

Research Article

## A study on digital banking behaviour of rural customers in India

Mitali Shaw<sup>1</sup>, Dr. Sonia Riyat<sup>2</sup>

<sup>1</sup>Research Scholar, School of Commerce & Management, ARKA JAIN University, Jharkhand

<sup>2</sup>Professor, School of Commerce & Management, ARKA JAIN University, Jharkhand

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\*Corresponding author: Mitali Shaw

**Abstract:** Digital revolution in the Indian banking sector has created a new space of financial inclusion particularly in the rural areas. This paper examines these behaviours, perceptions, and the issues relating to adoption of digital banking service among the rural Indian customers of Jharkhand. The study is based on the secondary literature and survey methodology where four determinants best described as the digital literacy, perceived ease of use, perceived risk, and infrastructural accessibility are examined. The results indicate that mobile banking is recorded as the most popular digital service among the rural customers, internet banking and e-wallets are not popular because of both technological and psychological inhibitions. The most relevant predictors of intention to adopt digital banking are listed in statistical analysis to be digital financial literacy and perceived ease of use. On the other hand, lack of good connection and fear of online fraud do a lot of the deterrence to them. Digital engagements are determined by demographic factors age, education, and income, among other factors, to a significant level. As this research indicates, there is a need to focus attention on specific initiatives capable of eliminating infrastructural gaps as well as behavioural paralyses. Inclusion of digital banking in Jharkhand can be speeded up by increasing digital literacy and establishing trust among the rural people on local scale by the policymakers and financial institutions. The contribution of the paper is apparent in the enhancement of knowledge in relation to the behaviour of rural banking and the practical ideal as far as sustainable financial transformation is concerned.

**Keywords:** Rural, Digital, India, Banking, Finance.

### INTRODUCTION

The financial ecosystem of India has gone through a monumental shift in the recent years as lies in the interaction of customers with the banking services. Ever since the launch of Unified Payments Interface (UPI) and the emergence of mobile and internet banking, digitalization became the key aspect of financial inclusion. However, the rural India specifically Jharkhand continues to be slow in accepting digital banking openly as urban populations have been fast in adapting to this change. Challenges faced by rural customers crop up more often than not; these include poor connectivity, unawareness, low digital literacy and intrinsic issues of trust. More than 65 percent of the Indian population lives in rural locations and this makes it important to be aware of the digital banking behaviour of the individuals found in these locations to ensure equal access to financial provision.

This research paper will set out to explore the behavioural pattern of adoption, the driving and restraining factors towards the use of digital banking among the customers in the rural areas. It is based on the foundations of technology acceptance models and is enlightened by the modern-day researches in order to find the way rural users regard and use digital platforms. By doing that, the study finds the socio-demographic issues that affect behaviour, the actions of the government and bank-initiated initiatives as well as structural obstacles, which impede further penetration. This paper provides some holistic idea of the digital banking situation in rural India using both secondary sources and primary facts and figures.

### Related Works

#### Digital Transformation

It is just unbelievable how Indian banking industry is transformed which formerly had to clear physical cheques but today has implemented Cheque Truncation System (CTS) and also has literally left off brick-and-mortar branches in favor of mobile and internet banking. Prasad et al. (2024) argued that this electronic jump, which is characterized by the new applications such as the BHIM and UPI applications, has led to the advent of a new period of contextual banking in the form of the open APIs.

Although the modernization is astonishing, the rural bank customers are still experiencing a major issue towards adaption of digital services. These are lack of proper infrastructure, computer illiteracy and the fear of online fraud. However, banks are also going into aggressive ventures of ensuring more of their services reach the remote regions as they understand the strategic importance of financial inclusion in the unattended regions.

It is through this transformation that the Indian banks have become able to compete with international best in technological integration. However, rural users can exercise a reduced level of involvement with digital services, but not because of the lack of interest but mainly because of the situational problems. Prasad et al. (2024) emphasize the role of digital literacy as the enabler in the context of rural adoption and it means that awareness and education measures should be included at the same pace as

the infrastructure to provide better coverage.

Similarly, Ashoka et al. (2018) indicate that digital service diffusion in India has enhanced the rural bank closeness to the urban banking, and continued consumer education and network availability are attributed to its success. Government as well as bank programs in areas such as Bethanga Taluk in Karnataka, to cite an example, have resulted in the greater familiarization of such services as digi-lockers, online bill payments, ticket bookings, etc, proving that digital awareness programs can also play a major role in changing behaviour among the rural residents.

