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Role of Mobile Banking in Bridging the Urban-Rural Financial Gap: Evidence from Gandaki Province

Rajiv Khanal[1]
Lecturer, Western Mega Collage
Lincoln University College

Abstract : *This study examines the impact of mobile banking on financial inclusion across urban and rural areas of Gandaki Province, Nepal. Despite national progress in expanding formal financial services, rural populations continue to face barriers such as geographic isolation, limited digital literacy, and distrust in financial institutions, which sustain disparities in access to banking services. Mobile banking offers a promising approach to bridge this gap by providing accessible, cost-effective, and secure financial services via mobile devices.*

A mixed-methods research design was employed, combining quantitative data collected from 792 respondents with qualitative insights from interviews and focus group discussions. Five key factors access to mobile technology, educational attainment, socioeconomic status, perceived security of mobile banking, and frequency of mobile banking usage were hypothesized to influence financial inclusion. Structural Equation Modeling (SEM) using SmartPLS was applied to test these relationships, with adequate model fit confirmed by multiple indices.

The results indicate that in urban settings all five factors significantly contribute to financial inclusion. In contrast, in rural areas, only socioeconomic status, perceived security, and mobile banking usage frequency were positively associated with financial inclusion. Notably, access to mobile technology and education level did not significantly affect rural financial inclusion, with education exhibiting a negative relationship, possibly reflecting migration effects or unmet expectations among educated rural residents.

These findings underscore the importance of context-specific strategies, including infrastructure improvement, digital literacy programs tailored to rural needs, and trust-building measures, to enhance equitable financial inclusion. The study advances understanding of mobile banking adoption by applying TAM and UTAUT frameworks to distinct geographic contexts within Nepal.

Keywords: *Mobile Banking, Financial Inclusion, Gandaki Province, Urban-Rural Financial Gap, Mobile Banking Adoption, Digital Literacy, Trust in Banking, Ease of Use, PLS-SEM, CFA, Nepal*

Introduction

Access to basic banking services remains a significant challenge for many residents of rural areas, while urban populations often enjoy seamless financial access. This stark gap between urban and rural banking accessibility has persisted despite technological advancements. Mobile banking has emerged as a transformative force in delivering financial services, raising important questions about its effectiveness in enhancing financial inclusion among rural populations in regions such as Kaski and Syangja. There is increasing interest in whether mobile phones, as widely used tools, can democratize banking and bridge long-standing disparities in access. This research examines the extent to which mobile banking helps to narrow the urban-rural financial divide and evaluates its tangible impacts on the livelihoods of farmers, small business owners, and families in these districts.

Financial inclusion is broadly defined as the availability and utilization of essential financial services by all segments of society, particularly the underserved (Mothobi & Kebotsamang, 2024). The importance of financial inclusion is clear in both urban and rural settings, but its significance is heightened among low-income populations. In developing economies, numerous barriers including strict regulatory policies and heavy institutional requirements prevent individuals with limited literacy from opening bank accounts (Klapper & Singer, 2017). This has resulted in ongoing disparities in access, with mobile banking emerging as a promising tool to address such inequalities. Digital technology now makes banking solutions more accessible and affordable, especially for those living far from traditional bank branches. In the Kaski and Syangja districts, mobile banking offers an opportunity for marginalized groups such as smallholders and micro-entrepreneurs, who often face severe financial exclusion to save, transfer funds, and access credit more easily, thereby supporting both individual welfare and local economic development.

The concept of financial inclusion, as outlined by Hannig & Jansen (2010) and Mader (2018), arose in policymaking and research circles in the early 2000s, highlighting the provision of affordable savings, credit, and insurance to traditionally excluded populations. The World Bank further promoted the idea in 2005 through global initiatives focused on poverty reduction (Goldman, 2005). Operationally, financial inclusion involves giving individuals and businesses, particularly those in rural or low-income areas, safe and reliable access to financial tools (Pomeroy et al., 2020). In Nepal, this includes enabling access to mobile banking accounts and microfinance for rural communities, even without formal education or collateral (Dhungana & Chapagain, 2019). The urgency for such initiatives increased after research showed that by 2010, around 40% of adults in developing countries remained outside basic banking services, prompting governments and institutions to promote inclusive financial policies (Groce et al., 2011). Key

indicators of financial inclusion now include rural bank branch density, mobile banking adoption, and the percentage of women with bank accounts.

Despite advancements, considerable disparities in banking access persist within Gandaki Province. Rural inhabitants often face pronounced difficulties in utilizing banking services, a challenge less experienced by their urban counterparts. This disparity reinforces the financial divide, with mobile banking providing a potential avenue to mitigate these challenges by extending services via mobile platforms to those distanced from physical bank outlets (Anyasi & Otubu, 2009; Duncombe & Boateng, 2009). Nevertheless, rural residents encounter substantial obstacles including low levels of digital literacy, insufficient internet connectivity, and mistrust of mobile banking platforms. Research to date has predominantly concentrated on the expansion of mobile banking in urban centers, leaving a knowledge gap regarding the specific challenges encountered by rural users. As a consequence, many rural households still face difficulties in saving, accessing credit, or conducting transactions. This study, therefore, seeks to elucidate the barriers impeding mobile banking adoption in rural areas and propose actionable solutions to enable equitable access to modern financial services.

Further compounding the issue are notable research gaps regarding the impact of mobile banking on rural-urban financial divides in Nepal, specifically within Gandaki Province. Prior analyses have typically emphasized macro-level trends in digital finance growth in urban contexts, where educational attainment and technological infrastructure are generally more favorable. Insufficient attention has been paid to the lived realities of rural populations, particularly women, older adults, and individuals with limited education, who may be disproportionately affected by digital exclusion. While mobile banking services are proliferating, questions remain about their suitability to rural users' needs and the practical measures required to support effective utilization. Evidence suggests that mere access to technology or higher education levels does not automatically translate into increased mobile banking usage among rural dwellers; unresolved structural barriers may exacerbate disparities. In light of these research lacunae, there is a critical need for empirical investigations that foreground rural voices and experiences to inform policymaking and program design.

The present study is of considerable importance, as it aims to deepen understanding of mobile banking's role in fostering inclusive growth in both urban and rural areas of Gandaki Province, Nepal. Persistent banking inaccessibility among rural communities impedes their capacity to save, borrow, remit funds, and participate fully in the economy. By systematically identifying and analysing the barriers encountered by rural populations, such as digital illiteracy, unreliable connectivity, and scepticism toward digital platforms, this research aspires to inform

the efforts of banks and policymakers. The insights derived from this study can help develop strategies for ensuring secure, widespread, and user-friendly access to mobile banking, thereby contributing to greater financial fairness, the empowerment of local enterprises, and the broader socioeconomic advancement of urban and rural regions.

Objective: The main goal of this study is to find out how different things like access to mobile phones, education level, income level, how safe people feel using mobile banking, and how often they use it affect financial inclusion.

1. Examine how access to mobile phones affects financial inclusion.
2. Analyze the relationship between a person's education level and financial inclusion.
3. Investigate the impact of a person's income or social status on financial inclusion.
4. Assess the association between perceived security in using mobile banking and financial inclusion.
5. Explore the effect of mobile banking usage frequency on financial inclusion.

Literature Review

Mobile Banking and Urban Rural Financial Inclusion

Recent research shows that digital financial services have grown quickly in Nepal. However, there are still big differences between urban and rural areas. According to Nepal's 2023 Financial Inclusion Report, 96% of adults in Gandaki Province use formal financial services such as banks or cooperatives (Gallego-Losada et al., 2024; Karki, 2024). This is the highest rate among all provinces. In provinces with less development, only about 87% of adults use these services. The number of people using mobile banking across Nepal increased 19 times from 2015 to 2023, with a growth rate of 45% per year (Thakuri et al., 2023). Still, urban areas have much higher usage than rural areas. For example, about 60% of urban adults have formal bank accounts, while only 50% of rural adults do (Dawadi, 2025).

In Pokhara, the capital of Gandaki, digital banking is very popular. A study by Ranabhat et al. (2022) found that 64% of bank customers in Pokhara use internet banking. These users say that saving time and having access at any time are the main benefits. On the other hand, many rural customers face problems like poor internet and low digital skills. Interviews with bankers in Gandaki show that rural people often find mobile banking apps difficult to use because of low digital literacy (Sharma, 2024). A 2025 survey in Pokhara sample size 392 found that people are more likely to use mobile banking if they find it easy and secure. Overall, research shows that urban people in Gandaki are using digital banking much more than those in rural areas. Many rural people are still underserved and face barriers to using these services.

Impacts on Financial Inclusion (Savings, Credit, Remittances)

Most studies agree that mobile banking helps more people access savings and banking services. For example, Limbu (2024), surveyed 150 people in Nepal and found that more use of electronic banking leads to more people using formal financial services. Alrabei et al., (2022), studied national data from 2016 to 2021 and found that as more people got mobile phones, more people opened bank accounts. This means mobile phones help rural and low-income people save money and use banking services. Other reviews show that mobile wallets allow people in remote villages to send and receive money without going to a bank branch.

There is less research on how mobile banking affects credit and remittances. Some studies use the number of deposit accounts to measure financial inclusion, but do not look directly at loans or remittances. International studies suggest that mobile banking can help people get small loans and send money, especially for migrants, but there is not much research on this in Nepal (Thieme & Wyss, 2005). The Nepal Rastra Bank has said that USSD-based payments can make it easier for people to send money across the country (Bank, 2024). However, there are few studies on how mobile banking helps people get loans or insurance in rural Gandaki. In summary, mobile banking reduces costs and saves time, which encourages saving and wider use of banking services, but more research is needed on its impact on credit and remittances.

