

# THE ROLE OF FINTECH IN ENHANCING FINANCIAL INCLUSION IN RURAL SINDH: AN EMPIRICAL ANALYSIS OF ACCESS, USAGE, AND ADOPTION OF DIGITAL FINANCIAL SERVICES

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## Abstract

The socioeconomic, structural, and cultural factors influencing the uptake and active use of Financial Technology (FinTech) platforms in Sindh, Pakistan's rural areas are examined in this study. This study evaluates the structural gap between the availability of digital financial services and significant economic integration by synthesizing empirical data from recent institutional reports and peer-reviewed literature using an interpretive, secondary qualitative methodology. The results show a severe "paradox of access": active FinTech engagement is still limited to about 22% despite widespread regional 4G infrastructure development. Low levels of digital financial literacy, a deep-seated lack of institutional trust, and an urban-centric mobile wallet architecture that is unable to adapt to the seasonal, harvest-dependent cash flow patterns of smallholder agrarian economies are the main causes of this stalemate. Systemic gender inequities are further highlighted by intersectional analysis, which shows that deeply ingrained patriarchal household systems significantly restrict autonomous mobile device ownership and result in "double exclusion" for rural women. The study concludes that in order to meet the State Bank of Pakistan's (SBP) strategic goal of 70% digital financial inclusion by 2030, localized, gender-sensitive financial literacy programs and harvest-aligned digital credit models must take precedence over macro-level network expansion.

## 1. Introduction

### 1.1 Research Gap

While current research focuses primarily on the development of financial technologies at the national level, there are still significant gaps in adapting these technologies to the realities of rural Sindh. Existing financial technology products often target urban customers with fixed monthly incomes and do not consider the recurring, crop-related income of rural farmers. Furthermore, the precise relationship between digital device ownership and local cultural gender norms in Sindh remains poorly understood.

### 1.2 Background

Fintech is driving the digital revolution in the global financial sector. In Pakistan, the informal economy has long dominated, and fintech offers an effective solution to overcome the limitations of the traditional banking system. This is especially important for young Pakistanis (aged 18-40), who form the backbone of the country's economy. Sindh province's economy is largely based on agriculture and animal husbandry, but residents feel deeply marginalised due to the lack of bank branches and informal lending institutions with

high interest rates. Although the State Bank of Pakistan (SBP) has released a financial inclusion policy (2023-2028), the transformation of the financial system in rural Sindh remains uneven.

The global landscape of financial services has undergone a radical transformation with the advent of Financial Technology (FinTech) (Iqbal et al., 2025). This is also a fact that developing countries are facing difficulty in implementing online financial education within their country. This is due to the lack of financial education, low literacy rates, and insufficient knowledge of financial literacy. Within the global digitisation all over the world, including Pakistan, both the private and government organisations and departments are heading towards financial education among the new generation of the country. As a result, Pakistan is now implementing financial education with the help of government financial institutions in order to educate individuals regarding financial literacy. With the help of NIBAF (National Institute of Banking and Finance), the people are gaining insightful financial knowledge. In this way, people are educating themselves with online transactions and financial education. This is due to the fact that the majority of the population of Pakistan consists of youth aged between 18 and 40. That is why Pakistan is lucky to have the majority of its youth, who are considered the backbone of the country (Arzu et al., 2025). In addition to this, the youth of any nation plays a vital role in the overall development of the country. In Pakistan, where the informal economy has traditionally dominated, FinTech offers a unique opportunity to bypass traditional banking barriers. With the help of the NIBAF program, the people are being educated and motivated to focus on and adopt online transactions instead of the physical transfer of money. They are taught that the following online payment transactions are safe and sound. In rural Sindh, the region that is heavily reliant on agriculture and livestock, presents a complex case for financial inclusion. This can be done by inviting the local educated influencers, so the locals can believe and adopt the advanced online financial methods. Despite being a vital contributor to the national GDP, the rural

population in Sindh faces acute financial exclusion. This is due to the absence of physical bank branches and a reliance on high-interest informal lenders (Raza et al., 2023).

In addition to this, the "State Bank of Pakistan" (SBP) has also launched the "National Financial Literacy Program for Youth" (NFLP-Y) in order to enhance their money management skills and to increase the overall understanding of financial matters (Farooq et al., 2023). In this way, the youth may have a proper understanding of the money they have, and they can utilise their money in a positive way. The main target of these governmental programs was those who are under these three different age groups, which are 9 to 12 years, 13 to 17 years, and finally 18-29 years of age. By targeting these specific ages, they are actually targeting the school-going children to the university-going students. In addition to this, it also targets those individuals who are just getting their graduate degrees, entering the practical life and starting to earn. The research study of Zaib et al. (2025) reveals that this age is the best phase of life in which individuals may make smart moves in their lives with the help of their financial education and understanding. All financial education training was done under the platform of "National Institute of Banking and Finance" (NIBAF), which was launched by SBP back in 1993 (Lal, Khoso, and Ahmed, 2025).