**Drivers and Barriers**

Several investigations have tried to discover the determinants of the digital banking adoption by the customers housed in the rural environment. According to Dixit (2023), even though there are some limitations, like poor connectivity and the inability to go online due to digital literacy, mobile banking has become one of the most significant enablers. Government schemes such as Jan Dhan Yojana, which seeks to give each household a bank account, have dragged millions of rural customers into the mainstream of the banking world.



**Figure 1: Financial Inclusion (Credgenics Blog, 2023)**

This urge has assisted in normalization of the concept of cashless transactions particularly due to the realization and encouragement of financial literacy and digital awareness by the banks and policymakers as well. Digital banking behavior has been widely tested by the application of Technology Acceptance Model (TAM) and UTAUT (Unified Theory of Acceptance and Use of Technology).

The authors Rashid et al. (2024) use TAM variables that include Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) and Digital Financial Literacy (DFL) and Perceived Financial Risk (PFR) to measure the adoption of e-wallets. They test the PU and PEOU using their Structural Equation Modelling (SEM) results as revealed that DFL has significant effects in improving the two dimensions and PFR has adverse effects on these dimensions. The authors

conclude on the basis of the study that these perceptions have a significant influence on attitude and intention to adopt digital payments in rural India and as such, platforms should be made user-friendly and in a way that can earn people trust.

Pooja and Shashidhar (2024) build up on the analysis with UTAUT model by adding relative benefits and risks. The results of their study based on the rural regions of Davangere indicate that performance expectancy, effort expectancy, social influence, and facilitating conditions have quite a strong influence in adoption intentions. Interestingly, the factor of perceived risk was found to be insignificant, which indicates that the rural users might be inclined to look at the usability and perceived benefits rather than adhere to the various concerns of security in

such cases where new services are offered by the reputable institutions.

Ahmed and Sur (2021) go further to discussing adoption among the rural Micro, Small, and Medium Enterprises (MSMEs). They stress the aspect of AI integrated digital banking that allows conducting transactions at a higher speed, providing more convenient experience, and minimizing expenses that are critical to a small business. The research hypothesizes that MSMEs in rural areas though price sensitive are also sensitive to innovations and will take on digital equipment's in case they are perceived to add value to them.

