Original Article ISSN (Online): 2582-7472

DIGITAL INDIA AND ICT INTEGRATION IN BANKING: A COMPARATIVE ASSESSMENT OF CUSTOMER SATISFACTION AND PERFORMANCE IN PUBLIC AND PRIVATE SECTOR BANKS OF PUNJAB

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DOI

10.29121/shodhkosh.v4.i2.2023.572

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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ABSTRACT

The current research focuses on the levels of customer satisfaction and effectiveness related to digital banking services of public and private bank sector were taken into study with the comparative perspective on consumers preferences and demographics impact and institutional performance as well. Based on empirical evidence of the 100 respondents and using secondary financial reports of 100 respondents data from 2010 to 2020, descriptive statistics, chi square testing, and t test were applied to examine the behavioral pattern and performance parameters including ROCE, ROA and Net Profit margin. The results demonstrate a solid preference for digital services, over manual services in the private sector, leading to a significant improvement in the satisfaction of customers and speed of service among various demographics. Moreover, private banks have fared better than public banks in terms of profitability and digital adoption. The study emphasizes the imperative for public sector banks to step up their digital game in a bid to enhance customer experience and increase financial inclusion through customer-friendly digital banking services.

Keywords: Digital Banking, Customer Satisfaction, Public VS Private Banks, Financial Performance, Demographic Factors



1. INTRODUCTION

The widespread use of Information and Communication Technology (ICT) in the banking service industry has revolutionized the delivery of financial services throughout India. The Digital India campaign of the Government of India was introduced in 2015 with the objective to increase digital literacy and improve the delivery of government services by increase in internet connectivity (Rajeshwari, 2019). One of the early and most affected sectors has been banking especially after some of the major policy level interventions such as 2016 demonetization and 2020 COVID-19 which increased digital modes of banking (Ravi, 2017). Consumers moved in a fast-track migration towards online banking, internet banking, mobile wallets during these times reshaping the conventional banking system (Türkmen & Soyer, 2020). ICT had already started to penetrate banking with the arrival of core banking systems; however it is only in recent years the massive swept of its application is noticed. Both private and public banks had to transform from traditional to contactless modes of service delivery, becoming technological as well as cultural and infrastructural imperatives to become 'future-oriented' (Carstens, 2018). The public sector banks were faced with challenges of digital literacy, integration, and resource deployment, private sector banks with more flexible organization models were able to respond

faster (Okiro & Ndungu, 2013). This discrepancy has led to discussions on customer satisfaction between categories of banks.

Digital India also did more than promote digital adoption - it also raised customer expectations. But there are a host of problems with this model, particularly in banking, more so in a diverse state like Punjab. Language difference as some users will not be familiar with Hindi/SSi and would like content in English, Economic inequality, urban bias, Differential levels of digital literacy between urban and rural areas that result in difficulty reaching client and service providers for those in rural areas make the seamless provision of services a sore point (Rangaswamy & Arora, 2016). Furthermore, the requirement of being provided with reliable and high-quality digital services has become increasingly important among competitive banking environments, playing a significant role in shaping customer satisfaction, loyalty, and switching behavior, i.e., (Koutsothanassi et al., 2017; Ndubisi, 2006). Despite considerable literature on adoption of digital banking, the comparative empirical research between public and private sector banks is scant in the context of the Punjab. Studies have been conducted more commonly over national or urban sampling rather than regional differences and after COVID digital behavior (Michael et al., 2015). Additionally, few of them have discussed directly the relationship between ICT and digital campaign effects with bank performance measures and customer satisfaction results. This study aims at addressing that gap by studying the comparative performance, customer experiences in the public and private banks in Punjab in the context of Digital India campaign and advances in information technology.

Specifically, the study examines if customers are truly satisfied with digital banking services, reveals how prestated service quality differs from perceived service quality, and determines whether digital service implementation is improving the bank's overall performance. The results have implications for policymakers, bank managers and digital infrastructure providers as they seek to enhance service delivery and strategic use of ICT in the banking industry.