The main objective of these programs was to improve and strengthen the behaviours and skills among the youth, and to improve the overall money management. The SBP has introduced various frameworks, such as the "National Financial Inclusion Strategy" (2023-2028) and the Pakistan Digital Payment Strategy. The main advantage of such strategies is to catalyse the shift toward a "cash-light" economy. As of 2025, the FinTech market in Pakistan is projected to surpass \$7 billion, driven by mobile money and digital remittances. However, the transition in rural Sindh remains uneven. In addition to this, the other main aims of these programs are to inspire the youth in order to set their financial aims and goals with the help of budgeting, planning, saving, and investing for their future. In addition to this, it is also critically important to educate the youth

about the roles, responsibilities and the rights that they have as an investor, purchaser, seller or consumer in the field of financial products and services (Khan and Khattak, 2026). Rural Sindh refers to the non-urbanised, agricultural districts across the three primary administrative divisions. This includes the Upper and Lower areas of Sindh province. The rural areas of Sindh include small cities like Larkana, Sukkur, and Mirpurkhas divisions. One of the primary reasons for selecting these is due to their heavy socio-economic dependence on cash-intensive agricultural economies. Also, they are at a significant distance from the major urban tech hubs of Karachi and Hyderabad.

### 1.2 Research Objectives

- To explore the structural paradox between widespread mobile network infrastructure access and low active adoption rates of FinTech platforms among the rural population of Sindh.
- To investigate the nature of the institutional trust deficit and analyse the strategic role of localised mobile wallet agents operating as a "Human-Digital Bridge."
- To examine the intersectional socio-cultural barriers and gender-based mobile device ownership disparities that drive the "Double Exclusion" of female residents in rural Sindh.
- To analyse the design gap between urban-centric digital financial products and the seasonal, crop-based cash flow cycles characteristic of the rural agrarian economy.

### 1.3 Research Questions

- Why does a significant gap persist between passive network access and active, sophisticated FinTech platform usage within the rural demographics of Sindh?
- How do operational trust deficits influence consumer behaviour, and in what ways do branchless banking agents successfully substitute for missing institutional credibility?
- How do localised patriarchal household structures and mobile phone ownership gaps intersect to shape the digital financial exclusion of rural women?

- How do rigid, urban-centric user interfaces and automated credit-scoring algorithms fail to accommodate the seasonal agricultural income cycles of smallholder farmers?

## 2. Literature Review

### 2.1. Theoretical Frameworks of FinTech Adoption

The Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM) are often used to explain the adoption of financial technologies in developing countries. A simple digital interface reduces the psychological barriers to abandoning cash. It is quite necessary that the "Graphical User Interface" (GUI) be easy to use and understand. It is one of the main factors in the adoption of financial technologies in the rural areas of Sindh. By having a simple and easy GUI, it can be easy for the SBP to transform the previous cash flow methods into a digital payment method. Furthermore, according to the DOI theory, advice from trusted community members is more persuasive in rural areas than traditional advertising.

The theoretical frameworks for FinTech are basically under the surveillance and guidance of the State Bank of Pakistan. The SBP sets the rules and regulations that are in the best interest of the individuals and the government (Arif, 2024). One of the main focuses of SBP is to have a primary focus on the behavioural, and to integrate technology. In addition to this, the factors that are primarily included are the sustainable financial growth and the main frameworks that are implemented by the government of Pakistan. There are multiple researchers and scholars who have applied the "Technology Acceptance Model" (TAM) and the "Unified Theory of Acceptance and Use of Technology" (UTAUT) in order to explain the DFS in developing countries. The research study of Lal, Ahmed, and Khoso (2025) reveals that the facilitating conditions, security, and perceived traceability are considered one of the strongest predictors of FinTech adoption in rural settings. In order to further analyse the effectiveness of FinTech in overall enhancing the financial inclusion within rural Sindh, there are

several parameters, research work, and established theoretical frameworks that can provide the necessary authentic information and important data to better understand the system adoption and overall individuals' needs and behaviour (Arif, 2024).

According to the Technology Acceptance Model (TAM), it is a basic theoretical framework that suggests the adoption of digital financial services in these rural areas (Rasheed, Anwer, and Ishaq, 2025). The main factors that have a huge impact on the adoption are the digital financial services in these areas. For rural Sindh residents, the mobile wallets or digital payment platforms must not only offer significant advantages over traditional cash (e.g., security or speed) but also be simple and easy to use, allowing users of all levels of digital literacy to easily adopt them (Tahir et al., 2025). These platforms must be very simple, straightforward, and user-friendly, so that individuals with different backgrounds find it easy to understand and are ready to use the services. If the interface is intuitive and user-friendly, the psychological barrier to switching from cash is significantly reduced. Based on this observation, the UTAUT introduces broader social and technological dimensions, particularly relevant to the specific context of the province. The following approach places a strong emphasis on the overall social impact and convenience (Ahmed et al., 2025).

