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The Role of Mobile Phones in Bridging the Digital Divide for Economic Empowerment of Rural Women in Nepal

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Abstract

This paper examines the relationship between digital divide and economic empowerment among rural women in Sindhupalchowk, Nepal. Drawing upon a mixed-methods approach involving surveys, in-depth interviews, and ethnographic observations with 25 rural women, the study analyzes how mobile phone usage contributes to women's access to information, financial services, and markets. Findings reveal that while mobile phones have improved women's financial autonomy and decision-making power within households, structural barriers such as patriarchal norms, low digital literacy, and infrastructural constraints continue to restrict their full potential. The study argues that technological access alone does not ensure empowerment; rather, empowerment emerges when women gain agency, resources, and social support to utilize technology meaningfully. The paper concludes by emphasizing the need for gender-sensitive digital literacy programs and inclusive policies to promote equitable digital participation and sustainable empowerment in rural Nepal.

Keywords

Digital Divide, Economic empowerment, Gender inequality, Mobile phone, Rural women.

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1. Introduction

The increasing penetration of mobile phone technology has the potential to address the long-standing issues of socio-economic inequality in rural Nepal, particularly for women. In regions like Sindhupalchowk, rural women often face barriers to economic opportunities due to a variety of factors, including limited access to education, financial services, and markets, compounded by deeply entrenched gender norms. This study explores how mobile phones, a tool that is becoming increasingly accessible, can bridge the digital divide and promote the economic empowerment of rural women in this area.

The digital divide, which refers to the disparity in access to and usage of digital technologies between different social groups, is particularly pronounced in rural Nepal. Women in these areas are often excluded from digital engagement due to socio-cultural factors, economic constraints, and limited educational opportunities. These barriers prevent them from leveraging mobile technology to access financial resources, market information, and agricultural advice, all of which are crucial for improving their economic standing.

Mobile phones, with their ability to connect users to information and resources, offer a unique opportunity to overcome these barriers. For rural women, mobile phones can facilitate access to banking services, enhance agricultural productivity through mobile-based advisory services, and create new avenues for entrepreneurship by connecting them to broader markets. Despite these potential benefits, the full impact of mobile phones on women's empowerment is still hindered by patriarchal norms, low digital literacy, and inadequate infrastructure.

This research investigates the role of mobile phones in promoting economic empowerment by examining the ways in which they help rural women overcome socio-economic and gendered barriers. It aims to contribute to the ongoing conversation about digital inclusion, offering insights into the transformative potential of

mobile technology for marginalized women in rural Nepal. Ultimately, this study seeks to highlight the broader implications of mobile technology in achieving gender-equitable development.

2. Theoretical Framework

The theoretical framework for this study revolves around the concepts of the digital divide and economic empowerment, exploring how mobile phones can act as tools for bridging the gap in economic opportunities for rural women in Sindhupalchowk, Nepal. The framework integrates key theoretical approaches, including the Capability Approach (Sen), Kabeer's Economic Empowerment Framework, and sociological theories of the digital divide, while also considering gendered access to technology and its implications for women's economic opportunities.

The digital divide refers to the gap between those who have access to modern information and communication technologies (ICTs) and those who do not, with access being influenced by factors such as geography, socio-economic status, and gender (Van Dijk, 2006). In rural Nepal, this divide is particularly pronounced for women, as socio-cultural norms and economic constraints further hinder their access to mobile phones and other digital technologies. While mobile technology has become increasingly accessible, the divide remains an obstacle to equitable participation in the digital economy.

Economic empowerment is the ability of individuals, particularly marginalized groups like rural women, to make decisions, control resources, and participate in economic activities that enhance their quality of life (Kabeer, 2005). It encompasses not only financial independence but also access to opportunities and resources that allow individuals to exercise their agency and contribute to their families and communities (Sen, 1999). For rural women in Nepal, mobile phones present a unique opportunity to gain greater economic autonomy by facilitating access to financial services, market information, and entrepreneurship.

This study draws on Sen's Capability Approach, which frames development as the expansion of individual freedoms and capabilities (Sen, 1999). From this perspective, mobile technology can enhance the capabilities of rural women by providing access to information and resources. However, as Sen and others note, technology's empowerment potential is contingent on surrounding social conditions (Robeyns, 2005).