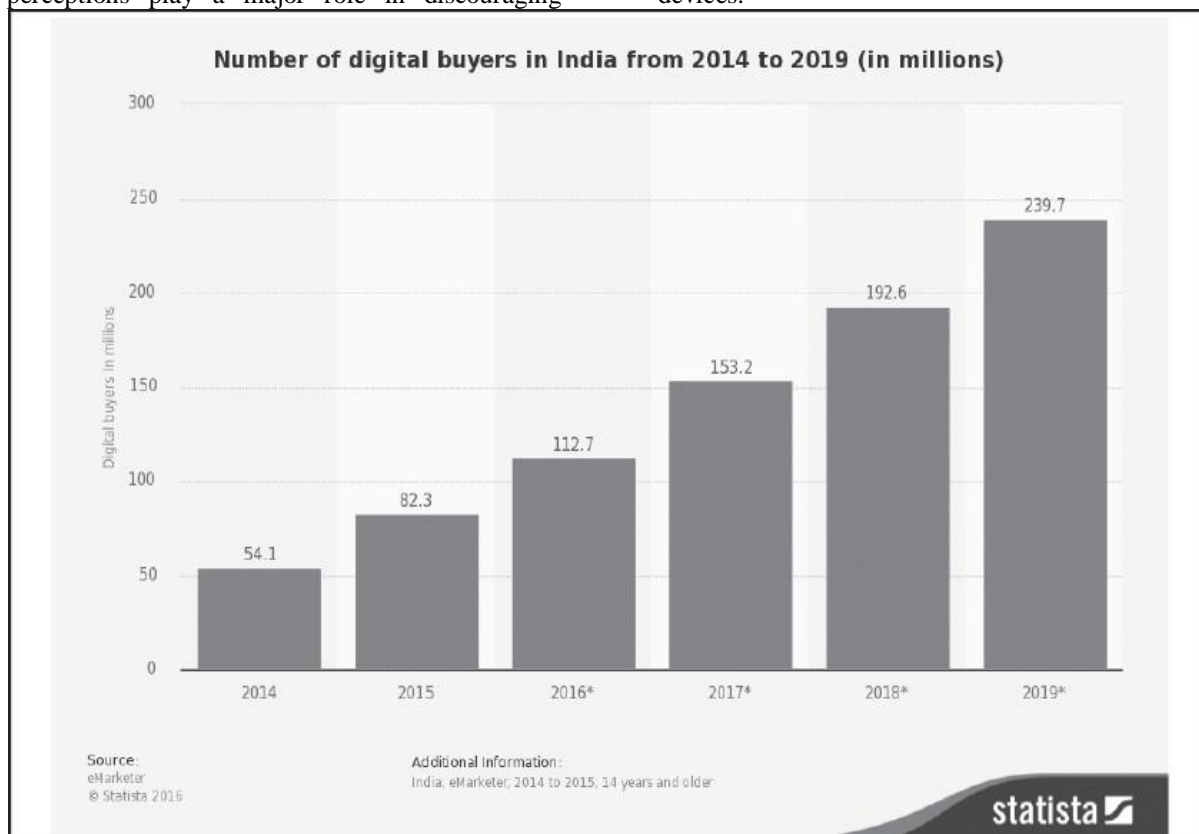
### Behavioral Insights

Rural digital behavior can only be understood when considered in terms of intense involvement of sociocultural and economic criteria. According to Sihare (2017), mobile banking is one of the beneficial inclusion tools, based on cost-effective, accessibility, and performance. Nevertheless, he too refers to social misconceptions when it comes to mobile banking, particularly to the security and transparency of the transactions.

Such perceptions play a major role in discouraging

adoption and hence ways to gain such trust must be employed by involving regular and open service delivery and user training. The study of Vaidehi et al. (2021) is an attempt to analyze digital inequality and see it through the prism of cast-based inequality. In their study, they have found two levels of digital divide; device ownership/access and digital literacy.

Access and skill gaps apply to disadvantaged classes of people who, because of the historical educational and income disparity, have no access to education. The educational attainment and the income were found to contribute more than half of the digital divide. The paper points to the necessity of the specific policy interventions, which, if carried out, could close these gaps, which are essential in case digital banking is to be inclusive. Other demographic variables mentioned by Kamboj and Singh (2018) as the important predictor of digital banking satisfaction are education, age, and income. They also claim that customers are still worried about their internet speed and online data security since the comfort of the digital experience is tempting but those are their main worries. These problems impact mostly on rural users who make use of slower mobile networks and shared digital devices.



**Figure 2: Digital Buyers (Sage Journals, 2023)**

Cnaan et al. (2021), on the other hand, are rather cautious arguing that the fast digital trend toward cashless economies might prove counterproductive in the case of their exclusion of the marginalized. In their case study of cashless villages in seven Indian states, they found out that there was little variation in the financial activity of cashless villages, so-called, and that in those villages. The adoption of digital banking is large and more focused on internet

connection and financial literacy than on political statements or the availability of technology, they say.