2. LITERATURE REVIEW & RESEARCH GAP

Recent studies have paid much attention to how digital banking and ICT use has impacted customer satisfaction and bank performance. Khattab et al. (2020) has proved that reliability, tangibility, and responsiveness of service quality dimensions have a direct impact on customer satisfaction using structural equation model for Malaysia. With respect to service delivery innovation and loyalty, Yusheng and Ibrahim (2019) found it to be positively significant to loyalty in the Ghana banking context. Likewise, in India, Venkata and Kumar (2019) utilized Vector Error Correction Model and revealed that NEFT and RTGS digital transaction systems have a short run and long run positive impact on bank profitability. According to Mbama (2018), customers have the appetite for mobile banking services and improving the Net Promoter Scores (NPS) with customer-centric digital functionalities can translate into a positive effect on overall bank performance. Mustapha(2018) noted that e-payment channels such as POS, and online banking systems enhance profitability by minimising the risk exposure as well as the cost of operations. Md Masum Miah (2018) employed PLS-SEM and discovered that most of the dimensions of digital banking influence customers' satisfaction positively except for responsiveness which has no effect.

R.Gokilvani et al. (2018) Customers perceived is influenced by the effectiveness of digital transaction and digital payment system need to bee perfected to reduce the delays. Jaybed Ray (2018) analyzed perception of business customers in public and private sector banking sector and found tangibility as the most contributing element on satisfaction where private banks performs better than public banks in general. Dilpreet Singh et al. (2017) that shows such results, indicating poor service development strategies in public banks compared with their private peers. Education was reported to significantly influence the adoption of DPs by customers by shamsher Singh (2017 and the work have been supplemented by Eswaran (2019) stressed that education beyond matriculation influence the adoption of digital services. Sadaf Firdous (2017) indicated that system efficiency, satisfaction and accessibility are 70% of the factors that drive customer satisfaction in online banking demonstrate the multilevel nature of digital engagement. Roy et al. (2017) stressed the significance of perceived risk in managing and customer attitudes towards digital banking adoption in India.

Faisal et al. (2009) analyzed Pakistani banks over the period 2007-2011 and, the variable considered to measure financial efficiency was Return on Operating Fixed Assets. They also discovered that higher utilization of digital infrastructure and fixed assets meant more profitable firms. For the Nigerian setting, Alagh (2014) discovered an increase in ATM and POS usage was associated with higher ROE, while web-based transactions decreased profitability because they were underutilized and costly. Ansarul Haque (2014) found that there was no significant difference in ROA

and NIM between banking groups, ROE did vary significantly. Brady and Cronin (2001) argued that all dimensions of service quality including reliability, responsiveness and empathy, should function together to improve customer perception. Parasuraman et al. (1991) previously developed the SERVQUAL model that provided the theoretical underpinning for many later studies on measuring service quality in banks. Agarwal (2009) performed a comparative analysis in India and found distinct perceptions of customer satisfaction between public and private sector banks. Similarly, Abedniya et al. (2011) used the CARTER model and found that the difference between customer expectations and perceptions of service quality impacts satisfaction negatively. Ndubisi (2006) further identified the abovementioned gender difference in loyalty behaviors that may affect digital penetration.

Nonetheless, several fundamental issues have not been extensively addressed in the literature. A majority of studies is urban-based or national trends on banking habits are examined irrespective of regional disparities like those existing in Punjab. Although several International and Indian (e.g., Mustapha, 2018; Faisal et al., 2012; Gokilvani et al., 2018) studies examined the influence of digital banking on performance and satisfaction, none directly compared the experiences of public and private banks in Punjab. Scarcely researches have also included what has occured after the digital acceleration following to the COVID 19 and how it has affected the banking habits. This gap is filled by this study, which examines the impact of digital India campaign and ICT-based banking services on customer satisfaction and financial performance in public and private sector banks in Punjab. The study also discusses the barriers that potential customers must overcome in order to adopt mobile banking: literacy, trust and access -all crucial to the success of the transformation of India's banking from physical to Digital.

3. OBJECTIVES OF THE STUDY

The general purpose of this study is to analyze and compare the acceptability, performance and customer satisfaction of digital banking services provided by the public and the private sector. It seeks to examine the association of demographic factors (i.e. gender, age, educational qualification etc.) with the usage of digital banking services (viz. money transfers, account statements, loan/mortgage services, etc.). The research also aims to examine customer satisfaction towards aspects of digital transactions such as speed, availability, usability and environmental-friendly technology. It also analyses the financial performances of some specific public and private sector banks over a decade to assess the effect of digital initiatives on the overall profitability and operational efficiency of Banks.