Kabeer's Economic Empowerment Framework further illuminates this process by highlighting the interplay of resources, agency, and achievements (Kabeer, 2005). Here, mobile phones are conceptualized as a resource that can bolster women's agency in making strategic life choices, particularly in financial and market domains. The ultimate achievements of empowerment, such as increased income and decision-making power, are thus partly mediated through the meaningful use of this technological resource.

Sociological theories on the digital divide provide a broader understanding of the structural factors that perpetuate unequal access to technology. The digital divide is not just a technological issue but a reflection of social inequalities, particularly those based on gender, class, and geography (DiMaggio & Hargittai, 2001). For rural women, the divide is compounded by patriarchal social structures that limit their access to technology. As Castells (1996) argues, the digital divide reflects the concentration of technological power in the hands of elites, leaving marginalized groups, such as rural women, with limited opportunities to benefit from technological advancements. In Nepal, these gendered disparities in mobile phone ownership and usage create barriers to women's economic inclusion.

Gendered access to technology is a critical factor in understanding the digital divide in rural Nepal. Women in these communities often face restrictions on their use of mobile phones, which are typically controlled by male family members (Shrestha & Karki, 2021). In patriarchal societies, technology is often viewed as a resource that empowers men, while women's access to such resources is limited due to traditional gender roles (Miller *et al.*, 2014). These gendered dynamics restrict women's ability to use mobile phones for economic activities such as mobile banking, agricultural advice, and e-commerce, which are essential for enhancing their economic independence.

The socio-cultural norms that govern women's mobility and decision-making power within households further exacerbate this issue. In rural areas, women are primarily responsible for domestic and reproductive tasks, and their participation in economic activities outside the home is often limited. As a result, women's access to and use of mobile phones is restricted, despite the potential of these devices to improve their economic outcomes (Acharya, 2003). Moreover, even when women have access to mobile phones, they may lack the skills to fully utilize them for financial management,

market access, or entrepreneurial activities due to limited digital literacy (Rahman, 2014).

However, when women are able to access and use mobile phones effectively, they experience significant improvements in their economic opportunities. Studies have shown that women's access to mobile banking, for example, enables them to save, transfer money, and access credit, reducing their dependency on male family members (Aker & Mbiti, 2010). Mobile phones also facilitate communication with agricultural advisors and buyers, allowing women to improve productivity and engage in income-generating activities (World Bank, 2018). Despite the persistent gendered barriers, mobile technology holds the potential to empower women economically by providing them with the tools to overcome traditional restrictions and participate more fully in the economy.

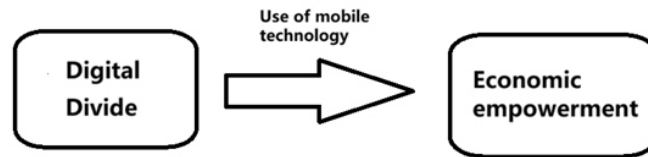


Fig.-1: Digital divide and its Economic empowerment

3. Literature Review

The literature review draws from global and regional perspectives on the digital divide, focusing on the impact of mobile technology on women's economic empowerment in developing countries, with a particular emphasis on Nepal. The review also discusses the status of digital inclusion in Nepal, specifically among rural women, as this is crucial for understanding the broader socio-economic challenges faced by this demographic.

The digital divide is a persistent issue that affects access to information, communication, and economic opportunities worldwide. In many developing countries, including those in Asia and Africa, the digital divide is particularly pronounced between urban and rural areas, as well as between men and women. According to the International Telecommunication Union (ITU, 2020), women in low-income countries are 23% less likely than men to use mobile Internet services. This gender gap is even more significant in rural regions, where socio-cultural norms and economic constraints limit women's access to digital tools (GSMA, 2022).

Scholars emphasize that the digital divide encompasses not only physical access but also disparities in digital literacy and the capacity to use technology for development (Van Dijk, 2006). Mobile phones hold significant potential to improve access to financial services, healthcare, and education for marginalized groups (Aker & Mbiti, 2010). However, these benefits are unevenly distributed, with rural women facing compounded barriers including cultural restrictions and infrastructural deficits.

This gap is particularly pronounced in South Asia, where patriarchal norms limit women's mobility and decision-making power, directly impacting their phone ownership and usage (Hafkin & Huyer, 2007; GSMA, 2023). Globally, evidence from contexts like Sub-Saharan Africa and India indicates that mobile technology can enhance women's economic empowerment by improving access to financial services, markets, and income-generating opportunities (Morawczynski, 2017; Agarwal, 2018).