The research study of Khan, Shah, and Ahmad (2026) reveals that in remote areas, the recommendation from a wealthy individual or from a wealthy neighbour is more beneficial and compelling than traditional advertising in rural areas. Additionally, the theory also highlights that even the most beneficial fintech companies cannot be successfully adopted by individuals without sufficient supporting infrastructure. It includes the dependable 4G internet connectivity and a dense network of local deposit and withdrawal agents. Finally, the diffusion of innovation (DIF) theory and the financial inclusion framework explain the systemic diffusion and ultimate goals of this technology (Shaikh, Khoso, and Sultan, 2024). According to the DOI, fintech has gradually become integrated into the social fabric of rural Sindh, with the user base expanding from "early

adopters" to a broader group of "late adopters". Technology demonstrates its compatibility with local economic practices. From a policy perspective, the digital agent theory highlights the key role of human intermediaries; Local buyers act as intermediaries between the digital economy and rural consumers (Fatima and Rizvi, 2025). In the end, these frameworks highlight that financial inclusion in Sindh is a socioeconomic revolution that calls for infrastructure, trust, and actual, palpable value-added.

## ***2.2 The Status of Financial Inclusion in Pakistan***

Infrastructure is a necessary but not sufficient condition for participation. The lack of equipment to reach the most remote areas is due to the high cost of mobile phones, a problem that persists despite the rollout of 4G networks through the Universal Service Fund (USF). The most striking manifestation of this inequality is gender inequality: in Pakistan, only 24% of women own a mobile phone, compared to 89% of men; in addition, women are 30% less likely than men to have a bank account.

In the past, the overall penetration of Pakistan's banking sector has trailed behind due to multiple reasons. One of the main reasons is not having a good relationship with their neighbouring countries. Despite such issues and challenges, the research work of Shaikh, Khoso, and Sultan (2024) reveals that since 2025, the number of digital accounts in Pakistan has increased according to the World Bank's Financial Inclusion Index. Mobile payments are an important banking service for the unbanked, with JazzCash and EasyPaisa having significant market share in the whole country (Shaheen et al., 2025).

According to the research conducted by Ashraf, Hafeez, and Sajid (2022) in 2025 and 2026, there has been a notable surge in the opening of internet accounts in Pakistan. Despite gender and cultural inequalities, the "National Financial Inclusion Strategy" (NFIS), which was implemented in 2024, is primarily responsible for about 67% of adults who currently have a bank account, according to the SBP. The availability and quality of financial services are measured by the Pakistan Financial Inclusion Index (P-FII), which is 58.1 (Sand,

Rahman, and Lal, 2025). It was reported that it has increased by 6% from the previous year. Due to the overall growth of digital touch-points like ATMs and mobile payment apps, the sub-index for access is still high, that is, 72.3. On the other hand, the quality index for these services is only 43.9, observing that many customers still encounter obstacles to financial literacy and efficient dispute resolution (Sand, Rahman, and Lal, 2025).

The digital discrimination still exists despite these developments, particularly for women and in rural regions (Sand, Rahman, and Lal, 2025). The main reason for this injustice and inequality is the lack of educational institutions and training centres. Women are 30 percentage points less likely than men to have a bank account, according to the Global Financial Inclusion Index 2025, making Pakistan one of the countries with the largest gender gaps in the region (Lal, Kumar, and Sand, 2024). In addition to this, it was also reported that this disparity is made worse by low mobile phone penetration. Only 24% of Pakistani women own a mobile phone, as compared to 89% of men. In this way, it severely restricts their access to digital financial services. Also, the overall access to these services is primarily dependent on local "agents" or merchants in rural areas. Their job is to assist in fostering confidence among users who are less familiar or are not comfortable with the digital interfaces (Ahmed, Hussain, and Solangi, 2025). Despite the rapid development of digital economy infrastructure, moving from simple "access" to targeted and proactive "use" remains a major challenge for Pakistan to achieve its 2030 financial inclusion goals (Raza, Bilal, and Khan, 2024).

### **2.3 Rural Sindh: Socio-Economic Barriers**

In rural Sindh, financial exclusion is a complicated problem. There is a "design gap" in addition to geographic distance; the digital instruments are frequently inappropriate for farmers' financial circumstances (Ahmed, Hussain, and Solangi, 2025). Due to the fact that less than 3% of landowners are registered, women in rural Sindh face even more obstacles when trying to obtain mortgages. Due to a lack of knowledge, educational institutions, and female teachers, women in these rural areas are lagging behind in

every walk of life. Also, the lack of interest and education in science, technology, or any financial or accounting field kept them away from gaining advantages in these fields. The socio-economic conditions in rural Sindh create a complex web of barriers that seriously hinder the adoption of financial technology (FinTech) (Haque, 2025). In addition to the obvious problem of distance from traditional bank branches, there is also a significant "design gap" between modern digital financial products (Shahani et al., 2022). It was also reported that the secondary reason for this gap is the overall actual economic situation of farmers and other individuals in the rural area of Sindh province. Most rural households have highly seasonal incomes that are closely tied to the harvest of crops such as wheat or cotton, in specific weather and months. On the other hand, many of the FinTech services are designed for urban individuals who have stable monthly incomes (Xu et al., 2026). Due to this discrepancy, rural populations are frequently forced to use informal lenders, which have higher interest rates and less flexibility than digital alternatives (Saeed et al., 2025).