Gender Disparities in Mobile Banking Usage

The gap between men and women in using financial services in Nepal has become smaller, but some differences remain. By 2022, about 89% of women and 90% of men used some formal financial services (Acharya, 2025). However, men are still more likely to have bank accounts 56% of men compared to 50% of women (Tripathi & Rajeev, 2023). Research shows that government policies and programs for women have helped close this gap. When it comes to mobile banking, most studies (mainly in cities) find little difference between men and women. For example, Glavee-Geo et al., (2017), surveyed 345 bank customers and found that gender did not have a significant effect on digital banking use. Still, women are a bit less likely to have bank accounts. There is little research on rural women's use of mobile banking, so it is not clear if they face extra barriers. More research is needed in this area.

Government and Policy Interventions

The Nepalese government and central bank have taken many steps to support mobile finance. Every bank must have branches in all 753 local areas, including rural places. This has helped bring banking services to remote regions. The government also pays social benefits, like old-age allowances, through bank accounts, which makes rural families open accounts. The Nepal Rastra Bank has created rules for digital finance, such as a 2016 policy that allowed companies

like eSewa, Khalti, and IME Pay to operate legally (Chand, 2025). In 2022, new rules allowed rural agents to use POS machines for deposits, withdrawals, and even small loans (Tun, 2023). In 2021, a new mobile payment service called Namaste Pay was launched, which works on basic phones and does not need the internet. These policies help people in areas without internet access use digital financial services. Other rules, like QR code payments, have made small payments and loans cheaper and easier. These actions aim to make mobile banking available to more people, especially in rural areas.

Theoretical Review

The Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) Singh & Srivastava, (2018), explain how independent variables like access to mobile technology, education level, socioeconomic status, perceived security, and mobile banking usage frequency influence the dependent variable mobile-banking-enabled financial inclusion. These theories provide a structured way to understand why some people adopt mobile banking more easily than others and how this adoption helps bridge financial gaps.

Technology Acceptance Model (TAM)

TAM focuses on two main factors: perceived usefulness how helpful mobile banking is and perceived ease of use how simple it is to operate. In Gandaki Province, access to mobile technology directly affects ease of use because rural users need smartphones and internet connectivity to even try mobile banking. For example, farmers in Syangja who own smartphones find it easier to check account balances or transfer money than those relying on basic phones. Education level also plays a role: people with higher education understand mobile banking interfaces faster, making the technology feel less intimidating.

Socioeconomic status influences perceived usefulness. Wealthier users in Pokhara, for instance, use mobile banking for loans and investments, while lower-income groups stick to basic transactions like remittances. Perceived security acts as a barrier or motivator: rural users hesitate to adopt mobile banking if they fear scams, but those who trust the system use it more frequently. Finally, mobile banking usage frequency reinforces habit formation. Regular users in Gandaki Province become more comfortable over time, which increases their reliance on digital financial services.

Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT adds more layers to TAM by including performance expectancy (how well mobile banking meets needs), effort expectancy (ease of learning), social influence (peer pressure), and facilitating conditions (resources like tech support). In Gandaki, access to mobile

technology is a facilitating condition without reliable networks, even educated users can't benefit from mobile banking. Education level reduces effort expectancy; villagers with basic literacy struggle with app navigation compared to urban users.

Socioeconomic status is tied to performance expectancy. Small business owners in Pokhara adopt mobile banking faster because it helps them manage cash flow, while rural laborers see fewer immediate benefits. Social influence matters in close-knit communities: when neighbors or family members use mobile banking, others feel pressured to try it. Perceived security also affects facilitating conditions banks offering fraud protection see higher adoption rates in rural Syangja. Lastly, usage frequency reflects behavioral intention; users who start with simple tasks (e.g., checking balances) gradually explore advanced features like loans.

Both TAM and UTAUT show that mobile banking adoption in Gandaki Province depends on a mix of technology access, education, income, trust, and regular use. TAM highlights how perceived usefulness and ease of use drive initial adoption, while UTAUT explains how social norms and technical support sustain long-term use. For example, a farmer with a smartphone access and basic education can learn to send payments ease of use, but without community encouragement social influence or reliable networks facilitating conditions, they might stop using the service. Policymakers and banks must address all these factors to ensure mobile banking effectively bridges the urban-rural financial gap.

Empirical Review

Hypothesis 1: If people in Gandaki Province have better access to mobile technology, then their level of financial inclusion through mobile banking will increase.

Access to mobile technology is a key factor in increasing financial inclusion through mobile banking. Studies show that people in rural areas with good mobile network coverage are much more likely to use mobile banking services (Mothobi & Kebotsamang, 2024). For example, when mobile internet and smartphones became more available in rural, the number of people using mobile banking doubled (Agurto et al., 2025). In Gandaki Province, over half of urban users said that reliable internet was the main reason they started using mobile banking, while fewer rural users could say the same (Karki et al., 2024). Research also found that living closer to mobile towers increased the chances of using mobile banking, and poor network quality discouraged regular use. These findings suggest that simply having access to mobile technology can make a big difference in whether people use digital financial services.

Hypothesis 2: There is a positive association between a user's education level and their ability to achieve financial inclusion using mobile banking services.

Education level also plays an important role in mobile banking adoption. People with higher education or better digital literacy are more comfortable using mobile banking apps. In Gandaki Province,Paudel users with secondary education were more than twice as likely to use mobile banking compared to those with only primary education (Kandel & Khanal, 2024). Similar results were found in other countries: financial literacy programs in Jordan led to a big increase in mobile banking use among educated groups, and university students in Dubai adopted mobile banking much faster than others (Shehadeh et al., 2025). On the other hand, rural users with low education often struggled with app navigation, which led to lower transaction frequency and even caused some to stop using mobile banking altogether.

Hypothesis 3: Socioeconomic status and access to mobile technology together have a combined effect on the financial inclusion of rural and urban residents through mobile banking.

Socioeconomic status affects how people use mobile banking and what features they choose. High-income users in places urban areas used mobile banking for loans and investments much more than low-income groups, who mostly used it for basic transactions like sending or receiving money (Mothobi & Kebotsamang, 2024). Small business owners and middle-income entrepreneurs adopted mobile banking faster because it helped them manage their finances and grow their businesses. In contrast, daily wage workers and low-income users had lower engagement, often because they did not see as many benefits or could not afford smartphones.

Hypothesis 4: Higher perceived security of mobile banking leads to a greater likelihood of financial inclusion among users in both urban and rural areas.

Perceived security is another important factor that influences whether people use mobile banking. Many rural users in Nepal and other countries avoided mobile banking because they were afraid of scams or losing their money (Dhakal & Acharya, 2025). When banks offered better fraud protection and introduced features like biometric logins, trust in mobile banking increased, especially in urban areas. Research from South Korea and Ghana also showed that users who trusted the security of mobile banking were much more likely to use it for bigger transactions and to keep using it over time.

Hypothesis 5: There is a relationship between how often people use mobile banking and their level of financial inclusion, but the direction of this relationship is not specified.

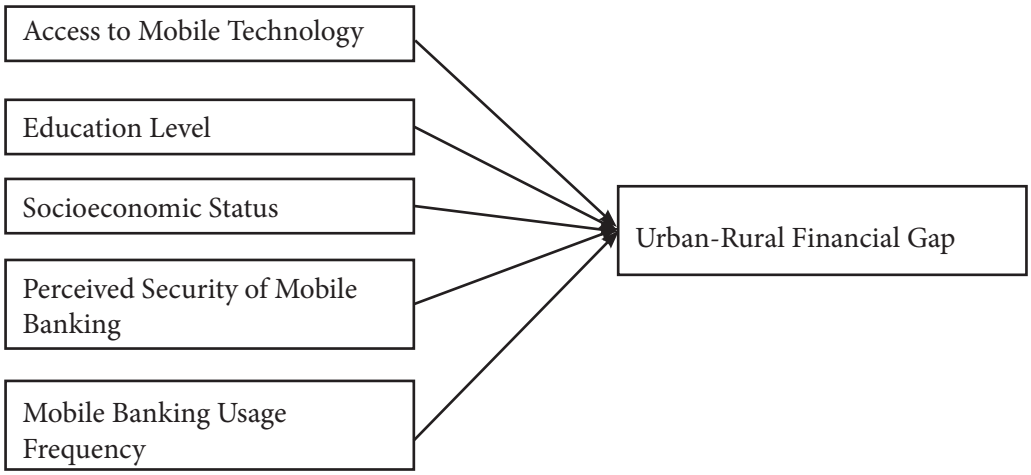
How often people use mobile banking also matters for financial inclusion. Regular users are more likely to try advanced features like loans and insurance, while occasional users stick to basic services (Moustati et all., 2024). Thakuri et al., (2023), studies in Nepal found that frequent users were more comfortable with mobile banking, felt less risk, and even encouraged others in

their community to use it. In Gandaki Province, people who used mobile banking more often had higher financial literacy and were more likely to recommend it to friends and family.

In conclusion, both the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) help explain how these factors access to mobile technology, education level, socioeconomic status, perceived security, and usage frequency work together to increase mobile-banking-enabled financial inclusion. TAM shows that people are more likely to use mobile banking when they find it useful and easy to use, while UTAUT adds that social influence and technical support also matter (Abu-Taieh et all., 2022). The findings from previous studies support these theories and show that improving access, education, trust, and support can help more people in rural and urban areas benefit from mobile banking.

Figure 1

Conceptual Framework



Research Design

Methodology

This study is about the role of mobile banking in bridging the urban-rural financial gap. The research areas are Galyang and Waling Municipalities rural areas in Syangja District and Pokhara Metropolitan City urban area in Kaski District. The target population is adults and young people who are 18 years old and above.