4. METHODOLOGY USED

The current study adopted a post-positivist philosophy of research recognizing that reality is socially constructed and an emphasis on the interpretation of subjective meanings and experience rather than objective measurement. A deductive approach was utilized, developing hypotheses according to established theories from customer satisfaction, digital banking, and ICT adoption literature, and then empirically testing them. The study was based on primary form of data collected by structured questionnaire and personal interviews with a sample size of 100 respondents (50 public and 50 private sector bank customers in Punjab) selected through convenience sampling. Secondary data was collected from annual bank reports/returns, Reserve Bank of India, and related literature. The data was analysed using SPSS 20.0 including descriptive statistics, t-test (for comparison between groups), reliability analysis, factor analysis, and regression analysis (to determine the predictors of satisfaction). To assess financial performance, ROA and ROE were utilized. This holistic approach provided a sophisticated analysis of the influence of Digital India campaign and ICT on customer satisfaction and comparative effectiveness of public and private sector banks in Punjab.

5. DATA ANALYSIS AND INTERPRETATION 5.1. DESCRIPTIVE ANALYSIS

The descriptive analysis describes the demographic characteristics of the respondents, as well as the digital banking and manual banking affinities. The proportions of male and female and the mean age of the responders were almost identical (50% and 50%, and the largest group was 30–50 years of age (60%; Table 1). The majority of them had finished with postgraduate (50%) or graduate (45%) level. In terms of type of account, 70% had a savings account, and among these only 5% had a term deposit.

Table 1 Frequency Distribution of Demographic Profile of Respondents

Category	Sub-category	Count	Percentage (%)
Gender	Male	50	50
	Female	50	50
Age	18-30	15	15
	30-50	60	60
	More than 50	25	25
Qualification	Matriculation	5	5
	Senior Secondary	10	10
	Graduation	45	45
	Post-Graduation	50	50
Type of Account	Saving Account	70	70
	Current Account	15	15
	Fixed Account	10	10
	Recurring	5	5

5.2. PREFERENCE FOR DIGITAL VS. MANUAL SERVICES

Table 2 shows that over 80% of respondents prefer online banking services for all key operations (transfer of money, statements, and loans), indicating high adoption of digital platforms.

Table 2 Respondents' Preference for Manual vs. Online Banking Services

Banking Services	Manual (%)	Online (%)	
Transfer of money	14	86	
Account statement	17	83	
Loan/Mortgage services	16	84	

5.3. CHI-SQUARE TEST ANALYSIS

To test the association between demographic factors (gender, age, qualification) and preference for digital services, chi-square tests were conducted.

Table 3 Chi-square Test Results for Association between Demographics and Digital Banking Services

Demographic Factor	Banking Service	Public Sector (p-value)	Private Sector (p-value)
Gender	Transfer of Money	0.078 (NS)	0.001 (Sig.)
	Account Statement	0.069 (NS)	0.002 (Sig.)
	Loan/Mortgage Services	0.078 (NS)	0.002 (Sig.)
Age	Transfer of Money	0.000 (Sig.)	0.000 (Sig.)
	Account Statement	0.000 (Sig.)	0.000 (Sig.)
	Loan/Mortgage Services	0.000 (Sig.)	0.000 (Sig.)
Qualification	Transfer of Money	0.001 (Sig.)	0.000 (Sig.)
	Account Statement	0.000 (Sig.)	0.000 (Sig.)
	Loan/Mortgage Services	0.001 (Sig.)	0.000 (Sig.)

Note: Sig. = Significant at p < 0.05; NS = Not Significant

The chi-square test of independence shows that gender does not matter in the use of digital services in public sector banks, but it does matter in the private sector banks implying that perceptions of efficiency based on gender are relatively more visible in the private sector. Age is associated most strongly, and consistently, with the use of the three digital services (money transfer, account information, and loan/mortgage services) in both banking sectors, indicating that digital uptake is distinctly age-related, probably biased towards younger age groups. Also, in both sectors qualification is strongly related to use of digital services, pointing to an effect of education on stimulating digital participation. These results reinforce the need for demographic customization in digital banking offerings. Public-sector banks in particular

may also want to undertake targeted awareness campaigns and human-user-interface classes for older and less-educated consumers to counteract the digital divide and to ensure that digital transformation is inclusive.

