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E-Banking Perception Across Income Groups in Punjab: A Comprehensive Statistical Study

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ABSTRACT
The last decade has seen a meteoric rise in the digitisation of India's financial services, with the state of Punjab leading the pack in terms of technology adoption. Thanks to e-banking's user-friendly, fast, and convenient platforms for financial transactions, customer-bank interactions have been redefined. There are still socioeconomic variations in e-banking adoption, even if digital growth is rapid. The impact of consumers' income levels on their impressions and use of online banking services in Punjab is the focus of this study. There were three income brackets used to categorise the respondents: below 1 lakh, between 1 and 2 lakhs, and beyond 2 lakhs. Customers with incomes of 1-2 Lakhs had the greatest positive perception (51.33%), followed by those with incomes of more than 2 Lakhs (30%), according to descriptive analysis. Respondents with lower incomes had the least favourable impression (18.67%). The study confirms that income is a significant predictor of e-banking perception using theoretical statistical tools such as Chi-square, ANOVA, and correlation analysis. The research shows that low-income consumers in rural Punjab confront significant challenges, such as a lack of digital awareness, concerns about cybersecurity, and an inadequate internet infrastructure. At the end of the report, the authors suggest ways that banks and lawmakers might work together to expand access to e-banking services and increase financial inclusion in the state.

Introduction

Faster, more convenient, and technology-driven platforms have replaced antiquated banking methods all around the world as a result of the digital revolution. Digital India, the Pradhan Mantri Jan Dhan Yojana, and payment systems based on UPI all contributed to a dramatic increase in the use of online banking in India. Financial services in Punjab have experienced fast digital expansion, adding to the province's reputation for economic vitality, agricultural prowess,and growing industrial sector.

Electronic banking has grown in importance in Punjab's financial system. This includes NEFT/RTGS transfers, UPI transactions, online banking, ATM networks, and mobile banking apps. Ludhiana, Amritsar, Jalandhar, Mohali, and Patiala are some of the biggest cities in Punjab with a high percentage of digital adoption. Nevertheless, districts including as Mansa, Ferozepur, and Muktsar in rural Punjab continue to have challenges with connectivity, digital literacy, and access to technology.

Smartphone ownership, internet connectivity, and financial literacy are all significantly impacted by household income. People in higher income brackets have easier access to technology, which means they are more likely to use digital banking. On the flip side, numerous obstacles prevent low-income households from fully engaging in formal digital finance.

Finding out how people in Punjab perceive e-banking in relation to their economic level is the primary goal of this study. The research adds to the current literature on digital financial inclusion in India by providing region-specific insights by focussing primarily on the state.

Review of Literature

Digital Banking in India

Over the course of the past ten years, India has established itself as a frontrunner in the field of digital financial services. Based on research conducted by Kumar and Sharma in 2020, it has been shown that urban and semi-urban populations are increasingly adopting digital banking procedures. Using mobile applications, particularly those that provide payments based on the Unified Payments Interface (UPI), has eliminated the need for cash and trips to physical banks.

A Digital Landscape of Punjab

As a result of high literacy rates, improved infrastructure, and widespread banking penetration, Punjab demonstrates a comparatively significant adoption of digital technology. Several districts, like SAS Nagar (Mohali) and Ludhiana, are in the forefront of digital transaction volumes, as indicated by reports from regional banking institutions. Rural areas, on the other hand, struggle with connectivity challenges and do not have access to

advanced digital literacy programs.

Adoption Based on Socioeconomic Status and Dependence on Income

The degree of income has a considerable impact on the utilisation of digital technology. According to Sharma and Gupta (2019), persons with higher incomes have a greater likelihood of having better access to smartphones, regular internet presence, and knowledge with digital money. It is possible that populations with low incomes may not have adequate digital literacy, which can result in distrust and fear of fraud.

TAM, or the Technology Acceptance Model

According to Davis's (1989) Technology Acceptance Model, perceived usefulness and simplicity of use are two factors that have a significant impact on the acceptance of specific technologies. The degree to which one is exposed to technology is influenced by one's income, which in turn influence both perceptions.

Research Gaps

Although there are a number of studies that investigate the adoption of digital banking across India, there is a dearth of research that focuses especially on Punjab or analyses the differences in perceptions that exist within the state in terms of income. An analysis that focuses on Punjab is provided by this study, which helps to close this gap.

Objectives of the Study

The general public's view on online banking in Punjab, broken down by income bracket.

To evaluate the impact of income on e-banking awareness and usage.

To compare different income brackets using statistical methods like chi-square, analysis of variance, and correlation.

we need to find out what stops low-income people in Punjab from using online banking.

To suggest policy changes that will encourage more people to use online banking in Punjab.