I used a multi-stage sampling approach. First, I selected the study areas. Then, I used random sampling to choose the respondents from both rural and urban areas. The total sample size is about 792, with 395 from rural areas and 397 from urban areas. A pilot survey was conducted with 30 participants 30 urbans, 30 rural not included in the final analysis. These participants

provided feedback on the clarity of questions, relevance of items, comprehensibility, and the estimated time required to complete the survey.

Data was collected using a structured questionnaire. The questionnaire included both open-ended and closed-ended questions. This helped to collect both quantitative and qualitative data. The questions were designed to measure the variables shown in the conceptual framework: access to mobile technology, education level, socioeconomic status, perceived security of mobile banking, and mobile banking usage frequency1.

In rural areas I conducted face-to-face interviews. This was done to help people who might have difficulty reading or using technology. In urban areas (Pokhara), I used both face-to-face interviews and online surveys, depending on what was more suitable for the respondents.

I used Smart PLS 4.0 software to analyze the data. The analysis focused on comparing the results from rural and urban areas. This helped to find out how mobile banking is affecting the financial gap between urban and rural areas.

Collecting data separately in rural and urban areas helps to understand the differences and challenges in each area. This approach makes it possible to identify specific barriers and opportunities for mobile banking in both settings. It also helps to make the findings useful for policy and practice in both rural and urban contexts.

Ethical Considerations

Participation in the study was voluntary. All respondents gave informed consent before taking part. The privacy and confidentiality of all data were maintained throughout the study. No personal information was shared, and all responses were kept secure and used only for research purposes.

Table. 1. *Demographic Analysis*

Variable	Category	Rural (n=395)	Urban (n=397)	Total (n=792)
Gender	Male	218 (55.0%)	198 (50.0%)	416 (52.5%)
	Female	171 (43.3%)	192 (48.3%)	363 (45.8%)
	Other	6 (1.7%)	7 (1.7%)	13 (1.7%)
Age Group	Under 20	53 (13.4%)	40 (10.0%)	93 (11.7%)
	21–30	119 (30.12%)	132 (33.2%)	251 (31.5%)
	31–40	99 (25.0%)	112 (28.2%)	211 (26.5%)
	41–50	72 (18.2%)	66 (16.6%)	138 (17.3%)
	51+	52 (13.2%)	47 (11.8%)	99 (12.5%)
	No formal education	44 (11.1%)	13 (3.2%)	57 (7.1%)
Education Level	Primary	73 (20.0%)	40 (10.0%)	113 (14.1%)

	Secondary	132 (33.4%)	106 (26.7%)	238 (30.0%)
	Bachelor	86 (21.7%)	132 (33.3%)	218 (27.3%)
	Master or above	52 (13.1%)	106 (26.7%)	158 (19.8%)
Occupation	Farmer	145 (36.7%)	27 (6.8%)	172 (21.6%)
	Business	52 (13.1%)	79 (20.0%)	131 (16.4%)
	Employed	80 (20.2%)	159 (40.0%)	239 (30.0%)
	Unemployed	52 (13.1%)	40 (10.0%)	92 (11.5%)
	Student	66 (16.7%)	92 (23.2%)	158 (19.8%)
Monthly Income	Less than NPR 10,000	131 (33.2%)	54 (13.6%)	185 (23.2%)
	NPR 10,000–30,000	171 (43.3%)	133 (33.5%)	304 (38.2%)
	NPR 30,001–50,000	66 (16.7%)	119 (29.9%)	185 (23.3%)
	Above NPR 50,000	27 (6.8%)	91 (22.9%)	118 (14.8%)
Use Mobil Ban	Yes	290 (73.4%)	370 (93.2%)	660 (83.3%)
	No	105 (26.4%)	27 (6.8%)	132 (16.7%)
Own Smartphone	Yes	237 (60.0%)	345 (86.9%)	582 (73.4%)
	No	158 (40.0%)	52 (13.1%)	210 (26.6%)
Use Mobile Banking	Less than 6 months	20 (5.0%)	23 (6.7%)	43 (5.4%)
	6–12 months	60 (15.1%)	51 (13.0%)	111 (14.0%)
Duration of Use	More than 1 year	395 (100.0%)	397 (100%)	792 (100%)

Table 1 study included 792 people from both rural and urban areas. The data shows clear differences between people living in rural and urban places across several key areas. Among the participants, just over half were male 52.5 percent. In rural areas, 55 percent were male, while in urban areas, 50 percent were male. Female participants made up 45.8 percent overall, with 43.3 percent in rural and 48.3 percent in urban areas. A small number 1.7 percent were identified as 'Other' in both groups. Most participants were between 21 and 40 years old. The largest group was the 21–30 age range, making up 31.5 percent of the total. The next biggest group was 31– 40 years 26.5 percent. Fewer people were under 20 or 11.7 percent or over 12.5 percent. There was a difference in education between rural and urban participants. In rural areas, more people had no formal education 11.1 percent compared to urban areas 3.2 percent. Most people had secondary education 30 percent, and many had a bachelor's degree 27.3 percent. More urban participants had a master's degree or higher 26.7 percent compared to rural 13.1 percent.

Farming was the main job in rural areas 36.7 percent, but only 6.8 percent in urban areas. More urban people were employed 40 percent or in business 20 percent compared to rural areas. Students made up about one-fifth of the total. Most rural participants earned less than NPR 30,000

per month. In urban areas, more people had higher incomes. About 23.2 percent of all participants earned less than NPR 10,000, while 14.8 percent earned more than NPR 50,000. Urban areas had more high-income earners. Mobile banking was more popular in urban areas 93.2 percent than in rural areas 73.4 percent. Most urban participants owned a smartphone 86.9 percent, compared to 60 percent in rural areas. Most people had been using mobile banking for more than one year. In summary, urban participants tended to have higher education, better jobs, and higher incomes. They also used mobile banking and smartphones more than rural participants. Rural participants were more likely to be farmers and have lower income and education levels.

Table. 2. *Factor Loading*

Construct	Indicator	Urban	Rural
AMP (Access to Mobile Technology)	AMP1	–	-
	AMP2	0.824	–
	AMP3	0.728	–
	AMP4	0.772	0.659
	AMP5	0.785	0.718
	AMP6	0.808	0.732
	AMP7	0.804	0.701
EDU (Education Level)	EDU1	0.786	0.871
	EDU2	0.783	0.873
	EDU3	0.742	-
	EDU4	0.726	-
	EDU5	0.765	-
	EDU6	0.730	0.790
	EDU7	-	0.806
URFG (Urban Rural Financial Gap)	URFG1	0.744	0.891
	URFG2	–	0.875
	URFG3	–	0.895
	URFG4	0.709	0.894
	URFG5	0.732	0.887
	URFG6	0.743	0.907
MOB (Mobile Banking Usage)	MOB1	0.690	0.900
	MOB2	0.704	0.867
	MOB3	–	0.887
	MOB4	0.742	0.840

	MOB6	0.749	–
	MOB7	0.672	–
PEM (Perceived Security of Mobile)	PEM1	–	0.873
	PEM2	0.774	0.882
	PEM3	0.722	0.884
	PEM4	0.724	0.901
	PEM5	0.767	0.851
	PEM6	0.714	0.845
	PEM7	0.771	0.869
SOC (Socioeconomic Status)	SOC1	0.761	0.751
	SOC2	0.794	0.682
	SOC3	0.807	0.780
	SOC4	0.803	0.794
	SOC5	0.803	0.795
	SOC6	0.766	0.795
	SOC7	0.784	0.812

In the table 2, most indicators of Cronbach's Alpha have high loadings in both urban and rural groups, but sometimes an indicator works better in one group than the other. For example, some questions about mobile banking are more relevant for urban users, while others fit rural users better. This pattern helps researchers understand which questions are clear and useful for different groups, and which areas might need more support or better explanation. Overall, the table helps show that education, access to technology, and social influence are important for using mobile banking, but there are still differences between urban and rural areas that need attention in future policies and programs. Education and social influence work very well in both city and village areas, with almost all questions showing strong numbers above. This means that whether someone lives in a city or village, their education level and what their community thinks are very important factors in mobile banking use. This research helps us understand that mobile banking affects city and village people differently, and banks need to create different strategies for each group to make their services more effective and accessible. Based on the above data analysis, the outer loading is above 0.60 (Fahmi et al., 2022), which demonstrates strong convergent validity for the construct.

Table. 3. *Construct Reliability and Validity*

Construct	Cronbach's α		Composite reliability		AVE	
	Urban	Rural	Urban	Rural	Urban	Rural
AMP	0.878	0.675	0.888	0.804	0.620	0.506
EDU	0.850	0.857	0.856	0.903	0.571	0.699
URFG	0.712	0.948	0.711	0.958	0.536	0.793
MOB	0.760	0.897	0.769	0.928	0.507	0.764
PEM	0.843	0.947	0.861	0.957	0.556	0.761
SOC	0.899	0.886	0.920	0.910	0.622	0.591

The above table 3 shows reliability and validity of the constructs used in this study were assessed using urban and rural area, including Cronbach's Alpha, Composite reliability and Average Variance Extracted (AVE). The accepted loading values require at least 0.60 for factor loading (Ab Hamid et al., 2017), and AVE must exceed 0.50 (Henseler et al., 2015) and Cronbach's alpha more than 0.70 (Hair Jr et al., 2020). Cronbach's Alpha values for all constructs exceeded the acceptable threshold of 0.7, indicating good internal consistency. It compares how reliable and valid the survey questions are for each main topic construct in both urban and rural areas. The results show that all constructs have good reliability and validity in both settings, as most values are above the recommended levels (0.7 for reliability and 0.5 for AVE). In urban areas, all constructs meet the minimum standards, but the reliability scores are generally higher in rural areas, Acess to Mobil Technology (AMP), especially for Education Level (EDU), Urban Rural Financial Gap (URFG), Mobile Banking Usage (MOB), Perceived Security of Mobile (PEM) and Socioeconomic Status(SOC). This means that the survey questions for these topics worked even better in rural areas, possibly because people in rural areas have more similar experiences or opinions about these topics.