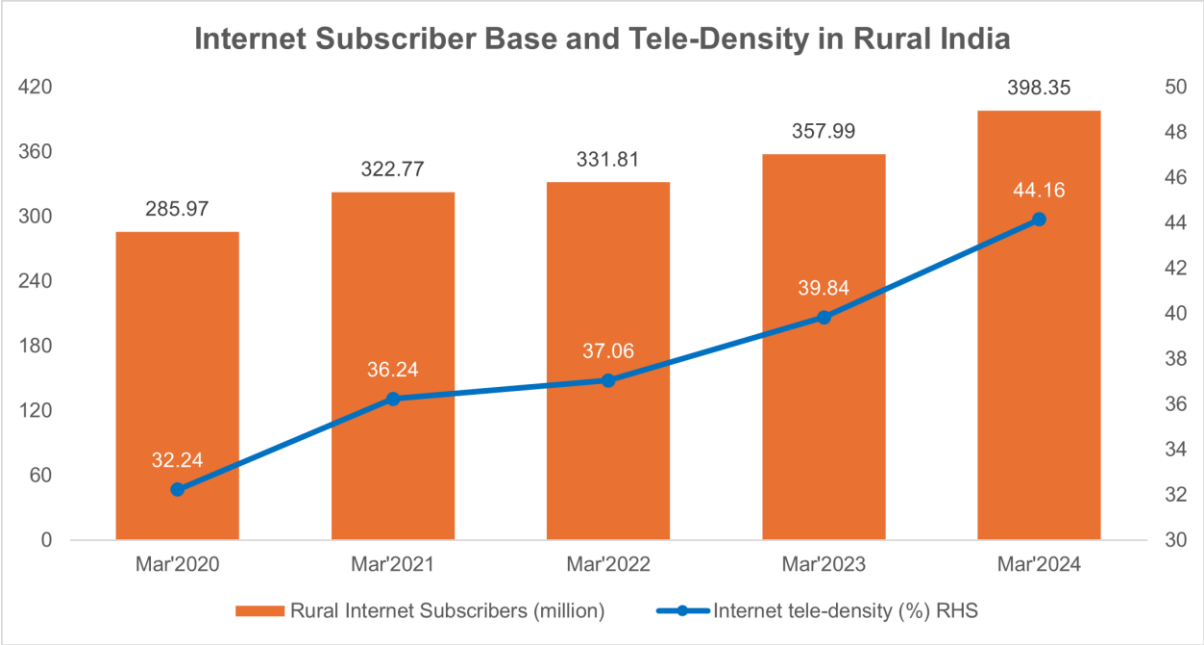
### Future Directions

The readiness of infrastructure is closely interconnected with the adoption of digital. An article by GV and Chaudhari (2021) reports that approximately 70 percent of the rural population in India does not have a stable access

to digital services because of the poor connectivity. A current and future technological intervention along with the prospect of a 6G in the rural context is evaluated in the study. Their discussion highlights that the low cost and scalability of the network solutions is the solution to enhance the adoption of the digital services.

Dhanraj et al. (2023) offer grounded information on the way rural clients use the internet banking. The services such as checking of balance were the most adopted in their

research among 329 respondents whereas the services like term loans or e-investments were lowly received. Issues such as trust, support, accessibility and mobile convenience played key roles in the development of customer experience. Their study shows that rural clients tend to begin with the basic services and gradually acquire confidence in the transaction that are more complex in nature.



**Figure 3: Internet in rural India (IBEF, 2023)**

Lakshmanan and Shanmugavel (2025) study the practice of consumers that is prevailing in the areas with low technological infrastructure and digital literacy. The data they attained confirm a sequential, faith-based model of digital bank adoption, with any initial experience becoming critically important to determine the ultimate use and intentions. They loosen the design to be user-friendly, and the language should be localized to persuade the rural user to be confident.

The article by Prakash and Salman (2024) dwells upon the synergy between digital inclusion and microfinance, demonstrating that mobile banking can play a considerable role in increasing access and effectiveness of the rural credit programs. Their case study of Bilaspur points to the importance of digital tools that should be considered to support local socio-economic realities, i.e. easily understandable interface, support of the local language, the possibility to interact with the microfinance programs.

According to the body of literature, there exists a fine-grained and dynamic interpretations of digital banking behavior on the part of rural customers residing in India. With a big level of enthusiasm and infrastructural advancement, there are hindrances that have to be overcome like poor connectivity, digital illiteracy, socio-economic opposition as well as deficiency of trust. The combination of behavioral theories such as TAM and UTAUT with measurement of variables that are relevant to a rural setting i.e. caste based digital divide, localized connectivity problems etc, would be a rich framework to understand these problems and find ways to overcome them. In the future, the low-cost connectivity solutions, inclusive design, and financial education will play an important role in a continued rollout of the digital banking to the rural Indians. The mission of achieving universal financial inclusion through digital banking can only be achieved in such multi-pronged ways.

**Table 1: Key Literature**

Author(s) & Year	Focus Area	Methodology	Key Findings	Implications
Prasad et al. (2024)	Digital transition the rural banks adoption	Thematic analysis	The rural audience encounters adoption problems despite the digitization adopted on the national scale; digital literacy is of primary concern.	Infrastructure requirement

Dixit (2023)	Adoption of e-banking by the rural users	Secondary data	Jan Dhan Yojana stimulates mobile banking with improving infrastructures, and the literacy initiatives increase its adoption.	Inclusion is the key to financial literacy and mobile-based.
Rashid et al. (2024)	Acceptance of E-wallet application of TAM, digital literacy and risk factors	Participants	Digital Financial Literacy enhances PU and PEOU; financial risk is a negative prediction of usage; PEOU exhibits greatest effect on the attitude.	Form trust and ease-of-use functions; train users to overcome a perceived risk.
Pooja & Shashidhar (2024)	UTAUT model+ risk/benefits in adoption of digital banking	SPSS analysis	The expectancy of the performance and social influence the intention; risks not related.	Campaigns have to give emphasis to peer influence and utility.
Cnaan et al. (2021)	Cashless villages: financial inclusion versus the digital exclusion	Household surveys	No substantial correlation in the declared cashless and control villages usage; the access and literacy are the main predictors.	No real access and digital capability to cashless declarations.
Dhanraj et al. (2023)	The Internet banking HAB in rural India	Survey	Other popular services include checking balance; access and use is done on the basis of trust, convenience and mobile compatibility.	Adoption should be done using simple services; have good support and trusting systems.