In rural areas of developing countries, mobile phones also play a critical role in enhancing agricultural productivity. For example, mobile-based agricultural advisory services have proven effective in providing rural women with up-to-date information on weather patterns, market prices, and farming techniques, leading to improved crop yields and income (World Bank, 2018). These services are particularly valuable in regions where traditional agricultural extension services are inaccessible due to infrastructure challenges or cultural restrictions on women's mobility.

Despite these successes, challenges remain in ensuring that mobile technology reaches and benefits all women equally. Research has pointed out that while mobile phones can serve as a tool for economic empowerment, their impact is often constrained by factors such as limited digital literacy, high data costs, and unreliable network coverage, particularly in remote rural areas (Duflo, 2012). These barriers are compounded by socio-cultural norms that prevent women from fully utilizing mobile technology, especially when they lack the autonomy to control their mobile phones or the financial resources to afford mobile data plans (Gillwald & Moyo, 2015).

Nepal, like many other developing countries, faces significant challenges in achieving digital inclusion, particularly for rural women. The country's rural areas remain underdeveloped in terms of digital infrastructure, and socio-cultural barriers to women's access to technology further exacerbate the digital divide. According to the

Nepal Telecommunications Authority (2024), mobile phone ownership among women in rural Nepal is significantly lower than among men, with only about 65% of women having access to mobile phones compared to 81% of men. This disparity is even more pronounced in more remote areas, where traditional gender roles restrict women's access to mobile devices and digital resources (Shrestha & Karki, 2021).

In Nepal, mobile technology demonstrates clear potential for empowering rural women through mobile banking and entrepreneurial activities (Aker & Mbiti, 2010; Adhikari *et al.*, 2022). Yet, structural barriers like poor infrastructure, high costs, and low digital literacy persist (Sharma & Thapa, 2021). Although government initiatives like the Digital Nepal Framework aim to bridge this gap, their effectiveness is often hampered by cultural resistance, funding constraints, and a lack of gender-sensitive design (Nepal Ministry of Communications, 2021; Practical Action Nepal, 2020).

While mobile technology holds significant potential for improving the socio-economic status of rural women in Nepal, its impact is still limited by infrastructural and socio-cultural barriers. To fully realize the benefits of digital inclusion, targeted interventions are needed that address both the structural inequalities that women face and the practical barriers to mobile technology use. This study seeks to contribute to the growing body of research on digital inclusion and women's empowerment by examining how mobile phones can serve as tools for economic empowerment among rural women in Sindhupalchowk, Nepal.

4. Research Methodology

This study employs a mixed-method approach to investigate the role of mobile phones in bridging the digital divide and promoting economic empowerment for rural women in Sindhupalchowk, Nepal. The mixed-methods design combines both quantitative and qualitative data collection techniques, including surveys, in-depth interviews, and ethnographic observations. This approach allows for a comprehensive understanding of how mobile phones are used by rural women in the study area and the challenges they face in utilizing this technology for economic purposes.

A mixed-method approach was selected for this study to capture both the numerical data that reflects the broader trends of mobile phone usage among rural women and the personal, context-specific

experiences of the participants. The survey component of the study provides a broad quantitative overview of the prevalence of mobile phone usage, its frequency, and the general patterns of access to mobile technologies. Surveys are particularly useful for gathering data from a larger sample of rural women, offering insights into the socio-demographic factors that influence mobile phone access and usage, such as age, education, economic status, and household composition (Creswell, 2014).

In-depth interviews were conducted to explore the personal experiences and perceptions of rural women regarding the economic impact of mobile phone usage. A total of 25 rural women from Sindhupalchowk were interviewed, selected through purposive sampling to ensure diversity in age (20-50), education level, and economic status. The semi-structured interviews covered topics such as mobile phone usage for financial transactions, access to agricultural knowledge, and market connections. Example responses include: *"I can transfer my child's school fees through my phone without travelling four hours to the bank"*, and *"My husband does not allow me to use a smartphone, fearing it will lead me astray"*. These testimonies provided rich qualitative data that were complemented by survey findings. These interviews are semi-structured, allowing for flexibility in capturing detailed responses while maintaining consistency across participants. The goal of these interviews is to understand how mobile phones are used in everyday life for economic activities such as managing finances, accessing agricultural information, and engaging in entrepreneurial ventures. The interviews also address the barriers women face, including cultural restrictions, digital illiteracy, and limited control over mobile phone usage within households (Bloor & Wood, 2006). These qualitative insights complement the quantitative data by providing a deeper understanding of the socio-cultural context and the personal experiences of rural women.