Overall, the table shows that the survey tool is strong and reliable for both urban and rural groups, but it works especially well in rural areas for certain topics. This finding supports the use of these constructs in further research and policy-making, as they accurately measure attitudes and experiences with mobile banking in different settings. The higher reliability and validity in rural areas may reflect the more unified challenges and experiences faced by rural populations regarding education, financial inclusion, and mobile banking. These results can help guide banks and policymakers to design better programs that address the specific needs of both urban and rural users, making mobile banking more accessible and effective for everyone.

Table. 4. *Fornall Larker*

Con-struct	AMP (U)	AMP (R)	EDU (U)	EDU (R)	URFG (U)	URFG (R)	MOB (U)	MOB (R)	PEM (U)	PEM (R)	SOC (U)	SOC (R)
AMP	0.726	0.787										
EDU	-0.230	-0.023	0.893	0.756								
URFG	0.336	0.313	-0.629	0.288	0.890	0.732						
MOB	0.300	0.046	-0.567	0.055	0.802	0.258	0.874	0.712				
PEM	0.334	-0.059	-0.578	0.004	0.812	0.211	0.902	-0.003	0.872	0.746		
SOC	0.313	0.059	-0.505	-0.049	0.744	0.274	0.831	-0.027	0.886	-0.016	0.823	0.788

Based on the above tables, 4, Fornell Larker provide insights into the discriminant validity of the constructs, with values below diagonal values generally indicating sufficient discriminant validity (Mohammed et all., 2025). To determine discriminant validity between the constructs in the urban and rural settings. The square root of the Average Variance Extracted (AVE) for each construct, displayed on the diagonal, was higher than the correlations between constructs in both samples, which speaks in favour of discriminant validity. Education Level (EDU = 0.893), Urban Rural Financial Gap (URFG = 0.890), Mobile Banking Use Frequency (MOB = 0.874), Perceived Security of Mobile (PEM = 0.872), and Socioeconomic Influence (SOC = 0.823) demonstrated high internal consistency and a distinct separation with other variables in the case of the rural sample. In comparison, although urban constructs also displayed satisfactory values (e.g., AMP = 0.787; SOC = 0.788), the construct correlations were, in general, weaker than in the rural data. Interestingly, all of the remaining constructs in the rural area showed a negative correlation with Education (e.g., EDU-URFG = -0.629; EDU-MOB = -0.567), which means that, in the rural context, better education levels do not automatically lead to improvements in financial behavior or the adoption of mobile banking. In rural contexts, Mobile Banking Use and Socioeconomic Influence indicated close relationships with Perceived Security Ease and Motivation (e.g., MOB-PEM = 0.902; SOC-PEM = 0.886), as did Perceived Security of Mobil and Motivation with each other (e.g., PE-PEM = 0.930; MO-PEM = 0.911), thus reflecting the interdependence of these factors in shaping the financial behavior of rural users. All in all, the findings imply that the rural respondents exhibit a more pronounced structural relationship among constructs, which may be attributed to a more cohesive view of mobile banking advantages and convenience in less financially developed settings.

Table. 5. *Model Fit*

Fit Index	Urban Area	Rural Area
SRMR	0.059	0.049
d_ULS	1.97	1.424
d_G	0.713	0.34
Chi-square	1662.446	773.014
NFI	0.865	0.856

The model fit results table 5 shows for both urban and rural samples show that the models fit the data well. In both cases, the Standardized Root Mean Square Residual (SRMR) values are below the recommended cutoff of 0.08 specifically, 0.059 for urban and 0.049 for rural indicating a good match between the model and the observed data. The value of SRMR should be smaller than 0.085 or 0.12 (Shi et al., 2018). The d_ULS and d_G values, which measure the difference between the actual and predicted correlation matrices, are lower for the rural model d_ULS = 1.424; d_G = 0.340 compared to the urban model d_ULS = 1.97; d_G = 0.713, suggesting an even closer fit in rural areas. The Chi-square statistic is also smaller in the rural sample 773.014 than in the urban sample (1662.446), which further supports a better fit for the rural data. Both models have Normed Fit Index (NFI) values above 0.80 - 0.865 for urban and 0.856 for rural showing strong comparative fit. Overall, while both models are acceptable, the rural model demonstrates a slightly better fit, as reflected in the SRMR, d_ULS, and d_G values.

Table. 6. *VIF*

Construct	VIF(U)	VIF(R)
AMP -> URFG	1.010	2.407
EDU -> URFG	1.006	2.113
MOB -> URFG	1.006	1.965
PEM -> URFG	1.004	1.853
SOC -> URFG	1.007	1.525

The VIF table 6 shows how much the different factors like access to mobile technology, education level, mobile banking use, empowerment, and socioeconomics are related to each other when predicting urban to rural financial gap in both urban and rural areas. Although standard errors are higher, they indicate that the coefficients of any or all independent variables may be very different from zero (Schielzeth, 2010). A commonly used measure of indicator multicollinearity is the Variance Inflation factor (VIF). The collinearity test of a model is said to be free of 98 multicollinearity if all VIF values produced by a full collinearity test are less than or equal to 3.3 or 5 (Kroll & Song, 2013; Tomaschek et al., 2018). All the VIF values in the table are low (all below 5), which means there is no serious overlap between the factors. This is good because it tells us that each factor is giving its own unique information and not repeating what the others are showing. In simple terms, the results are reliable, and we can trust that the analysis is not affected by the factors being too similar to each other. This makes the study strong and helps us better understand what affects financial inclusion in both cities and villages.

Table. 7. *Coefficient of Determination (R^2)*

U	Original sample (O)
URFG(Urban)	0.367
URFG(Rural)	0.74

Table 7 presents the R-squared value in the rural area is 0.74, which means that 74% of the changes in the urban to rural financial gap can be explained by the factors used in the model for rural people. This is a high value and shows that the model works very well for explaining the financial gap in villages. In simple words, most of the important reasons why rural people are included in financial services are covered by this study. On the other hand, the R-squared value in the urban area is 0.367, which means that only about 37% of the changes in the urban to rural financial gap can be explained by the same factors for city people. This is a lower value and tells us that there are other reasons affecting the financial gap in cities that are not included in the model. So, the study explains the financial gap much better in rural areas than in urban areas, showing that the factors used are more suitable for villages than for cities. According to Purwanto & Sudargini (2021), the acceptable ranges for R^2 values of endogenous latent variables are 0.67 for substantial, 0.33 for moderate and 0.19 for weak measurement.

Table. 8. *Hypothesis Result Rural Area*

Hypothesis	Bita Valu	T-valu	P-values	2.50%	97.50%	Decision
AMP > URFG H1	0.046	1.649	0.099	-0.01	0.101	Unsupported
EDU > URFG H2	-0.313	4.376	0.001	-0.448	-0.169	Supported
SOC > URFG H3	0.503	6.982	0.001	0.367	0.649	Supported
PEM > URFG H4	0.401	4.301	0.001	0.208	0.574	Supported
MOB > URFG H5	0.283	4.314	0.001	0.157	0.416	Supported

The hypothesis testing results in Table 8 show the direct effects of five key factors on the urban-rural financial gap. Out of the five hypotheses tested, four were found to be statistically significant, while one was not supported by the data.

Hypothesis H1, which examined whether access to mobile technology (AMP) reduces the urban-rural financial gap, was not supported ($\beta = 0.046$, $t = 1.645$, $p = 0.099$). This means that simply having awareness or positive perceptions about mobile technology does not significantly help bridge the gap between urban and rural financial gap. The p-value of 0.099 is above the

standard significance level of 0.05, indicating that this relationship is not strong enough to be considered reliable.

Hypothesis H2 revealed an unexpected finding: education level (EDU) actually increases the urban-rural financial gap ($\beta = -0.313$, $t = 4.376$, $p < 0.001$). This negative relationship suggests that higher education levels may actually widen the gap between urban and rural financial inclusion rather than narrow it. This could be because educated people in rural areas might have higher expectations for financial services or may migrate to urban areas, leaving less educated populations behind.

Hypothesis H3 showed that socioeconomic status (SOC) has the strongest positive effect on reducing the urban-rural financial gap ($\beta = 0.508$, $t = 6.982$, $p < 0.001$). This means that better economic conditions and social standing significantly help bridge the gap between urban and rural financial inclusion. People with higher socioeconomic status are more likely to access and use financial services regardless of their location.

Hypothesis H4 demonstrated that perceived security of mobile banking (PEM) positively influences the reduction of the urban-rural financial gap ($\beta = 0.401$, $t = 4.301$, $p < 0.001$). When people feel safe and secure using mobile banking services, it helps reduce the differences in financial inclusion between urban and rural areas. Trust and confidence in mobile banking security are crucial for its adoption.

Finally, Hypothesis H5 confirmed that mobile banking usage frequency (MOB) positively affects the reduction of the urban-rural financial gap ($\beta = 0.283$, $t = 4.314$, $p < 0.001$). The more frequently people use mobile banking services, the more it helps bridge the gap between urban and rural financial inclusion. Regular usage leads to better financial access and inclusion for users in both areas.

Based on the hypothesis testing tables provided, this analysis examines how different factors influence financial inclusion through mobile banking in rural and urban areas of Gandaki Province, Nepal. The results show distinct patterns between the two settings, with important implications for policy and practice.