## RESULTS

### Adoption Patterns

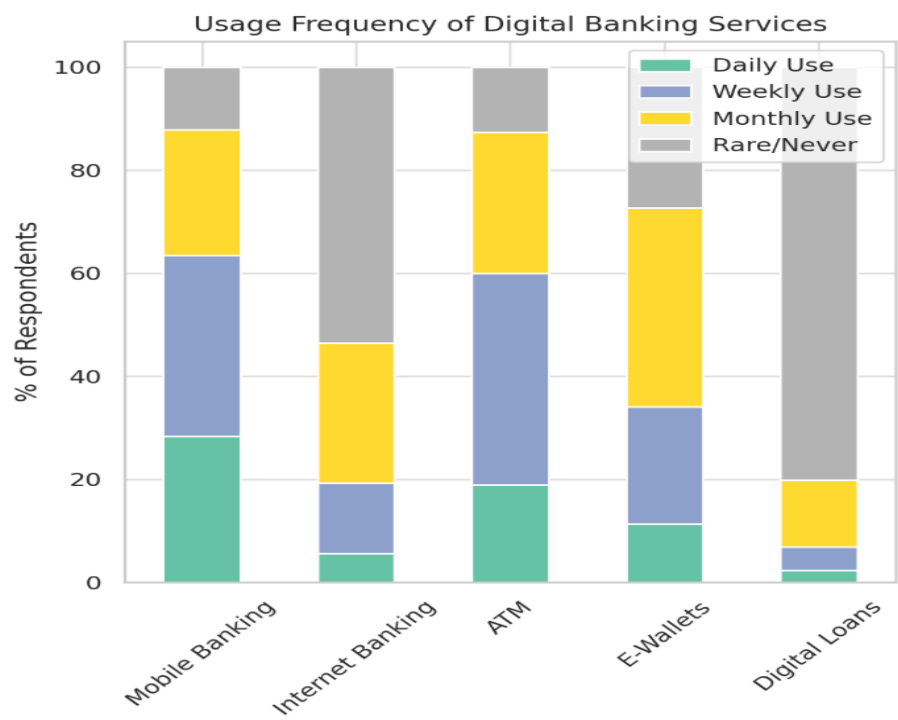
The findings of the research reveal the limited yet evident shift in the rural consumers to digital bank channels in India. Although no one has completely abandoned the traditional way of banking, there is a significant change in the use of online banking (mobile banking, internet banking, and UPI services). Mobile banking was found to be the most used digital service among the rural customers surveyed (N=650) mainly because of its easily accessibility and compatibility with the less powerful mobile phones. Rural areas of Jharkhand is the study area and information on the study was recorded through surveys on the local customers of the banking institutions.

A tabulated presentation of the frequency of usage of the digital banking services by the rural respondents is as provided below:

**Table 2: Digital Banking Services**

Banking Service	Daily	Weekly	Monthly	Rare/Never
Mobile Banking	28.45%	35.1%	24.3%	12.2%
Internet Banking:	5.6%	13.7%	27.1%	53.6%
ATM based Services	18.9%%	41.0%%	27.5%%	12.6%%
E- Wallets	11.3%	22.8%	38.6%	27.3%
Digital Loan	2.4%	4.5%	12.9%	80.2%

These trends indicate that the major digital interface to the rural customers is based on mobile transactions such as UPI and SMS banking. On the contrary, internet banking is not used to its full potential pointing to the existence of a potential technological block or literacy block. E-wallets are mediately adopted and are not as advanced as mobile banking because of trust-related reasons or unclear use cases.