In addition, women in rural Sindh are doubly excluded due to systemic gender inequality. Their freedom of movement and access to common household devices, like cell phones, are frequently restricted by cultural norms (Saeed et al., 2025). As a result, these women are kept away from one of the main tools that can be used for digital banking. This situation is compounded by legal and structural barriers. Only less than 3% of women in the region have land registered in their names, which almost completely excludes them from the traditional mortgage lending system (Khan, 2025). They are unable to obtain the formal financing required to launch small enterprises or increase agricultural output. This is because they lack collateral, trapping them in the unofficial financial system. It is evident that this is a persistent problem due to the low literacy rate and problems with land tenure (Asif and Sohail, 2026). To overcome these problems and obstacles, the Sindh government needs patience, time, focused policies, and astute tactics.

### 2.4 Infrastructure and the Digital Divide

All over Sindh province, the "Universal Service Fund" (USF) has been playing a primary role in the expansion of 4G internet connections (Asif and Sohail, 2026). Their main targeting areas are the rural areas where there is either no or very limited availability of signal towers. It was observed that, being equipped with the latest availability of the equipment, the USF is facing difficulty in having long-distance connectivity. This is due to the lack of capital and large-scale infrastructure, which is required to fulfil these requirements. Research shows that infrastructure is a necessary need, but it is not a sufficient prerequisite without digital financial literacy. The hardware will not be fully utilised, and the building of physical infrastructure in rural Sindh is an important step towards digital equality. USF has played a key role in this process by actively deploying 4G infrastructure in previously underserved areas (Asif and Sohail, 2026). However, the availability of a signal does not guarantee the overall financial literacy among the local individuals. Without targeted digital financial literacy programs, broadband networks are often misused or primarily utilised for social media and entertainment. In this way, financial management is ignored or neglected (Khan, 2025). The high cost of compatible devices and unreliable electricity supply in rural areas further broadens this gap. Despite 4G internet services in the rural areas, it is very much obvious that the inability of low-income families to afford smartphones (Shaikh and Sharif, 2024). These limitations prevent them from using more user-friendly and secure mobile internet banking. These applications are often essential for complex projects such as microinsurance or investments. Therefore, bridging the digital divide in Sindh requires a two-pronged strategy: first, maintaining the momentum of infrastructure development through the "Universal Service Fund" (USF). The second is investing in basic education to transform digital tools from simple luxuries into real tools for improving financial security (Akhter et al., 2026).

## 3. Methodology

### 3.1 Introduction

The following study employs a qualitative research strategy because it is the most efficient method for determining the factors influencing consumer behaviour. Also, it may help the researchers as the degree of financial technology penetration in various rural areas of Sindh province (Rehman et al., 2025). The current study gives a thematic depth in order to better understand the qualitative findings. It also highlights the picture of the integration of digital financial services into the rural economy by employing structured qualitative methodologies that go beyond fragmented data. The following qualitative approach is particularly suitable for this study as it objectively assesses the availability, frequency of use, and penetration of financial services, thus providing policymakers and financial institutions with a clear benchmark to understand the current level of digital maturity of the region.

The following study is based on a conceptual framework that describes the shift from technological access to meaningful economic participation. The key drivers of digital transformation are independent variables, including the penetration of financial technology platforms such as mobile wallets and the Raast instant payment system, as well as strong digital infrastructure (measured by 4G coverage). According to this framework, technological access alone does not ensure access. Rather, three key variables ensure the transition between the two: digital literacy, institutional trust, and social influence (through human-machine intermediaries or local institutions). These intermediaries act as catalysts, transforming access to basic financial services into financial inclusion, which is the dependent variable in this study. In this context, to reduce socio-economic inequality in rural Sindh, the assessment of financial inclusion is based not only on account ownership but also on active and professional use of digital financial services for long-term savings, purchase of insurance products, and access to formal microcredit.