Table. 9. *Urban Area Hypothesis Results*

Hypothesis	Bita- Valu	T-value	P-values	2.50%	97.50%	Decision
AMP > URFG H1	0.306	7.375	0.001	0.222	0.386	supported
EDU > URFG H2	0.295	7.377	0.001	0.209	0.368	Supported
SOC > URFG H3	0.28	7.876	0.001	0.209	0.348	Supported
PEM > URFG H4	0.233	6.121	0.001	0.154	0.304	Supported
MOB > URFG H5	0.236	6.004	0.001	0.153	0.309	Supported

Table 9 presents the hypothesis testing results for the urban area, demonstrating that all five research hypotheses (H1 to H5) were strongly supported, indicating significant positive relationships between the independent variables and the reduction of the urban-rural financial gap. Each hypothesis achieved statistical significance with p-values of 0.001, indicating very strong evidence for these relationships.

Access to Mobile Technology (H1) showed the strongest effect on reducing the urban-rural financial gap with a beta coefficient of 0.306 and a t-value of 7.375. This means that better access to mobile technology in urban areas significantly helps bridge the gap between urban and rural financial inclusion. The confidence interval (0.222 to 0.386) confirms this positive relationship is reliable and meaningful1.

Education Level (H2) also demonstrated a strong positive impact with a beta value of 0.295 and t-value of 7.377. This finding indicates that higher education levels in urban areas contribute significantly to reducing financial disparities between urban and rural populations. Urban residents with better education are more likely to use financial services effectively, which helps narrow the gap.

Socioeconomic Status (H3) proved to be another important factor with a beta coefficient of 0.28 and t-value of 7.876. This suggests that improved socioeconomic conditions in urban areas play a crucial role in bridging the financial divide. People with better economic status are more capable of accessing and utilizing various financial services.

Perceived Security of Mobile Banking (H4) showed a positive effect with a beta value of 0.233 and t-value of 6.121. When urban residents feel secure about using mobile banking services, it contributes to reducing the urban-rural financial gap. Trust and confidence in digital financial services are essential for their adoption and effective use.

Mobile Banking Use Frequency (H5) also demonstrated a significant positive relationship with a beta coefficient of 0.236 and t-value of 6.004. Regular use of mobile banking services by urban residents helps reduce the financial gap between urban and rural areas. The more frequently people use these services, the more they contribute to overall financial inclusion.

All hypotheses showed narrow confidence intervals that did not include zero, confirming the reliability of these positive relationships. The strong t-values (all above 6.0) indicate that these effects are not due to chance and represent genuine relationships between the variables. These findings support the theoretical foundations based on the Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology, demonstrating that urban factors significantly influence the reduction of urban-rural financial disparities through mobile banking adoption and usage.

Figure. 2. *Path Diagram Rural*

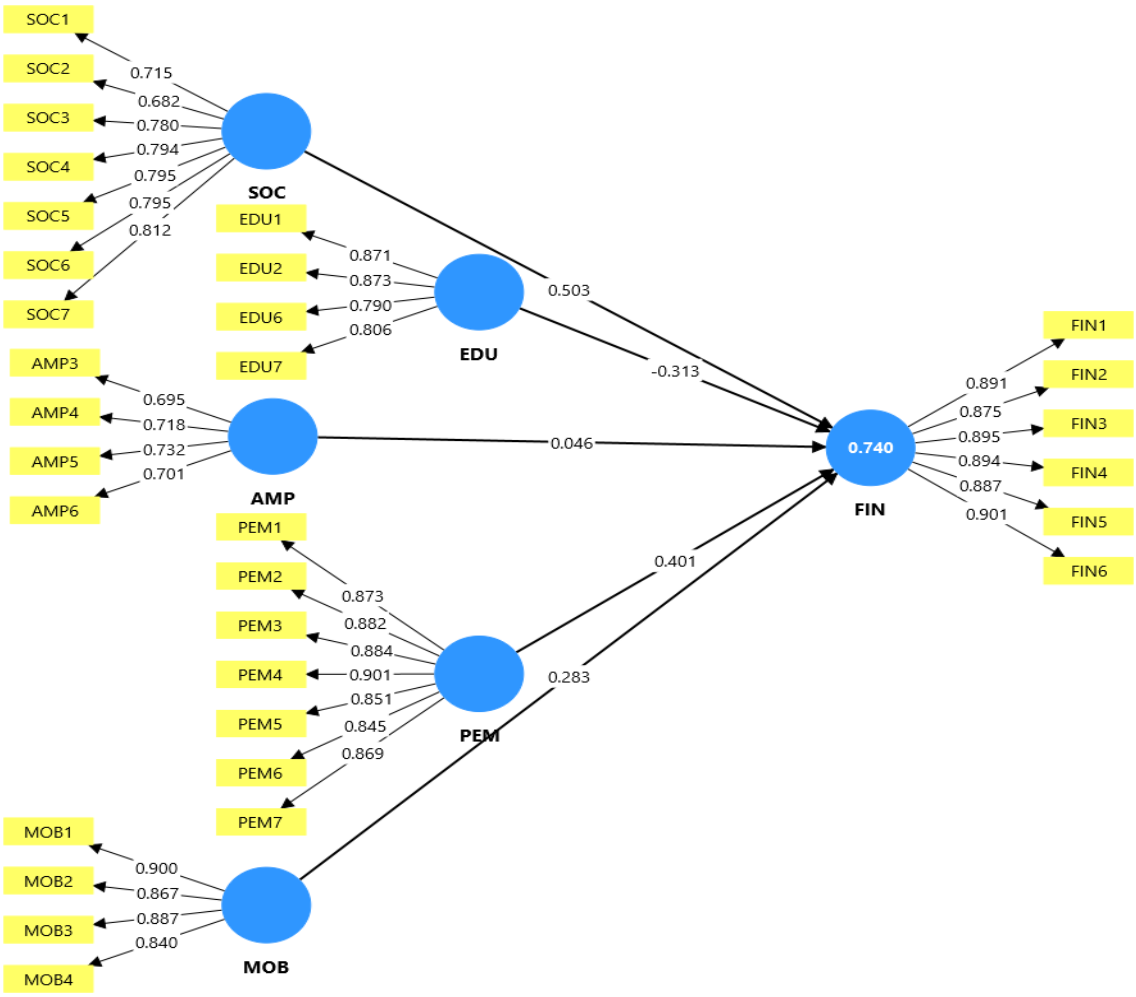


Figure. 3. *Path Diagram Urban*

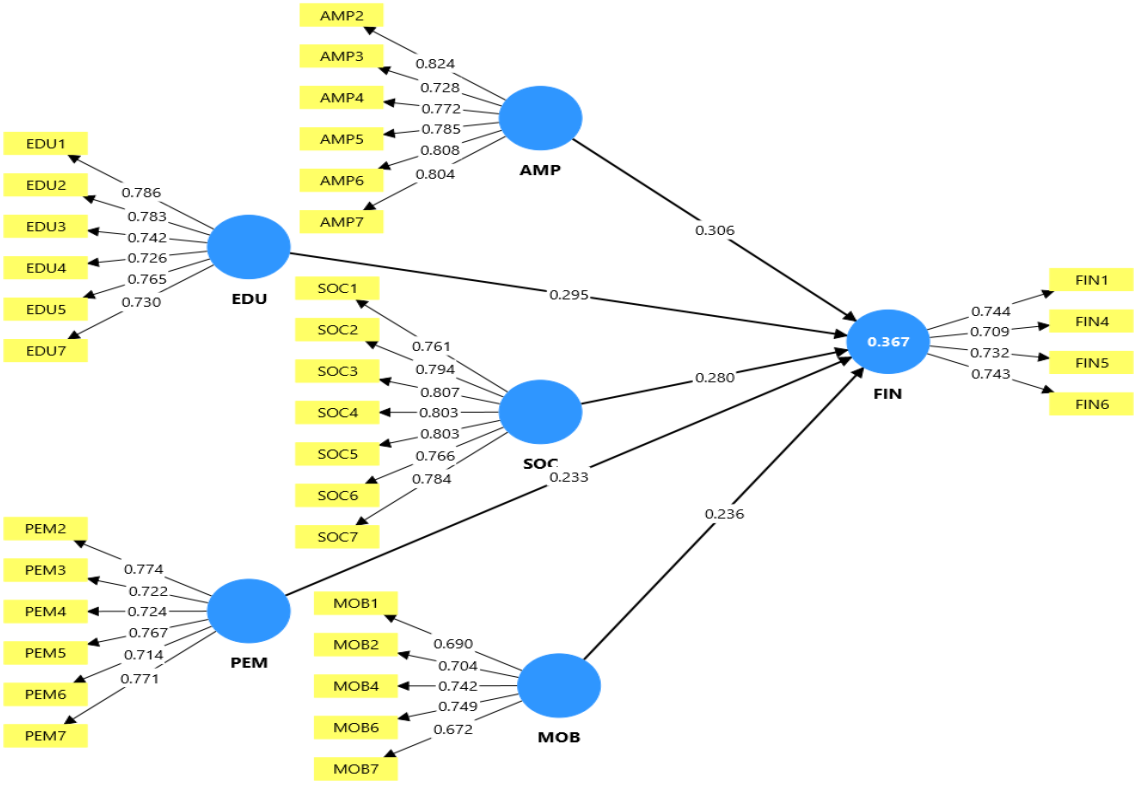


Table. 10. *Comparison Result Both*

Hypothesis	Relationship	Urban Result	Rural Result	Key Different
H1	AMP → URFG	Strong positive effect (β = 0.306)	No significant effect.	Access to mobile technology is a key driver in cities but is not enough to reduce the gap in rural areas alone.
H2	EDU → URFG	Strong positive effect (β = 0.295)	Significant negative effect (β = -0.313).	Education helps reduce the gap in urban areas but appears to widen it in rural areas.
H3	SOC → URFG	Strong positive effect (β = 0.280)	Strongest positive effect (β = 0.508).	Socioeconomic status is a powerful factor in both areas but has an even stronger impact in the rural context.
H4	PEM → URFG	Positive effect (β = 0.233)	Strong positive effect (β = 0.401).	Perceived security is important everywhere but is a stronger factor for bridging the gap in rural areas.
H5	MOB → URFG	Positive effect (β = 0.236)	Positive effect (β = 0.283).	Frequent use of mobile banking helps reduce the gap in both areas, with a slightly stronger effect in rural settings.