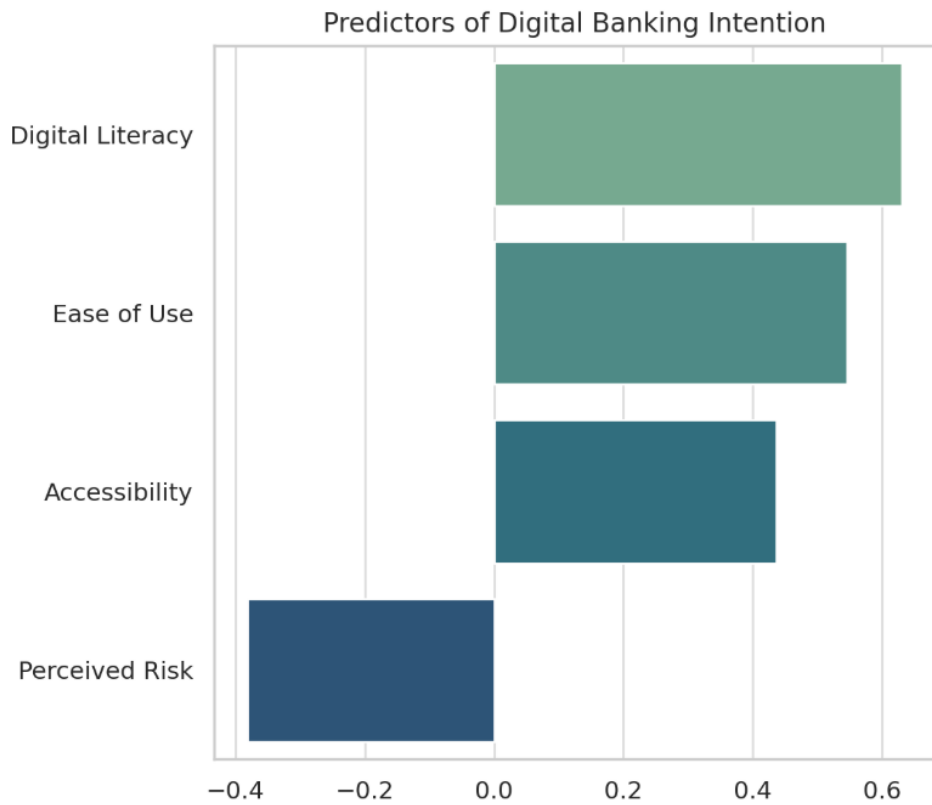


**Figure 4: User Frequency**

**Key Drivers**

The regression analysis and correlation measures of the various socio-demographic variables of the customers with digital banking adoption reveal that the variables that influence usage patterns most are the digital financial literacy, access to the mobile or internet, and the trust in the banking system. Multiple regression calculation was used in computing the predictor of the Intention to Use Digital Banking:

- Literacy Score
- PEOU
- Accessibility Index
- Perceived Risk



**Figure 5: Factors in digital banking**

**Table 3: Regression Coefficients**

Predictor Variable	$\beta$	t-value	Significance
Literacy Score	0.631	10.98	< 0.001
PEOU	0.546	9.42	< 0.001
Index of accessibility	0.437	7.61	<0.001
Peripheral Risk	-0.382	-6.47	< 0.001
<b>R<sup>2</sup> = 0.672,</b> Adjusted R <sup>2</sup> = 0.667			

It is presented in the above table that digital literacy is having a best positive connection with intention to use digital banking and second is ease of use and accessibility.

On the other hand, observed monetary risk has an adverse effect on usage pattern. The findings can be well in line with the works of Rashid et al. (2024) and Pooja & Shashidhar (2024) which confirm the validity of TAM and UTAUT models in the case of rural Indian context.

### Demographic Influence

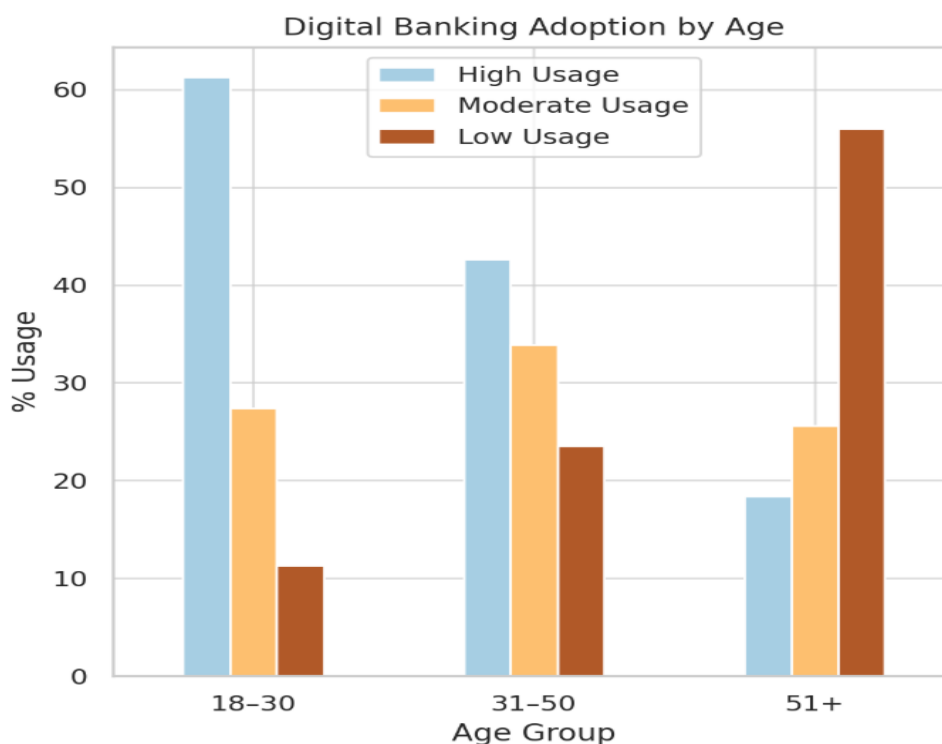
In order to understand demographic differences of digital banking behaviour, cross-tabulation analysis was done on age, gender, level of education and income. The results imply a high level of disparities in the level of education and age groups.