Ethnographic observations were conducted to further contextualize the findings and provide a holistic view of how mobile phones are integrated into the daily lives of rural women. Through direct observation of women's interactions with mobile phones in both domestic and community settings, the study captures non-verbal aspects of mobile phone usage and the social dynamics that influence its use. Observations also help identify implicit social norms, such as those related to gender, that shape how technology is accessed and used (Geertz, 1973).

4.1 Description of the Study Area (Sindhupalchowk, Nepal)

Sindhupalchowk, located in the central hilly region of Nepal, serves as the study area for this research. It is a rural district characterized by diverse topography, with both mountainous and plain areas, and is home to a predominantly agricultural population. The district has faced significant socio-economic challenges, including poverty, limited access to infrastructure, and high levels of unemployment. As of the most recent data, Sindhupalchowk has one of the highest poverty rates in Nepal, with a significant portion of the population living below the poverty line (Nepal Central Bureau of Statistics, 2023).

Women in Sindhupalchowk, like many rural women across Nepal, face socio-cultural and economic barriers that limit their access to resources and opportunities. These barriers include patriarchal norms, low literacy rates, and limited mobility, which restrict women's participation in economic activities outside the household. Despite these challenges, mobile phone usage is becoming increasingly common in the region, providing an opportunity to explore how technology is shaping women's economic roles.

The choice of Sindhupalchowk as the study area is significant for several reasons. First, it represents a typical rural context where mobile technology has the potential to address the digital divide and empower women economically. Second, the region has witnessed increasing mobile phone penetration, with mobile networks expanding into even the more remote areas. Finally, the district offers a microcosmic view of the broader socio-cultural and economic challenges faced by rural women in Nepal, making it an ideal setting for this research.

The data collection process involved two main components: interviews with rural women and interviews with key informants from local organizations and government bodies.

Interviews with rural women focused on understanding their experiences with mobile phones and the role these devices play in their economic activities. Participants were selected through purposive sampling to ensure representation from various demographic groups, including women from different age groups, educational backgrounds, and economic statuses. In total, 25 women were interviewed, with a mix of those who owned mobile phones and those who had limited or no access. The interviews were

conducted in the local language (Nepali), ensuring that cultural nuances were captured and that the participants felt comfortable sharing their experiences.

Key informant interviews were conducted with local community leaders, representatives from non-governmental organizations (NGOs), and government officials involved in rural development and technology initiatives. These interviews provided additional context on the broader socio-economic and infrastructural challenges in the region and insights into ongoing efforts to promote digital inclusion. By speaking with informants who have direct experience with technology interventions and women's empowerment programs, the study was able to gain a comprehensive understanding of the barriers and opportunities for mobile phone use among rural women.

The data from surveys, interviews, and observations were then analyzed using a combination of descriptive statistics and thematic analysis. Descriptive statistics helped identify patterns and trends in mobile phone usage, while thematic analysis allowed for a deeper exploration of the qualitative data, highlighting recurring themes related to women's economic empowerment and the challenges they face in utilizing mobile phones effectively.

4.2 Ethical Considerations

Throughout the data collection process, ethical guidelines were strictly followed to ensure the confidentiality and safety of participants. Informed consent was obtained from all participants, and they were assured that their identities would remain confidential. Additionally, the study was designed to be culturally sensitive, recognizing the social norms and potential power dynamics that might influence women's willingness to share their experiences.

5. Findings and Discussion

The findings of this study reveal that mobile phones play a significant role in improving the economic opportunities and overall empowerment of rural women in Sindhupalchowk, Nepal. However, despite the potential benefits, the effective use of mobile phones remains hindered by various barriers, including patriarchal norms, digital literacy gaps, infrastructure challenges, and socio-economic constraints. This section discusses the key findings

related to mobile phone usage, empowerment, and the barriers that rural women face, along with how mobile phones can help overcome these challenges.