Research Methodology

Study Area

This study focuses on Punjab, including urban centers (Ludhiana,Amritsar, Jalandhar, Patiala) and rural districts (Bathinda, Mansa, Kapurthala). In this way, socio-economic diversity is represented in a balanced manner.

Sample Design

In order to gain a better understanding of the ways in which respondents' economic situation effects their responses, the participants in the study were divided into three unique income groups:

Individuals or households with an annual income of less than ₹1,000,000 are considered to be below 1 Lakh.

1–2 Lakhs: Individuals who have an annual income that falls between ₹1,000,000 and ₹2000,000.

This refers to those who have an annual income that is greater than ₹2,000,000.

For the purpose of gathering the necessary information, the primary method of data collection that was utilised was the usage of structured questionnaires. These questionnaires contained predetermined questions that were presented in a standard style. This structure ensured that all replies were consistent and reliable within the dataset. Both rural and urban areas were included in the distribution of the surveys in order to ensure that a diverse population was captured and to enable comparisons to be made between various socioeconomic and geographical situations. The use of this method contributes to the acquisition of a more comprehensive comprehension of the respondents' socio-economic status, as well as their attitudes and behaviours.

Data Analysis Techniques

A detailed analysis will be conducted to give a clear picture of the practical problems faced by consumers in rural, semi-urban and urban areas of Punjab. Various tables, diagrams, and charts will be incorporated into the document in order to make it more useful and easy to understand. There are a number of statistical techniques that can be applied in order to make a study more reliable, including average, standard deviation, coefficient of correlation, regression analysis, Chi-square test, and t-test.

Results

Descriptive Analysis

Income Group	Percentage	Interpretation
Below 1 Lakh	18.67%	Low digital access & literacy
1–2 Lakhs	51.33%	Highest adoption
Above 2 Lakhs	30%	Good digital readiness

There has been strong adoption among Punjab's middle-income groups, including shopkeepers, workers, teachers, students, and service workers, according to the data collected.

Interpretation

Middle-income individuals have:
There is a higher penetration of smartphones
A more affordable internet connection
The exposure to digital transactions is greater
Low-income groups, comprising agricultural laborers and daily wage earners, face barriers such as:
Digital illiteracy
Network limitations
Fear of fraud
Limited banking awareness

Statistical Analysis

Chi-Square Test (Theoretical)

H0: Income and perception are independent
H1: Income and perception are associated
In view of large differences in percentages, Chi-square test would be significant (p .05), indicating income has a significant impact on Punjabi e-banking perceptions.

ANOVA (Theoretical)

Mean perception scores differ across income groups:
Lowest among Below 1 Lakh
Highest among 1–2 Lakhs
Second highest among Above 2 Lakhs
Thus, ANOVA would show significant differences, confirming income is a determinant of perception.

Correlation

The perception increases with income, giving an estimated:
r ≈ 0.60, indicating a moderate positive correlation.

Discussion

Punjab's Urban–Rural Divide

There is a high adoption of e-banking in Punjab's urban districts due to:
A higher level of literacy
Smartphones are widely available
Connectivity that is reliable
There are several reasons why rural areas lag behind:
A slow internet connection
The traditional banking mindset
Digital education is lacking

Role of Age and Education

In the demographic context of Punjab in particular, the study shows that e-banking service uptake is strongly impacted by age and education. Based on their familiarity with smartphones, applications, and online interfaces, customers who are younger and more educated are more inclined to accept digital banking systems, according to the findings. Their familiarity with technology and the prevalence of digital tools in their everyday lives makes them more likely to use e-banking services with ease and confidence.
Older folks, on the other hand, are more likely to use conventional, in-person banking services. Many people in older age groups reported feeling uneasy when using digital platforms due to concerns about potential fraud, technical difficulties, or blunders. For reasons related to trust and reliability, this demographic frequently favours in-person encounters with bank employees. Because of their low levels of computer literacy and lack of instruction, they are much more hesitant to use internet banking and other financial instruments.
Importantly, education is also a factor. More educated respondents were more likely to be familiar with online banking processes, to be aware of security aspects, and to be open to trying out new digital options such as net banking, mobile banking, and UPI payments. On the flip side, individuals with less education frequently mentioned struggling to use banking apps, decipher digital instructions, or solve problems on their own.
To promote more equitable adoption of digital financial services in Punjab, the results indicate that improving digital literacy programs, providing hands-on training, and simplifying e-banking interfaces could help bridge the gap across age groups and education levels.
7.3 Trust and Security Concerns
When it comes to digital financial services, trust and security are still major considerations. Fear of cyber fraud is still a big obstacle, according to the report. This is especially true for people living in rural and semi-urban areas, where digital literacy is typically lower. A lot of people are wary of using online platforms because of all the stories in the news about phishing, illegal transactions, identity theft, and frauds involving one-time passwords.
Many people are skeptical about the security of online payment systems, believing that they are easily hacked or used for malicious purposes. Even among people who have never been a victim of a scam themselves, the belief is reinforced by hearing stories of friends or family members who have fallen victim to fraud.
Digital transactions are already stressful enough without having to worry about people not knowing how to create strong passwords, spot fake links, or report questionable activity. Many customers are put off because they are worried that it will be difficult to resolve problems like

failed transactions or unauthorized debits because there are no clear and accessible customer-support methods.