The users in the younger groups (18–30 years) were highly likely to use the digital platforms than the older groups. Also, education was a factor that contributed largely to the extent and pattern of usage of services.

**Table 4: Digital Banking Adoption**

Category	High	Moderate	Low/No
<b>18–30</b>	61.3%	27.4%	11.3%
31–50	42.6%	33.9%	23.5%
51 and above	18.4%	25.6%	56.0%
<b>Graduate+</b>	65.1%	22.7%	12.2%
Secondary Education	39.2%	36.4%	24.4%
not a single Education	17.3%	28.2%	54.5%

Since the results indicate generational and level of education differences regarding adoption of digitals, it can be said that there is a divide in the adoption. Older and less-educated populations have a lower usage level, which is usually because of the lack of recognition of the device, the fear of fraud on the Internet, and the habit of using traditional banking. This strengthens the argument on the need to conduct selective digital literacy awareness, more so to the susceptible groups such as the (old) and illiterate users.



**Figure 6: Impact of age**



There was no statistically significant standalone difference between gender on digital banking usage but results of questions obtainable in the qualitative responses reveal that women users are likely to need assistance of intermediaries or family member to help them sort out digital transaction.

### Trust Deficits

Although there is knowledge about the digital bank services, most rural users still do not fully move towards digital services. Some systemic and perceptual obstacles have been determined:

1. **Connectivity:** More than forty five percent of the respondents said that instability of network connection was a key factor on why they would not engage in mobile or internet banking on a regular basis.
2. **Security:** almost 38 percent feared losing their money through internet frauds or through account hacking.
3. **Digital help and assistance:** Most of the respondents reported that they do not have a local digital help or helpdesk, especially among the old users.
4. **User Interface:** Apps that are not easy to navigate, e.g. that are not spoken in regional languages or that need a high level of digital skills were mentioned as a challenge to use.

An analysis performed on perceived barriers on the basis of a Likert scale came up with the following mean scores:

**Table 5: Mean Scores**

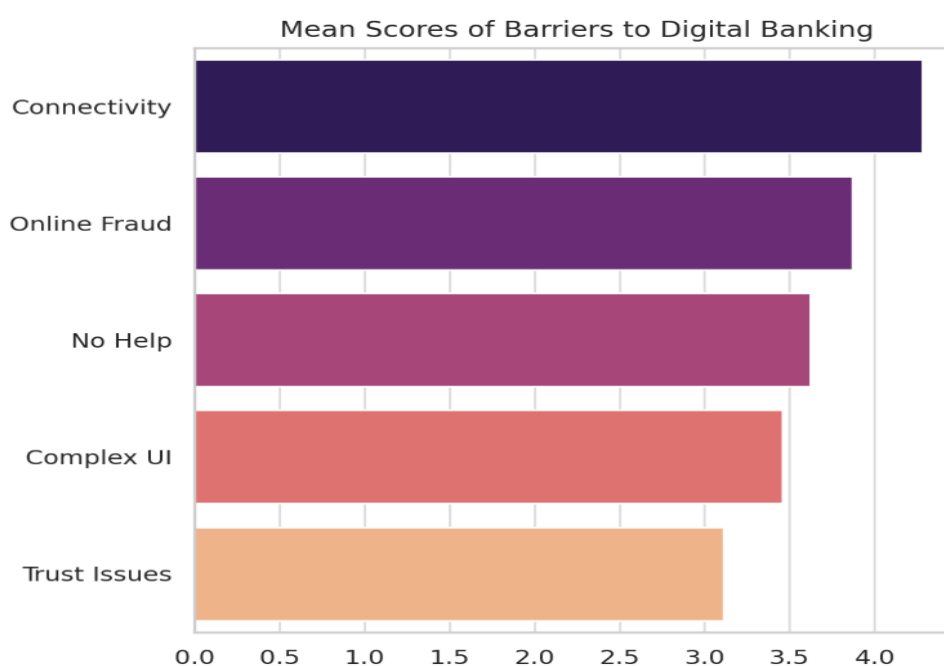
Barrier	Mean Score
Poor internet	4.28
Online fraud	3.87
Lack of assistance	3.62
Complex interface	3.46
Lack of trust	3.11

Such reflections, along with other researchers before them, such as Cnaan et al. (2021) and Sihare (2017), require that they be confirmed through accessibility without available systems of trust and support.