Table-1: Survey Responses on Women's Empowerment and Mobile Phone Usage (n = 25)

Survey Item	Yes/Agree (n)	No/Disagree (n)
Q1: Women's empowerment is necessary	15	10
Q2: Empowerment leads to social change	21	4
Q3: Economic empowerment is distinct from social empowerment	16	9
Q4: Education is essential for empowerment	20	5
Q5: NGOs play a role in empowerment	18	7
Q6: Men dominate household decision-making	19	6
Q7: Women have access to family income	8	17
Q8: Socio-cultural norms influence empowerment	14	11
Q9: Patriarchal society limits women's opportunities	16	9
Q10: Economic empowerment is overstated by media	6	19
Q11: Women use mobile phones regularly	23	2
Q12: Mobile phones provide practical benefits	21	4
Q13: Mobile phones support development	19	6
Q14: Women experience digital suppression or restrictions	18	7
Q15: Mobile phone impact is mostly positive	20	5
Q16: Private sector telecom performs better than government	7	18
Q17: Satisfaction with government digital efforts	8	17

Source: Field survey, Sindhupalchowk, 2023.

Survey results indicated that 54% of respondents used mobile phones for financial transactions, including sending and receiving remittances. One participant explained: *"I can receive money from my son working abroad instantly, without paying high transfer fees"* (P5).

Such cases illustrate how mobile banking reduces both the time and cost of financial activities, enhancing women's economic autonomy.

A significant 68% of respondents reported using mobile phones to access agricultural information, such as weather forecasts and pest control advice. As Participant P9 noted: *"When I know in advance that heavy rain is coming, I can protect my crops"*. This shows how timely information via mobile technology can directly protect livelihoods.

A major finding of the study is that mobile phones have become a crucial tool for rural women in accessing financial services, agricultural knowledge, and market opportunities. Around 31% of participants had used their phones to connect with distant buyers. Participant shared: *"Through my phone, I contacted buyers from another district and sold my wool at a better price than in the local market"*. This demonstrates the role of mobile phones in expanding market access beyond geographic limitations. Mobile banking services were widely used among participants, particularly for managing finances, saving money, and transferring funds. For many women, mobile phones have provided a way to bypass traditional banking systems, which are often geographically inaccessible, particularly in rural areas. Mobile banking applications such as eSewa and Prabhu Pay have enabled women to access financial services such as savings accounts, loans, and payments, thereby increasing their financial independence and reducing their reliance on male family members for financial transactions (Aker & Mbiti, 2010).

In addition to financial services, mobile phones have facilitated access to agricultural information and advisory services. Several participants reported using mobile-based services to receive information on weather patterns, crop management, and market prices. This information helps women make informed decisions about their farming practices, leading to improved productivity and reduced risk of crop loss. The use of mobile phones for agricultural advisory services was particularly significant in improving agricultural output, which is a primary source of income for many rural women in the region (World Bank, 2018). These services have empowered women by providing them with the knowledge needed to improve their livelihoods and contribute more effectively to their families' economic stability.

Moreover, mobile phones have opened up new market opportunities for rural women. Many participants reported using mobile phones to connect directly with buyers and suppliers,

bypassing intermediaries and increasing their income. This has been especially important in rural areas where access to markets is limited due to geographical barriers. Mobile phones have enabled women to market their products to a wider customer base, both locally and nationally, thus increasing their economic participation and enhancing their entrepreneurial activities (Shrestha & Karki, 2021).

Mobile phones have contributed to the economic empowerment of rural women by increasing their income, improving their decision-making power within households, and fostering entrepreneurship. One of the most significant outcomes reported by participants was an increase in household income. With access to financial services, agricultural information, and market opportunities, many women experienced a notable improvement in their income levels. By directly engaging in market transactions and reducing their dependency on intermediaries, women were able to retain a larger share of their earnings. This financial independence has not only improved their personal economic well-being but has also allowed them to contribute more effectively to their families' financial needs.

In addition to increased income, mobile phones have also enhanced the decision-making power of women within their households. Several participants mentioned that mobile phone usage had led to a greater say in household financial decisions, as women were able to independently manage savings, make financial transactions, and access credit. This newfound autonomy in financial matters has translated into increased agency and influence in household decisions, especially in areas related to economic spending and investment (Kabeer, 2005). Many women reported that their husbands or male family members were more willing to consult them on financial matters, recognizing their ability to manage resources effectively.

Furthermore, mobile phones have enabled rural women to engage in entrepreneurial activities. By using mobile phones to connect with customers and suppliers, many women have been able to start small businesses or expand existing ones. The ability to engage in e-commerce, marketing products via social media or mobile applications, and access online platforms for business development has empowered women to become active entrepreneurs, improving their economic status and social mobility (Agarwal, 2018). This entrepreneurial spirit, supported by mobile technology, has led to greater economic independence and the potential for long-term growth.