Table 10 represents the most striking differences are seen in the roles of access to mobile technology (H1) and education level (H2). In urban areas, both factors significantly help reduce the financial gap. This is logical, as urban residents generally have better infrastructure and educational opportunities, allowing them to use mobile banking more effectively. However, in rural areas, the results are opposite. The lack of significance for H1 suggests that simply having access or awareness is not sufficient to overcome other barriers in rural settings, such as poor network quality or lack of technical support.

The negative impact of education (H2) in rural areas is a critical finding. This may indicate that higher education in a rural context, without corresponding local opportunities or financial services, could lead to frustration or migration to urban centers, thereby widening the gap for the remaining population. This aligns with the "knowledge gap hypothesis," which suggests that disparities can grow if one group cannot act on new information as effectively as another.

In contrast, socioeconomic status (H3), perceived security (H4), and mobile banking use frequency (H5) were found to be significant positive drivers in both urban and rural contexts. Notably, socioeconomic status and perceived security had much stronger effects in rural areas. This highlights that fundamental factors like economic stability and trust in the system are especially crucial for encouraging financial inclusion in rural communities. While urban users may take security for granted, it is a key hurdle to overcome for rural adoption.

In conclusion, the comparison shows that the drivers for reducing the urban-rural financial gap are not universal. Urban strategies should focus on leveraging existing advantages in technology and education. Rural strategies, however, must prioritize building a foundation of trust and addressing fundamental socioeconomic barriers before the benefits of technology and education can be fully realized.

Table. 11. *Effect Size F^2*

Construct	Bita Valu (U)	Bita Valu (R)
AMP > URFG	0.147	0.007
EDU > URFG	0.137	0.048
MOB > URFG	0.088	0.054
PEM > URFG	0.085	0.074
SOC > URFG	0.123	0.186

The f-square table shows the effect size of each factor on the Urban Rural Financial Gap (URFG) in both urban and rural areas. F-square values tell us how much each factor contributes to explaining the changes in the dependent variable. Based on established guidelines, f-square values of 0.02 represent small effects, 0.15 represent medium effects, and 0.35 represent large effects (Ramayah et all., 2018).

In urban areas, Access to Mobile Technology (AMP) shows the strongest effect with an f-square value of 0.147, which is close to medium effect size. This means that mobile technology access makes a meaningful contribution to reducing the urban-rural financial gap in cities. Education Level (EDU) follows with 0.137, also approaching medium effect size, indicating that higher education significantly helps bridge the financial gap.

The other factors show smaller but still meaningful effects: Socioeconomic Status (SOC) at 0.123, Mobile Banking Use Frequency (MOB) at 0.088, and Perceived Security (PEM) at 0.085. All these values fall in the small effect range but are above the minimum threshold of 0.02, showing they all contribute to reducing the financial gap in urban areas.

The rural area shows a completely different pattern. Socioeconomic Status (SOC) has the strongest effect with 0.186, which qualifies as a medium effect size. This suggests that economic status is the most important factor for bridging the urban-rural financial gap in rural settings.

Interestingly, all other factors show much weaker effects in rural areas compared to urban areas. Perceived Security (PEM) shows 0.074, Mobile Banking Use Frequency (MOB) shows 0.054, and Education Level (EDU) shows 0.048 - all representing small effects. Most notably, Access to Mobile Technology (AMP) has a very weak effect of only 0.007, which is practically negligible.

Table. 12. *Quadratic Effects*

	P values (R)	P values (U)	Effects
QE (AMP) > URFG	0.065	0.081	Insignificant
QE (EDU) > URFG	0.703	0.769	Insignificant
QE (MOB) > URFG	0.534	0.345	Insignificant
QE (PEM) > URFG	0.808	0.537	Insignificant
QE (SOC) > URFG	0.205	0.691	Insignificant

Table 12 analysis uses Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine possible quadratic (curved) effects between key constructs, following the methods outlined by Hair et al. (2017) and Sarstedt et al. (2020). The table reports on whether quadratic relationships exist between AMP, EDU, MOB, PEM, and SOC with URFG. According to the results, all quadratic effects are statistically insignificant, as their p-values exceed the conventional thresholds of 0.05 or 0.10 (Chin, 1998; Roodman, 2009; Henseler et al., 2009; Amrhein et al., 2017). This means that nonlinear (curved) relationships between these constructs and URFG do not substantially contribute to the model. The findings suggest that linear relationships are more appropriate for explaining the connections between these variables. Consistent with PLS-SEM principles, which emphasize prediction and variance explanation over traditional model fit (Ali et al., 2018), the results show that including quadratic terms does not improve the model's explanatory power.

Major Finding

Unexpected Results and Their Implications

One of the most surprising findings was that Access to Mobile Perception (AMP) had no significant effect on reducing the urban-rural financial gap in rural areas ($\beta = 0.046$, $p = 0.099$). This contradicts common assumptions that simply increasing awareness or access to mobile technology will automatically improve financial inclusion. The insignificant result suggests that rural areas face deeper structural barriers that mere awareness cannot overcome.

This finding aligns with research showing that rural populations need more than just technology access - they need supportive infrastructure, reliable networks, and appropriate training to effectively use mobile banking services. The lack of significance may reflect poor network quality, limited technical support, or inadequate digital literacy programs in rural Gandaki Province.

Negative Impact of Education in Rural Areas

Perhaps the most unexpected finding was the negative relationship between Education Level (EDU) and financial inclusion in rural areas ($\beta = -0.313$, $p < 0.001$). This counterintuitive result suggests that higher education levels in rural contexts may actually widen the urban-rural financial gap rather than narrow it.

Several explanations can account for this phenomenon. First, educated individuals in rural areas may have higher expectations for financial services that local mobile banking offerings cannot meet, leading to frustration and lower adoption. Second, the "brain drain" effect may be at play, where educated rural residents migrate to urban areas for better opportunities, leaving behind less educated populations and thereby widening the gap.

Third, educated rural residents may be more aware of security risks and limitations of mobile banking systems, making them more cautious about adoption compared to their urban counterparts who have better infrastructure and support systems. This finding supports the "knowledge gap hypothesis," which suggests that information disparities can actually increase inequalities when one group cannot act on new information as effectively as another.

Effect Size Analysis

The f-square values reveal important differences in factor importance between urban and rural areas. In urban areas, Access to Mobile Technology shows the strongest effect ($f^2 = 0.147$), approaching medium effect size, followed by Education Level ($f^2 = 0.137$). This pattern reflects urban areas' advantage in technology infrastructure and educational resources (Abbas et al., 2018; Wareing et all., 2018)

Rural areas show a completely different pattern, with Socioeconomic Status having the strongest effect ($f^2 = 0.186$), qualifying as medium effect size. All other factors show much weaker effects in rural areas, with Access to Mobile Technology having practically negligible impact ($f^2 =$

0.007). This stark difference highlights the fundamental role of economic stability in rural mobile banking adoption.

The findings align with broader research on financial inclusion in South Asia, which shows that mobile banking adoption varies significantly between urban and rural contexts (Çallı, 2023; Wong et al., 2023). Studies from Nepal and other developing countries have consistently found that socioeconomic factors are more important than technological factors in rural areas (Çallı, 2023; Omala, 2023; Paneru, 2023).

Research on mobile banking adoption in developing countries supports the finding that perceived security is crucial for rural adoption (Anegue, 2025; Lorain et al., 2025; Tripathi & Rajeev, 2023). Studies from India, Bangladesh, and other South Asian countries have shown similar patterns where trust and security concerns are primary barriers to rural mobile banking adoption (Apaua & Lallie, 2022; Apaua et al., 2022; Pokhrel, 2022).

Byanjankar, et al., (2025) & Jain et al., (2024) found that the negative impact of education in rural areas has been observed in other contexts and aligns with literature on rural development challenges. Studies from various developing countries have found that education without corresponding local opportunities can lead to migration and increased disparities (Abbas et al., 2018; Khan et al., 2017). Raju & Reddy, (2022) and Senyo et al., (2021) this phenomenon has been documented in rural development literature as the "educated migration" effect.

Banskota et al., (2025), Cheah et al., (2013) and Pant, B. (2016) unlock the insignificant impact of mobile access perception in rural areas is consistent with research showing that infrastructure challenges go beyond simple awareness. Studies from rural Nepal and similar contexts have demonstrated that reliable network coverage, electricity, and technical support are prerequisite conditions for effective mobile banking adoption (Nepal Economic Forum, 2023; Apaua & Lallie, 2022; Khan et all., 2017).

Discussion and Conclusion

This study examined five key variables influencing the urban-rural financial gap through mobile banking adoption in Gandaki Province, Nepal. The findings reveal important differences between urban and rural contexts that have significant implications for financial inclusion policies and mobile banking strategies. The results provide insights into how different factors work in various settings and challenge some common assumptions about technology adoption in developing countries.