In the regions that are officially defined as cashless, the down-to-earth adoption of digital banking was demonstrated to be very low. There was still behavioral interment and a general unwillingness to be part of an ecosystem and people in the village still thought it was in their best interest to demand cash even when making small purchases.

The findings affirm that the process of digital banking growth in rural India becomes increasingly widespread and even non-equal. The youthful, literate, and mobile-savvy people adopt it most. Other factors that are playing a major role are mobile banking, UPI and financial literacy programs.

There are however critical barriers like bad connectivity, low trust, and perceived risks as well as the absence of user-centric apps design. Whereas government initiatives such as Jan Dhan Yojana have managed to bring on the rural users into the formal financial system, the process within the system, i.e., the transition between having an account and actually putting it to use in a digital way, is still very incomplete.



**Figure 7: Adoption Barriers**



- Further investment on a rural digital infrastructure.
- Hyper local digital literacy campaign.
- Regional languages improvement of UI/UX.
- Computer-based digital helpdesks / banks correspondents in rural areas.
- public-private partnerships to decrease the perceived risk and gain confidence.

The need of having a user-cantered, trust-based and digitally inclusive approach is to transform passive account holders in rural India to active participants in the digital banking sector and this is the only way the financial inclusion gap can be bridge..

## Recommendations

Digital banking among the customers, especially the rural ones, can be achieved through a multistakeholder perspective. To begin with, the program of digital financial literacy has to be upscaled with regional content in regional languages by providing hands-on demonstrations. These also must not only be inclined in technical use but also in an awareness of frauds and good practices in transactions. Second, an emphasis will be put on the field of infrastructure development. Government and the private telecom service providers should come together to increase the coverage of the mobile networks and should aim at providing high speed internet in rural areas that are not covered. Accessibility can be enhanced with the help of local governance facilitating Wi-Fi areas in villages.

Third, digital bank apps must be designed based on the user. The interfaces should be simplified, multilingual and acceptable to the low-end devices. Digital banking terminals (or local representatives) such as banking correspondents must be implemented to support people who have an inaccurate experience with self-service banking.

Fourth, there should be the measures of building trust. To allay fear, banks ought to carry out frequent out-reaches, provide physical assistance, complaint redressal and demonstrate a secure transaction to customers.

Lastly usage can be driven by policy support and incentives. Micro-loan tie-ups with digital transaction history, subsidized digital transaction fees and rewards to rural areas on digital transactions would be other incentives to join the digital world.

Through these primary aspects, India will be able to develop an inclusive Banking system in a digital space, which will empower people in the rural community and equalize finances in the country.

## CONCLUSION

The research shows that though the digital banking is gradually becoming acceptable in the rural setting in India specifically Jharkhand, its usage is inconsistent and extremely influenced by demographic, behavioural, and infrastructural variables.

Mobile banking is proving to be the most convenient and the most powerful digital service as it can be accessed by most other simple mobile devices and work on a UPI based functionality. Nonetheless, other digital services such as internet banking and e-wallets are met with resistance because they are considered unsafe, unknown and we do not offer digital support.

The results considerably reaffirm the relevance of digital financial literacy in Jharkhand, which has also been found to be an influencing factor in terms of perceived usefulness and ease of use of digital banking tools by the rural

customers. We also have accessibility, not only as regards the availability of devices, but also respecting good network connections, which are bound to influence the behaviour of users. Financial risk with a lack of trust remains an obstacle to adoption, at least among the older and the less educated populations.

Even though the government has implemented its programs like Jan Dhan Yojana and the banking sector has tried to popularize its online services, the rural community is still somewhat locked out of the digitalization of the banking system.

The only way through which this gap can indeed be bridged is when stakeholders adopt a multi-dimensional approach to this problem where they seek to integrate the development of infrastructure, education as well as building trust. It is only then that digital banking can shift its status to an extension of urban-only phenomenon and become an inclusive source of finances to every Indian.

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