC shows higher variance in customers satisfaction, it indicates that HDFC is marginally better at addressing or understanding the key factors driving customer's satisfaction.

Examining earlier research, especially that conducted by Choudhury (2022), on the variables affecting the quality of digital banking services: A comparison between SBI and HDFC banks in Hyderabad, it is seen that HDFC is strong when it comes to website design and privacy. However SBI clearly outperforms HDFC in few areas in terms of efficiency, system availability, fulfillment and responsiveness,. According to Venkateswarlu (2023), a comparative study in Bangalore city, findings show that HDFC and SBI Bank offer different levels of service quality. This indicates that the present study support Abrar (2020) as it concluded mixed review on service quality of SBI & HDFC Bank. The results indicate that SBI in comparison to HDFC has been successful in offering its customers timely and effective services in this area. However, HDFC performed better than SBI in terms of passbook updating services, demonstrating that HDFC is more successful in meeting its customer's expectations in offering precise and timely passbook updating services. But in overall service delivery, HDFC was excellent. This suggests that HDFC has set up a smooth and organized system for providing services, which elevates customer satisfaction. In the line with this Vasantha (2024) concluded that people are more satisfied from the HDFC bank as compared to SBI due to their better services provided by them.

The paper makes two contributions. The first benefit is that it adds to the body of academic knowledge, which helps future researchers find relevant topics and organize their studies based on existing findings. Secondly, the banking sector can use these findings as a guide to enhance their bank service performance to meet the expectations of customers, boost their happiness and eventually build customer trust.

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