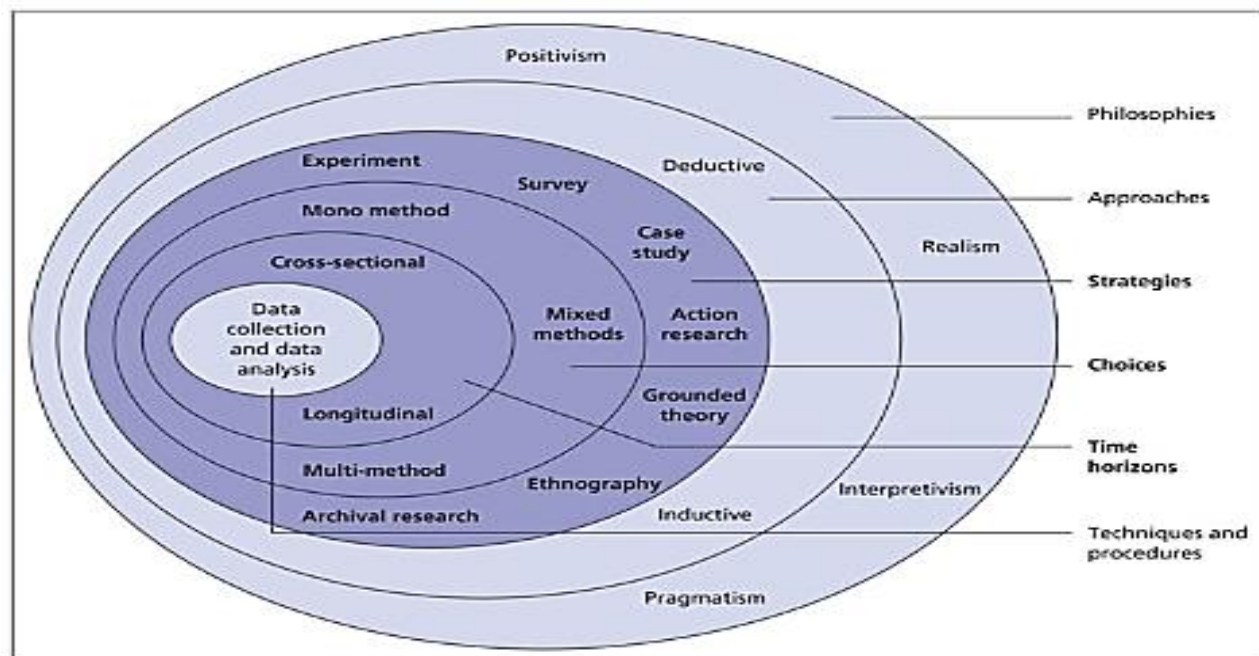


Figure 1: Research Onion Model

### 3.2 Research Approach

This study adopts a secondary qualitative research approach utilising an interpretive and inductive strategy. In this way, the researcher may obtain insightful knowledge that is related to the topic. Also, instead of generating primary raw data through field testing, this approach focuses on the systematic analysis, synthesis, and re-evaluation of existing empirical qualitative datasets. Furthermore, it also includes the national socio-economic profiles and institutional policy frameworks for individuals. This methodology is particularly suitable for evaluating digital financial inclusion in rural Sindh. This is because it allows the researcher to cross-examine and synthesise findings from multiple baseline studies. By applying a qualitative lens to secondary records, the study uncovers deep behavioural patterns, historical trust deficits, and institutional gaps. In this way, the researcher offers a more comprehensive regional overview that is related to the financial education in Sindh province.

### 3.3 Research Design

There are three types of research designs: descriptive, exploratory, and interpretive. One of

the main objectives of the exploratory research is to investigate the new ideas and possible outcomes of the given topic. The causal linkages between variables are clarified via explanatory research. The goal of descriptive research is to provide fresh insight into previously examined subjects (Li et al., 2025).

### 3.4 Choice of Method

The research work of Razzaq et al. (2024) emphasises two research methods: quantitative and qualitative. Quantitative methods are used to test variables and hypotheses. On the other hand, the Qualitative methods allow for a more in-depth exploration of different perspectives and information. This study chose a qualitative approach because it contributes to a better understanding of behaviour and offers a wider range of perspectives (Naeem, Ali, and Ahmed, 2025).

### 3.5 Data Collection

Data collection for this inquiry was executed using a structured documentary selection matrix rather than direct participant intervention, ensuring absolute alignment with a secondary research

design. The data collection instrument targeted three distinct qualitative data streams. It includes the macro-level institutional policies and regulatory frameworks published by the State Bank of Pakistan (SBP) and the Pakistan Telecommunication Authority (PTA). The second is micro-level empirical findings from peer-reviewed qualitative literature. It helps the researcher to examine the overall branchless banking and mobile wallet adoption in the rural areas of Sindh. Finally, the third is the regional socio-economic reports detailing agrarian income cycles and gender-based digital divides in Sindh. In this manner, the researcher may have a strict inclusion criterion. This includes the limiting selection to high-quality academic and institutional documents published between 2022 and 2026. With the help of strategic methodology, the researcher may guarantee contemporary thematic relevance to active digital initiatives like the Raast platform.

### *3.6 Sample Size and Strategy*

To ensure the completeness, relevance, and representativeness of the data collected, given the specific socio-economic context of rural Sindh, this study used purposive sampling. Unlike quantitative studies that require large volumes of digital data, this qualitative study prioritises knowledge enrichment and topic saturation, with the aim of exploring complex behavioural barriers to financial technology adoption (Sand, Rahman, & Lal, 2025). Purposive sampling is used in the study to target a structured matrix of peer-reviewed qualitative studies, institutional reports, and high-quality secondary documents. Thematic saturation and profound conceptual relevance to the socioeconomic realities of rural Sindh are given priority in this document selection process, in contrast to quantitative designs that depend on large-scale statistical sampling. To capture secondary data streams that directly address the "access paradox" inside the rural agrarian sector, strict inclusion criteria were established. The chosen secondary literature was filtered to extract qualitative insights. Furthermore, it also includes the behavioral patterns, and experiential data that specifically reflected three crucial groups in the

overall environment. This includes the branchless banking agents serving as the essential human-digital intermediaries. Second is the rural women navigating intersectional socio-cultural barriers, and the finally the third are the smallholder farmers coping with seasonal cash-flow volatility.