5.4. SATISFACTION RATINGS ON DIGITAL SERVICES

Respondents were asked to rate various aspects of digital services. The responses were rated on a Likert scale, and average scores were computed.

Table 4 Customer Satisfaction on Digital Transactions

Indicator	Avg. Rating (Public)	Avg. Rating (Private)	
Conduct transactions quickly	1.32	1.67	
Availability 24×7	1.38	1.77	
One-stop payment solution	1.33	1.78	
Manage account effectively	1.48	1.75	
Support record-keeping	1.80	1.73	
Environmentally friendly	1.64	1.80	
Accuracy	1.76	1.82	
Easy to use (low mental effort)	1.50	1.65	
Clear structure of content	1.80	1.23 (Better)	
Website accessibility	1.74	1.99	
Helps in learning e-banking	1.77	1.87	
Intention to use in future	1.79	1.75	

Both bank types show high satisfaction with digital banking. Public banks slightly outperform private banks in speed and environmental aspects, while private banks have better ratings for structured content and user interface.

5.5. COMPARATIVE PERFORMANCE OF BANKS (2011–2020)

Table 5 Comparative Financial Performance of SBI and HDFC Bank (2010–2020)

Metric	SBI (Public Sector)	HDFC Bank (Private Sector)	t-value	p-value	Significance
Average ROCE	1.84	3.19	-4.983	0.004	Significant
Average Net Profit Margin (%)	6.18	21.14	-3.189	0.024	Significant
Average Return on Assets (ROA)	0.43	1.66	-2.949	0.032	Significant
Total Income (₹ in '000 Cr.)	Ranged from 5.20-20.42	Ranged from 13.03-27.91	_	_	Observable Fluctuation

Comparative financial analysis of SBI (public sector) and HDFC Bank (private sector) from 2010–2020 All over the past decade there is a clear difference between the public and private sectors in performance indicators. All three core indicators i.e., ROCE (3.19 vs. 1.84), Net Profit Margin (21.14% vs. 6.18%), and ROA (1.66 vs. 0.43) of HDFC over SBI are statistically significant (p-value < 0.05). SBI had significant variation across years in the total income partly due to volatile operating environment, whereas for HDFC total income was relatively stable. These results highlight the private sector's superior efficiency and profitability, probably due to flexible decision-making, technology investment, and consumeroriented tactics. The results also signal to policymakers and public financial institutions of the need for digitalization, improved financial performance criteria and customer engagement to effectively compete in the changing banking environment.

6. CONCLUSION AND IMPLICATIONS

The study concludes that digital banking has increased customer satisfaction significantly, especially among the customers of the private sector banks, due to superior efficiency, availability, easy-to-operate, and user-friendly digital interfaces. There were clear demographic links to the usage of digital services, with age, sex and educational attainment all strongly linked. Chi-square tests revealed that there is a significant customer demography and service efficiency relation of greater intensity in private banks than public banks. It indicates that, the private players such as HDFC have outperformed the public ones such as SBI in the ROCE (Return on Capital Employed), Net Profit Margin, ROA (Return on

Assets) while observing the financial performance analysis for the last ten years. These are clear reflections of the increasing need for digital transformation to improve customer experience and drive operational efficiency. Insights from this study has a loud and clear call to public sector banks to change their commonly known 'one-size-fits-all' challenging approach to go for more customer focused digital strategy by investing on high-end IT infrastructure and digital literacy programs. Policy makers and banks' management need to concentrate in customizing banking services among different categories of customers to realize the inclusiveness of digital banking adoption. Better training, easier digital platforms and more-dependable support systems might further bolster trust and use among more technologynaive consumers. Subsequent research may extend the current study with a larger sample of farmers from other Indian states could be taken to improve its generalizability. Developing more innovative studies on the effects of new technologies: artificial intelligence chatbots, blockchain, and biometric authentication within digital banking on trust and loyalty.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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