Urban Area Results

In urban areas, all five hypotheses were strongly supported, showing that mobile banking can effectively bridge financial gaps when the right conditions exist. Access to Mobile Technology (AMP) emerged as the strongest predictor with a beta coefficient of 0.306, indicating

that better mobile infrastructure and awareness significantly help reduce urban-rural financial disparities. Education Level (EDU) also showed strong positive effects (β = 0.295), suggesting that educated urban residents are more likely to use mobile banking services effectively, which helps narrow the gap between urban and rural financial inclusion.

Socioeconomic Status (SOC) proved important with a beta value of 0.28, confirming that wealthier urban residents contribute significantly to bridging financial divides through their adoption and usage of mobile banking services. Both Perceived Security (PEM) and Mobile Banking Use Frequency (MOB) showed positive relationships, with beta coefficients of 0.233 and 0.236 respectively, indicating that trust in mobile banking security and regular usage patterns help reduce financial disparities.

Rural Area Results

The rural area results present a more complex picture with both expected and surprising findings. Only four out of five hypotheses were supported, with one showing an unexpected negative relationship. Socioeconomic Status (SOC) emerged as the strongest factor (β = 0.508), demonstrating that economic conditions are even more crucial in rural settings than in urban areas for bridging financial gaps.

Perceived Security of Mobile Banking (PEM) showed a strong positive effect (β = 0.401), indicating that trust and confidence in mobile banking systems are particularly important for rural adoption. Mobile Banking Use Frequency (MOB) also demonstrated significant positive impact (β = 0.283), suggesting that regular usage helps bridge financial gaps in rural areas.

Theoretical Framework Applications

The results demonstrate different patterns of technology acceptance between urban and rural areas, which can be explained through both Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) frameworks.

In urban areas, TAM's core concepts of perceived usefulness and perceived ease of use are strongly supported (Hutomo, 2023; Sarfaraz, 2017) Urban residents find mobile banking both useful and easy to use due to better infrastructure, education, and support systems (Wareing et la., 2018). The UTAUT model's emphasis on performance expectancy and facilitating conditions also explains why access to mobile technology and education are significant factors in urban settings (Nepal, 2023; Ozili, 2020)

For rural areas, the UTAUT model's focus on social influence and facilitating conditions becomes more relevant (Ozili, 2020; Williams et al., 2023) The strong impact of socioeconomic status and perceived security suggests that rural adoption depends more on fundamental enabling conditions and community trust than on individual awareness or education (Apaua & Lallie,

2022; Senyo et al., 2021). This aligns with UTAUT's emphasis on the importance of social and infrastructural support for technology adoption (Ozili, 2020; Wyman, 2017)

Limitations and Methodological Considerations

This study is limited to Gandaki Province, Nepal, and the findings may not be generalizable to other regions or countries. The specific cultural, economic, and infrastructural context of this province may influence the relationships observed between variables. Future research should examine these relationships in different geographic and cultural contexts to establish broader validity.

The cross-sectional nature of this study limits our ability to establish causal relationships between variables. While the statistical relationships are clear, we cannot definitively conclude that changes in these variables will cause changes in financial inclusion outcomes. Longitudinal studies would be needed to establish causality and understand how these relationships evolve over time.

The study's reliance on mobile banking users may introduce selection bias, as non-users are not represented in the analysis. This limitation is particularly important for understanding barriers to adoption and may affect the generalizability of findings to the broader population. Future research should include non-users to provide a more comprehensive understanding of adoption barriers.

The constructs used in this study were developed primarily in Western contexts and may not fully capture the nuances of mobile banking adoption in rural Nepal. Cultural factors such as community relationships, traditional financial practices, and local trust networks may play important roles that are not adequately measured by standard technology acceptance models.

Policy and Practical Implications

The findings suggest that financial inclusion strategies should be tailored differently for urban and rural contexts. Urban strategies should continue to leverage advantages in technology infrastructure and education, focusing on expanding access and improving digital literacy programs.

Rural strategies require a more fundamental approach that prioritizes building economic stability and trust before focusing on technology adoption. This means addressing basic infrastructure needs, providing economic development opportunities, and building community-based trust networks for mobile banking services.

The negative impact of education in rural areas suggests that simply providing general education may not be sufficient for improving mobile banking adoption. Instead, targeted financial literacy and mobile banking training programs that address specific rural contexts and concerns

may be more effective. These programs should focus on practical skills and address security concerns that educated rural residents may have.

The weak impact of mobile access perception in rural areas highlights the need for comprehensive infrastructure development rather than just awareness campaigns. This includes improving network coverage, ensuring reliable electricity supply, and establishing local technical support systems. Without these foundational elements, awareness and education efforts are unlikely to be effective.

Conclusions and Future Research Directions

This study provides important insights into the complex relationships between various factors and mobile banking adoption in different contexts. The findings challenge simple assumptions about technology adoption and highlight the need for context-specific approaches to financial inclusion.

The unexpected negative impact of education in rural areas and the insignificant effect of mobile access perception point to the importance of addressing fundamental structural barriers before expecting technology-based solutions to be effective. This suggests that financial inclusion efforts should take a more holistic approach that addresses economic, social, and infrastructural foundations alongside technological interventions.

Future research should examine these relationships across different periods and geographic contexts to build a more comprehensive understanding of mobile banking adoption patterns. Longitudinal studies would be particularly valuable for understanding how these relationships evolve as infrastructure and economic conditions change.

References

Ab Hamid, M. R., Sami, W., & Sidek, M. M. (2017, September). Discriminant validity assessment: Use of Fornell & Larcker criterion versus HTMT criterion. In Journal of physics: Conference series (Vol. 890, No. 1, p. 012163). IOP Publishing.

Abbas, S. K., Hassan, H. A., Asif, J., Ahmed, B., & Haider, S. S. (2018). Integration of TTF, UTAUT, and ITM for mobile banking adoption. *International Journal of Advanced Engineering, Management and Science (IJAEMS) Vol-4, Issue-5*.

Abu-Taieh, E. M., AlHadid, I., Abu-Tayeh, S., Masa'deh, R. E., Alkhawaldeh, R. S., Khwaldeh, S., & Alrowwad, A. A. (2022). Continued intention to use of M-Banking in Jordan by integrating UTAUT, TPB, TAM and service quality with ML. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(3), 120.

Acharya, L. (2025). Digital Banking and Women's Financial Empowerment in Nepal.

Agurto, M., Djebbari, H., Sarangi, S., Silupú, B., Trivelli, C., & Torres, J. (2025). The Provision of Information on Mobile Banking by Local Ambassadors: Experimental Evidence From Peru. *Journal of International Development*.

Alrabei, A. M., Al-Othman, L. N., Al-Dalabih, F. A., Taber, T. A., Ali, B. J., & Amareen, S. A. M. (2022). The impact of mobile payment on the financial inclusion rates. *Information Sciences Letters*, *11*(4), 1033-1044.

Anegue, J. D. D. (2025). Do Mobile Payments Foster Banking Access in Rural Areas in Cameroon?. *Open Access Library Journal*, *12*(4), 1-17.

Anyasi, F. I., & Otubu, P. A. (2009). Mobile phone technology in banking system: Its economic effect. *Research Journal of Information Technology*, *1*(1), 1-5.

Apaua, R., & Lallie, H. S. (2022). Measuring user perceived security of mobile banking applications. *arXiv preprint arXiv:2201.03052*.

Bank, N. R. (2024). A Study Report on the USSD-based Payment System and its Regulations: Suggestions for Nepal.

Banskota, B., Bhusal, R., Yadav, P. K., Baidya, J. L., & Banskota, A. K. (2025). Unlocking potential: innovative "private-non-profit" partnership for empowering children with disabilities in resource-limited settings in Nepal. *Frontiers in Public Health*, *13*, 1438992.

Byanjankar, R., Adhikari, S. R., & Khan, M. M. (2025). Financial inclusion and living standards: evidence from Nepal. *Oxford Development Studies*, 1-19.

Çallı, L. (2023). Exploring mobile banking adoption and service quality features through user-generated content: the application of a topic modeling approach to Google Play Store reviews. *International Journal of Bank Marketing*, *41*(2), 428-454.

Chand, N. (2025). Impact of the digital payment on consumer behaviour in Nepal.

Cheah, C. M., Teo, A. C., Ooi, K. B., & Wong, J. C. (2013). Extending the UTAUT model in m-banking adoption. In *Diversity, Technology, and Innovation for Operational Competitiveness: Proceedings of the 2013 International Conference on Technology Innovation and Industrial Management* (pp. 2-137). ToKnowPress.

Dawadi, L. P. (2025). *Migration and remittance inflows in Nepal with special reference to Gandaki Province* (Doctoral dissertation).

Dhakal, P., & Acharya, S. L. (2025). The Impact of Digital Transformation on Banking Services and Customer Experience: a study of the Nepalese banking sector.

Dhungana, B. R., & Chapagain, R. (2019). Performance of multiple borrowing clients in Gandaki Province of Nepal. *Prithvi Academic Journal*, *2*, 18-31.

Duncombe, R., & Boateng, R. (2009). Mobile Phones and Financial Services in Developing Countries: a review of concepts, methods, issues, evidence and future research directions. *Third World Quarterly*, *30*(7), 1237-1258.

Fahmi, M. A., Novel, N. J. A., & Putra, W. B. T. S. (2022). The impact of vocational perception on entrepreneurial intention: An empirical analysis of the logistics business study program at Padjadjaran University. International Journal of Research in Business and Social Science, 11(8), 276-289.

Gallego-Losada, M. J., Montero-Navarro, A., Gallego-Losada, R., & Rodríguez-Sánchez, J. L. (2024). Measuring financial divide in the rural environment. The potential role of the digital transformation of finance. *International Entrepreneurship and Management Journal*, *20*(4), 2791-2810.