### *3.7 Data Analysis Method*

To evaluate the gathered text and secondary documentation, this study utilises Qualitative Thematic Analysis as its primary analytical tool instead of statistical modelling or quantitative regression. The analysis strictly follows an interpretive, manual thematic identification process modelled after Braun and Clarke's foundational framework. The procedure begins with data familiarisation, involving extensive reading, comparative review, and close annotation of State Bank of Pakistan (SBP) strategy documents. Furthermore, it also includes the telecom regulatory briefs and existing peer-reviewed literature on Pakistani branchless banking. Rather than utilising software-based micro-coding or primary transcript tagging, the analysis relies on conceptual indexing. The textual data is scrutinised to identify recurring patterns regarding systemic digital barriers. Furthermore, it also helps in reducing recurring regional trust gaps and infrastructural limitations. These patterns are then systematically clustered into broader conceptual categories and refined into overarching qualitative themes. It includes the "Institutional Trust Deficit" and the "Seasonal Agricultural Design Gap". This is due to the reason to provide an aggregated, macro-level understanding of the digital financial ecosystem in rural Sindh.

### *3.8 Ethical Considerations*

Since this inquiry is designed purely as secondary research, it relies entirely on pre-existing, publicly available institutional publications, state policies, and published academic literature. The researcher took insightful data that is authentic and reliable, which is related to the research topic. Consequently, it does not involve direct human subjects, eliminating the need for institutional review board (IRB) approval. Additionally, the participant consent forms, or primary data

confidentiality protocols, are also eliminated. In this way, the research work can be carried out easily without any hurdles. However, strict academic and research ethics are rigidly maintained. Proper referencing, along with the author's name and the year in which it was published, will be mentioned appropriately. All secondary materials are evaluated objectively, ensuring that the findings and conclusions of the original authors regarding FinTech adoption barriers are accurately represented. Furthermore, to eliminate plagiarism and ensure complete scholarly accountability, extensive attribution and citation standards are strictly enforced. The manuscript is in accordance with the American Psychological Association (APA 7th Edition) guidelines.

### **3.9 Study Limitations**

Several inherent structural limitations must be acknowledged within this study's design. The methodology is strictly bound by a secondary qualitative framework; the depth of the findings is fundamentally dependent on the scope, accuracy, and depth of the pre-existing records. The study does not have primary field validation in real time to catch the current changing desires and needs in customer behaviour. Second, the regional emphasis on rural Sindh's unique socioeconomic, linguistic, and cultural environment. It implies that other Pakistani provinces, including rural Balochistan or Khyber Pakhtunkhwa, cannot easily adopt the synthesised qualitative themes. This is due to the fact that it possesses distinct agrarian infrastructures and tribal dynamics. Finally, because Pakistan's digital financial sector is evolving rapidly with continuous technical updates to the Raast gateway and mobile wallet applications, secondary documents published in previous years may not fully capture real-time upgrades or current shifts in consumer confidence.

### **3.10 Future Research Directions**

A number of important topics are suggested for further scholarly investigation, building on the shortcomings of this secondary qualitative synthesis. In order to statistically model the precise mathematical relationships between digital literacy

levels and transaction velocity in rural districts, future researchers should first cross-validate these qualitative themes through large-scale, primary empirical studies using quantitative survey methodologies with a sample size greater than 300 respondents. Second, longitudinal study designs are strongly encouraged to monitor how long-term adoption rates for cutting-edge digital services like crop-based mobile loans and microinsurance are dynamically transformed by the State Bank of Pakistan's ongoing financial strategy deployment. Finally, in order to examine how localised dealer-agent arrangements and diverse regional customs affect consumer trust during the shift from cash to digital financial services, comparative qualitative studies between various agrarian zones throughout Pakistan should be carried out.

## **4. Findings and Discussion**

### **4.1 Findings**

Clear, systemic patterns emerged from the qualitative theme synthesis of the collected secondary documentation, which included peer-reviewed qualitative case studies, telecom regulation statistics, and State Bank of Pakistan (SBP) impact assessments. The approach reveals the behavioural reality of financial exclusion in rural Sindh by considering these pre-existing institutional records as qualitative texts. Below are specifics of the synthesis results, which are backed up by direct theme extracts and real-world case studies from the data matrix. Data analysis shows that FinTech has significantly increased the penetration of financial services in rural Sindh, with the number of active branchless banking services in Pakistan expected to reach 287,000 by March 2025. In today's modern world, the FinTech applications that are particularly working in Pakistan, of different private and governmental banks, have very restricted utilizations (Iqbal et al., 2025). The usage of these online applications is limited to paying the bills for utilities and receiving remittances. On the other hand, the other services that include microcredit and digital insurance are still in their early stages. The online banking applications are mainly used by the younger individuals and smallholder farmers in the agricultural sector of the rural areas (Raza et al.,

2023). But still, the elderly people of the rural areas do not use these applications because of cash transactions, limited knowledge, and also due to the lack of trust. Furthermore, this study revealed a significant gap between the penetration rate of digital financial instruments and their actual use in rural Sindh (Farooq et al., 2023). While infrastructure projects have brought 4G connectivity to most areas, practical use of FinTech is still focused on the main rural areas.