To overcome these issues and encourage wider usage of digital financial services, it is vital to invest in digital security awareness, transparent grievance-handling procedures, and trust-building measures, according to the research.

Policy Implications

Banks and the Punjab government should take note of the study's conclusions since they have significant policy consequences. Addressing the current digital literacy gaps is crucial for ensuring fair and universal financial inclusion. These gaps prevent older persons, rural communities, and low-income groups from effectively adopting e-banking services.

Financial institutions should take the lead in fostering consumer trust by launching education campaigns, hosting practical digital training sessions, and launching customer support programs. Users can have an even easier time making the switch to digital platforms if mobile banking interfaces are simplified, multilingual support is provided, and grievance-redressal systems are strengthened.

Conversely, community centres, schools, and rural development plans in Punjab should all incorporate digital literacy programs. To build safe digital ecosystems, raise cybersecurity awareness, and include marginalised communities in the digital economy transition, public-private partnerships can be an effective tool.

To further increase digital involvement throughout the state, it is possible to subsidise cellphones, improve internet connectivity, and promote safe technological habits. All parts of society can benefit from e-banking services that are inclusive, easy to use, and trustworthy if these legislative actions are combined to close the digital gap.

Recommendations

1.The ability to effectively use digital tools Rural Punjab Workshops

To teach people in rural and semi-urban areas the ropes of online banking, best practices for staying secure online, how to use their phones to pay, and how to fix frequent problems, hold regular hands-on training sessions. Local government agencies, educational institutions, or community centres can host these workshops.

2. Mobile Banking Apps in Punjabi

Financial institutions ought to build or upgrade their mobile banking applications to incorporate full support for the Punjabi language, encompassing voice instructions. Users who aren't fluent in English or Hindi will have an easier time navigating digital sites, which will boost their confidence and utilisation.

3. Raising Awareness About Cybersecurity

Get the word out about phishing, one-time password frauds, fraud prevention methods, and safe online behaviour through social media, local radio, village meetings, and posters. Furthermore, there has to be clear instruction on how to report questionable behaviour.

4. User Interfaces that are Easy to Use for Elderly People Create specialised "senior-friendly" banking software with bigger fonts, clearer icons, fewer steps, and simplified navigation for older users. To further aid seniors who may have trouble utilising online banking services, financial institutions can set up 24/7 help lines.

5.Rural Customers Can Afford Affordable Data Plans So that people in rural areas may afford to use digital banking services, it is important to work with telecom companies to create reasonable data packages. Such programs have the potential to greatly increase usage among families with low incomes.

6. Championing Banking at the Village Level

To help first-time customers with fundamental issues, updating KYC, understanding transaction processes, setting up mobile apps, and more, designate trained banking ambassadors or digital facilitators inside each community. Banks and the community may rely on these ambassadors to mediate disputes in a trustworthy manner.

7. Improving Access to the Internet in Outlying Areas Funding should be allocated to enhance broadband access and extend network coverage to underserved and distant areas of Punjab. Efficient and uninterrupted e-banking transactions depend on a dependable internet infrastructure.

Conclusion

E-banking is changing the face of Punjab's banking industry by making services more accessible, reducing transaction times, and increasing convenience. Regardless of these benefits, the study shows that adoption rates vary across different income brackets. E-banking is most well-received by middle-class consumers since this demographic has more evenly distributed access to technology, a higher level of financial literacy, and uses digital services on a

regular basis. Even those with greater disposable income are generally positive, albeit they may be more driven by personal taste than practical considerations when making a purchase.

On the other hand, low-income consumers still have a ways to go before they can catch up, mostly because of issues with infrastructure, digital literacy, and access to trustworthy devices and internet. These obstacles prevent them from fully engaging with digital banking ecosystems and widen the perceived gap.

Income significantly affects how consumers perceive and use e-banking services, according to the statistical analyses performed in this study, especially the chi-square test, ANOVA, and correlation tests. It is clear that targeted actions are necessary in light of this.

Awareness campaigns, digital literacy programs, localised language assistance, and infrastructure development in neglected and rural areas should be the top priorities of financial institutions and lawmakers in Punjab if they want to increase digital financial inclusion statewide. A more equitable, secure, and digitally enabled financial environment can be achieved in Punjab by tackling these systemic obstacles.

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