Glavee-Geo, R., Shaikh, A. A., & Karjaluoto, H. (2017). Mobile banking services adoption in Pakistan: are there gender differences? *International Journal of bank marketing*, *35*(7),

1090-1114.

Goldman, M. (2005). *Imperial nature: The World Bank and struggles for social justice in the age of globalization*. Yale University Press.

Groce, N., Kett, M., Lang, R., & Trani, J. F. (2011). Disability and poverty: The need for a more nuanced understanding of implications for development policy and practice. *Third World Quarterly*, *32*(8), 1493-1513.

Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of business research*, *109*, 101-110.

Hannig, A., & Jansen, S. (2010). *Financial inclusion and financial stability: Current policy issues* (No. 259). ADBI Working Paper.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the academy of marketing science, 43, 115-135.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the academy of marketing science, 43, 115-135.

Hutomo, F. W. (2023). Technology Acceptance Model (TAM) methodology system analysis on mobile banking users. *Journal of Earth Kingdom*, *1*(1).

Jain, P., Sharma, B. K., Gautam, U., Parihar, A. S., & Siddiqui, Z. (2024). Do Social and economic empowerment attain through mobile banking? An empirical assessment. In *E3S Web of Conferences* (Vol. 571, p. 03001). EDP Sciences.

Kandel, S., & Khanal, G. P. (2024). Investigating the Pedagogical Values of Smartphones: Students' Experiences from Nepal's Rural Community Schools. *Journal of NELTA Gandaki*, *7*(1-2), 77-90.

Karki, D., Bhattarai, G., & Dahal, R. K. (2024). User acceptance determinants in m-banking adoption. *Nurture*, *18*(1), 201-213.

Karki, S. K. (2024). Determinants of community engagement and its role in income poverty reduction: Evidence from Jajarkot, Nepal. *Heliyon*, *10*(13).

Khan, I. U., Hameed, Z., & Khan, S. U. (2017). Understanding online banking adoption in a developing country: UTAUT2 with cultural moderators. *Journal of Global Information Management (JGIM)*, *25*(1), 43-65.

Khan, I. U., Hameed, Z., & Khan, S. U. (2017). Understanding online banking adoption in a developing country: UTAUT2 with cultural moderators. *Journal of Global Information Management (JGIM)*, *25*(1), 43-65.

Kroll, C. N., & Song, P. (2013). Impact of multi collinearity on small sample hydrologic regression models. Water Resources Research, 49(6), 3756-3769.

Limbu, B. (2024). Satisfaction Levels of Customers With Online Banking Sectors in Nepal.

Lorain, M. A., Pernas, J. B., Jannes, G., Grande, E. U., Sánchez, P. L., & Sierra, J. (2025). Unraveling financial exclusion during the COVID-19 pandemic: A gender perspective in Latin American countries. *World Development*, *188*, 106924.

Mader, P. (2018). Contesting financial inclusion. *Development and change*, *49*(2), 461-483.

Mohammed, A., Al-Swidi, A. K., Ferraris, A., & Jabeen, F. (2025). Mobile Payments in Health

Crisis: A Comprehensive Approach to Analyzing Consumer Behavior in Emerging Markets. *International Journal of Consumer Studies*, *49*(3), e70063.

Mothobi, O., & Kebotsamang, K. (2024). The impact of network coverage on adoption of Fintech and financial inclusion in sub-Saharan Africa. *Journal of Economic Structures*, *13*(1), 5.

Mothobi, O., & Kebotsamang, K. (2024). The impact of network coverage on adoption of Fintech and financial inclusion in sub-Saharan Africa. *Journal of Economic Structures*, *13*(1), 5.

Moustati, I., Gherabi, N., & Saadi, M. (2024). Leveraging the internet of behaviours and digital nudges for enhancing customers' financial decision-making. *International Journal of Computer Applications in Technology*, *74*(3), 208-221.

Nepal Economic Forum. (2023). Status of Financial Inclusion in Nepal. Retrieved from https://nepaleconomicforum.org/status-of-financial-inclusion-in-nepal/.

Nepal, P. (2023). An Overview of Financial Inclusion in Nepal. *Kalika Journal of Multidisciplinary Research*, *1*(1), 1-13.

Omala, M. A. (2023). Power Relations in Climate Finance Coordination: The North-South Divide in Strategy and Implementation of Adaptation Programs in Nepal, Mozambique, Bangladesh, and Zambia. *Sustainability and climate change*, *16*(2), 150-161.

Ozili, P. K. (2020). Social inclusion and financial inclusion: international evidence. *International Journal of Development Issues*, *19*(2), 169-186.

Paneru, B. P. (2023). Stock market efficiency and factors influencing Nepalese investment decisions. *Open Journal of Business and Management*, *11*(6), 3152-3193.

Pant, B. (2016). Financial inclusion in Nepal: Policy review and prescriptions. *NRB Economic Review*, *28*(2), 1-18.

Pokhrel, L. (2022). The frequency of mobile banking use during covid-19. *NRB Economic Review*, *34*(1), 24-48.

Pomeroy, R., Arango, C., Lomboy, C. G., & Box, S. (2020). Financial inclusion to build economic resilience in small-scale fisheries. *Marine policy*, *118*, 103982.

Purwanto, A., & Sudargini, Y. (2021). Partial least squares structural squation modeling (PLS SEM) analysis for social and management research: A literature review. Journal of Industrial Engineering & Management Research, 2(4), 114-123.

Raju, M. G., & Reddy, I. L. (2022). Mobile Banking Use by Rural Students. *Journal of Algebraic Statistics*, *13*(1), 817-828.

Ramayah, T. J. F. H., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). Partial least squares structural equation modeling (PLS-SEM) using smart PLS 3.0. *An updated guide and practical guide to statistical analysis*, *1*(1), 1-72.

Sarfaraz, J. (2017). Unified theory of acceptance and use of technology (UTAUT) model-mobile banking. *Journal of Internet Banking and Commerce*, *22*(3), 1-20.

Schielzeth, H. (2010). Simple means to improve the interpretability of regression coefficients. Methods in Ecology and Evolution, 1(2), 103-113.

Senyo, P. K., Osabutey, E. L., & Seny Kan, K. A. (2021). Pathways to improving financial inclusion through mobile money: a fuzzy set qualitative comparative analysis. *Information Technology & People*, *34*(7), 1997-2017.

Senyo, P. K., Osabutey, E. L., & Seny Kan, K. A. (2021). Pathways to improving financial inclusion through mobile money: a fuzzy set qualitative comparative analysis. *Information Technology & People*, *34*(7), 1997-2017.

Sharma, H. (2024). *Digital Financial Services: Unveiling the Collective Potential in Rural Landscape of India* (Doctoral dissertation, Auckland University of Technology).

Shehadeh, M., Dawood, H. M., & Hussainey, K. (2025). Digital financial literacy and usage of cashless payments in Jordan: the moderating role of gender. *International Journal of Accounting & Information Management*, *33*(2), 354-382.

Shi, D., Maydeu-Olivares, A., & DiStefano, C. (2018). The relationship between the standardized root mean square residual and model misspecification in factor analysis models. Multivariate Behavioral Research, 53(5), 676-694.

Singh, S., & Srivastava, R. K. (2018). Predicting the intention to use mobile banking in India. *International Journal of Bank Marketing*, *36*(2), 357-378.

Sri, N., Dhakal, A., Danuwar, R. K., Baral, D. K., & Koirala, A. (2023). Factor affecting customer satisfaction of mobile banking services of commercial bank in Kathmandu Valley. *Interdisciplinary Journal of Innovation in Nepalese Academia*, *2*(1), 34-52.

Thakuri, N., Dhakal, A., Danuwar, R. K., Baral, D. K., & Koirala, A. (2023). Factor affecting customer satisfaction of mobile banking services of commercial bank in Kathmandu Valley. *Interdisciplinary Journal of Innovation in Nepalese Academia*, *2*(1), 34-52.

Thieme, S., & Wyss, S. (2005). Migration patterns and remittance transfer in Nepal: A case study of Sainik Basti in western Nepal. *International Migration*, *43*(5), 59-98.

Tomaschek, F., Hendrix, P., & Baayen, R. H. (2018). Strategies for addressing collinearity in multivariate linguistic data. Journal of phonetics, 71, 249-267.

Tripathi, S., & Rajeev, M. (2023). Gender-inclusive development through Fintech: Studying gender-based digital financial inclusion in a cross-country setting. *Sustainability*, *15*(13), 10253.

Tun, T. D. N. (2023). *A Study on Digital Financial Inclusion in Myanmar: A Case Study in ShwePaukKan Township, Yangon (Thu Dein Naing Tun, 2023)* (Doctoral dissertation, MERAL Portal).

Wareing, L., Robins, J., Patha, C., Street, J., Adler, J., Blackwell, B., ... & Omar, L. (2018). Driving Industrial Strategy for North West Growth: The Role of the Creative Industries.

Williams, T. H., Iriobe, G. O., Ayodele, T. D., Olasupo, S. F., & Aladejebi, M. O. (2023). Do illiteracy and unemployment affect financial inclusion in the rural areas of developing countries? *Investment Management & Financial Innovations*, *20*(2), 89.

Wong, Z. Z. A., Badeeb, R. A., & Philip, A. P. (2023). Financial inclusion, poverty, and income inequality in ASEAN countries: does financial innovation matter? *Social Indicators Research*, *169*(1), 471-503.

Wyman, O. (2017). *Accelerating financial inclusion in South-East Asia with digital finance*. Asian Development Bank.

Y. The opportunities and challenges of digitizing government-to-person payments. *The World Bank Research Observer*, *32*(2), 211-226.