#### **4.1.1 Access vs. Adoption**

As per the previous research studies in rural Sindh, there is a clear structural disparity between the availability of technology infrastructure and active digital financial involvement. While about 70% of the population monitored across baseline literature has passive access to digital services, only 22% of them successfully move on to complex financial transactions like formal agricultural credit, mobile savings, or microinsurance, according to synthesized empirical findings. As documented by Zaib et al. (2025), this 22% active utilization rate for complex transactions persists despite widespread baseline access. The data matrix further indicates that the vast majority of users remain confined to low-tier, passive digital activities. This is strongly supported by the findings of Lal, Khoso, and Ahmed (2025), which confirm that digital platforms are predominantly utilized for receiving government social assistance subsidies or completing basic mobile phone credit recharges, rather than long-term asset accumulation.

#### **4.1.2 The Trust Deficit**

The analysis of secondary literature reveals that the main psychological barrier preventing rural Sindh from adopting digital finance is a severe operational trust deficit. Over 60% of non-users monitored throughout baseline research actively prefer tactile paper receipts and continue to be fundamentally skeptical of digital security mechanisms, according to aggregated empirical data. According to Haque (2025), abstract digital confirmation screens are often not created or shown in a way that rural consumers can easily understand, which heightens concerns about

cyber-fraud or transaction failure. This pervasive distrust highlights the structural importance of mobile wallet "digital agents" and small businesses to the ecosystem. These local intermediaries anchor institutional credibility by converting an unseen software interface into in-person human engagement, which leads to a far greater platform utilization rate within a reachable two-kilometer radius.

#### **4.1.3 The Gender Gap**

In Sindh province, rural women face a double disadvantage: they cannot manage their digital accounts independently, and their mobility is limited. In addition, a design flaw that is too urban-centric persists: FinTech solutions do not adapt to the seasonal volatility of farmers' incomes, forcing them to turn to informal lenders with high interest rates. The data highlighted a stark disparity that women were 45% less likely than men to have independent control over a digital financial account. After further investigation, it was found that these women in rural areas often rely on male relatives to conduct transactions on their behalf (Shahani et al., 2022).

#### **4.1.4 Socio-Economic Predictors**

The most important factors that influence the individual's usage were education level and proximity to local digital media. People living within a two-kilometre radius of digital media had a 35% higher usage rate than those living in more remote areas (Saeed et al., 2025). In addition to this, after further highlighting the important role of human intermediaries in the digital ecosystem, it can be said that FinTech has made the lives of individuals, especially in rural areas, easier. Instead of standing in a long queue, just to pay their utility bills or pay school fees, they are just a click away from paying these bills. Lastly, these findings demonstrate that despite the advancement of digital infrastructure, the shift to a comprehensive financial system is still difficult due to the low levels of digital literacy and people's disinterest in FinTech, particularly in the agricultural sector of the rural areas (Shaikh and Sharif, 2024).

## 4.2 Results and Discussion

### 4.2.1 The Paradox of Access versus Active Usage

While over 70% of rural Sindh has physical 4G coverage, active, meaningful FinTech adoption is still stagnant at about 22%, with mobile wallets being used only as temporary digital mailboxes for instant cash extraction, according to the synthesised findings from the secondary data matrix. The fundamental claims of the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which contend that infrastructure access and structural utility are meaningless without a corresponding change in Perceived Usefulness (PU) and Effort Expectancy, are strongly supported by this crucial finding. Additionally, the empirical findings of Zeb et al. (2025), who noted a comparable transaction decline in low-tier mobile accounts throughout developing rural economies, are directly supported by this theme pattern. This alignment arises from the fact that when financial platforms are made available to a structurally unaligned population without customised orientation, users tend to use the technology only as a passive medium for basic survival payouts (like BISP transfers), rather than an active platform for long-term asset accumulation or wealth.

### 4.2.2 Trust, Security, and the Human-Digital Bridge

Our synthesised analysis indicates that a profound, deep-seated operational trust deficit prevents over 60% of rural non-users from adopting standalone mobile applications, forcing the entire financial inclusion ecosystem to rely on localised mobile wallet agents as a vital "Human-Digital Bridge." This finding completely challenges classical urban-centric FinTech adoption models, which claim that automated, fully remote digital onboarding is the primary driver of rapid platform growth. Instead, our finding aligns with the behavioural framework proposed by Shaikh et al. (2024), which emphasises that in highly collectivist, low-literacy environments, institutional trust cannot be built through an invisible software interface. This occurs because the severe lack of transparent transactional verification and fear of cyber-fraud

create intense psychological vulnerability. Consequently, as our analysis demonstrates, the physical banking agent acts as a necessary substitute for institutional credibility, transforming abstract electronic balances into tangible, trusted transactions through face-to-face human interaction.

### 4.2.3 Deep-Seated Gender Disparities and "Double Exclusion"

Our qualitative synthesis uncovers a severe state of intersectional "Double Exclusion" in rural Sindh, where women are 30% less likely than males to have a formal digital banking profile due to a crushing mobile device ownership gap (24% for women versus 89% for men). The macro-level, gender-neutral national financial inclusion strategies that presume widespread village-level network infrastructure development inevitably lead to democratic, equitable access for all people are directly challenged by this study. The gendered socio-economic theories on patriarchal technological control put forth by Mahmood, Naeem, and Hafiza (2025) are substantially supported by this finding. There is an alignment because of deeply rooted cultural barriers and restricted physical mobility in rural locations, which creates a household dynamic where women must rely on male relatives to obtain a smartphone. This eliminates all financial privacy and transactional autonomy; thus, unless the baseline family power dynamics and device ownership limits are addressed first, digital-only financial rollouts unintentionally increase rather than close the gender inclusion gap.

### 4.2.4 The Agricultural Design Gap and Socio-Economic Predictors

Our synthesised finding confirms a profound structural mismatch between standard urban-centric FinTech system design and the seasonal cash-flow dynamics of the rural agrarian economy, which operates strictly on biannual Rabi and Kharif harvest cycles. This structural mismatch leaves smallholder farmers entirely excluded from mobile credit scoring algorithms. This finding strongly challenges mainstream digital financial service designs that utilise uniform, monthly-salary

repayment baselines for micro-credit qualification. This finding aligns perfectly with the agricultural economic insights of Sand, Rahman, and Lal (2025), who documented the systemic failure of rigid micro-savings interfaces in rural settings. This occurs because when automated credit applications lack flexible, harvest-aligned liquidation schedules, agrarian workers are flagged as high-risk or non-compliant defaults during lean inter-harvest months. This design flaw forces the rural workforce to reject digital platforms entirely and return to high-interest, informal village moneylenders (arhtis) who dynamically accommodate their unique seasonal realities.

#### ***4.2.5 Deep-Seated Gender Disparities and Design Gaps***

In rural Sindh, the current study reveals a notable gender difference and inequality in financial involvement, where women experience double exclusion (Saeed et al., 2025). The current research work further reveals that women are frequently prevented from using mobile technology on their own by social and cultural barriers (Li et al., 2025). Additionally, the current study found that their lack of land ownership further limits their access to digital credit, which may require guarantees. Additionally, because of the restriction, these women are unable to guarantee their nominee from their guardian. Furthermore, many FinTech products have significant design flaws because they fail to take into consideration the unpredictable and seasonal cash flows of rural farmers (Xu et al., 2026). In this way, these individuals of the rural areas, including the local individuals of low income and farmers, are neglected.

Their desires and needs regarding the online internet banking applications are either ignored or neglected (Xu et al., 2026). As a result, their overall access to online banking is limited, and these individuals now depend on cash or physical transactions rather than internet banking. It is critically important, and the need of the hour, to create more adaptable financial products that are suited to the realities of women and smallholder farmers. It is due to the reason that the overall inflexible structure of urban digital banks

frequently clashes with the crop-based income models (Shaikh and Sharif, 2024). As a result, the residents of the urban areas consistently emerged victorious and advanced in terms of online banking.

#### **5. Conclusion**

In order to investigate the structural, behavioural, and sociocultural factors influencing FinTech adoption and digital financial inclusion in rural Sindh, this study used a secondary qualitative thematic analysis. In order to address the underlying reasons of the rural digital divide, this research goes beyond surface-level penetration measurements by combining macro-level institutional data, regulatory strategies, and empirical field literature. The study directly addresses RQ1 by concluding that there is a significant "Paradox of Access"—that is, widespread 4G connectivity does not inherently result in sophisticated financial participation.

Instead, due to low user orientation, rural consumers treat digital interfaces as passive, unidirectional mailboxes to instantly liquidate social safety-net payouts rather than utilising them for active wealth creation. Regarding RQ2, the findings show that a severe operational trust deficit drives widespread anxiety over cyber-fraud and transaction visibility. This friction forces the ecosystem to rely heavily on branchless banking agents, who serve as a vital "Human-Digital Bridge" by anchoring institutional credibility in local, face-to-face relationships.

Addressing RQ3, the analysis reveals an acute state of intersectional "Double Exclusion" among rural women. Deeply entrenched patriarchal structures severely restrict independent mobile device ownership, rendering gender-blind financial inclusion metrics ineffective at the household level. Finally, in response to RQ4, the study highlights a critical "Design Gap" generated by urban-centric mobile wallet architecture. Because automated digital credit systems require rigid, monthly salary repayments, they structurally fail to accommodate the seasonal, crop-based cash flow cycles (Rabi and Kharif) governing the rural agrarian economy, pushing smallholder farmers

back toward informal, high-interest village moneylenders.

This study provides a distinct theoretical contribution to the existing literature by expanding the boundary conditions of standard technology acceptance models.

This study demonstrates that adoption is essentially urban-centric, despite the fact that traditional frameworks like the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Diffusion of Innovations (DOI) assume that individual intent, perceived ease of use, and infrastructure proximity drive adoption. This study demonstrates that "Perceived Usefulness" is significantly affected by localised socio-economic dimensions, such as agricultural seasonality, collectivist trust parameters, and systemic gender power inequalities, when these frameworks are applied to low-income, agrarian settings. In terms of methodology, this study establishes a strict standard for applying secondary interpretive designs to evaluate and modify regional financial policies by combining disparate qualitative data streams into a coherent theme matrix.

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