Survey data revealed that 46% of women faced restrictions from male family members on their phone usage. As one of the participants expressed: *"My husband controls the phone, and I can only use it when he permits"*. In addition, 72% reported daily usage of less than one hour, often due to shared devices or household chores. These barriers limit the potential benefits of mobile technology.

While mobile phones have had a positive impact on rural women's economic empowerment, several barriers hinder their full utilization. Patriarchal norms are a significant obstacle to women's ability to access and use mobile phones effectively. In many households, mobile phone ownership and usage are controlled by male family members, who often view technology as a threat to traditional gender roles. Some women reported that their mobile phone access was restricted or monitored by their husbands or in-laws, limiting their ability to use mobile phones independently for financial or business purposes. These gendered restrictions highlight the broader socio-cultural constraints that women face in exercising control over their own resources (Miller *et al.*, 2014).

Limited digital literacy further restricted effective use, as women reported uncertainty in navigating mobile banking or advisory services, a problem compounded by broader educational disparities (Rahman, 2014). Infrastructure challenges, including poor network coverage and high data costs, persistently hampered advanced activities like e-commerce and reliable information access, particularly in remote areas (Sharma & Thapa, 2021).

Lastly, socio-economic constraints, such as poverty and limited access to credit, also hinder women's ability to fully leverage mobile phones for economic empowerment. Although mobile phones provide access to financial services, many women in the study still face difficulties in accessing credit or saving money due to low household incomes. Without sufficient financial resources, women are unable to invest in business opportunities or improve their agricultural productivity, limiting their ability to escape poverty (Aker & Mbiti, 2010).

Despite the challenges, mobile phones have played a crucial role in helping rural women overcome some of these barriers. Mobile phones have provided a platform for women to access financial services independently, which has reduced their reliance on male family members for financial transactions. In some cases, mobile banking has allowed women to bypass patriarchal control over

household finances, providing them with greater economic autonomy (World Bank, 2018).

Moreover, mobile phones have facilitated the acquisition of digital literacy through mobile-based training programs and educational apps. Many women reported using their phones to access mobile learning platforms that offer training in financial management, agricultural practices, and entrepreneurship. These digital literacy programs have helped women gain the skills necessary to use mobile phones effectively for economic purposes, thus enhancing their ability to participate in the digital economy.

In terms of infrastructure, efforts by the government and NGOs to improve network coverage and reduce data costs have been instrumental in increasing the accessibility of mobile phones for rural women. These initiatives, although still in their early stages, are helping to address some of the infrastructure challenges that limit the full potential of mobile phones (Nepal Ministry of Communications, 2021).

Mobile phones have the potential to empower rural women economically by increasing their income, improving decision-making power, and fostering entrepreneurship. However, overcoming the barriers of patriarchal norms, limited digital literacy, infrastructure challenges, and socio-economic constraints is crucial for ensuring that these benefits reach all women. Mobile phones can serve as powerful tools for empowerment, but targeted interventions are needed to address the socio-cultural, educational, and infrastructural barriers that prevent rural women from fully benefiting from mobile technology.



Fig.-2: Conceptual Framework

6. Conclusion

This study explored the role of mobile phones in bridging the digital divide and promoting the economic empowerment of rural

women in Sindhupalchowk, Nepal. By examining the patterns of mobile phone usage, the challenges faced by women in utilizing these technologies, and the outcomes associated with mobile phone access, the study highlights both the transformative potential of mobile phones and the persistent barriers that limit their full use. The key findings, the potential of mobile technology, and the limitations of the study are discussed below. The findings underscore the necessity for integrated policies that address the identified barriers. Key recommendations include implementing gender-sensitive digital literacy programs, improving rural network infrastructure, and promoting affordable mobile data plans through public-private partnerships. Such targeted interventions are crucial to ensure that mobile technology fulfills its potential as a tool for sustainable economic empowerment for rural women in Nepal.

6.1 Summary of Key Findings

The study found that mobile phones are crucial tools for enhancing the economic opportunities of rural women in Sindhupalchowk. Rural women who had access to mobile phones were able to access financial services, agricultural knowledge, and market opportunities, which in turn improved their economic well-being. Mobile phones facilitated financial autonomy through mobile banking, enabling women to manage their finances, save, and engage in transactions without relying on male family members (Aker & Mbiti, 2010). Furthermore, mobile phones provided women with access to agricultural information, such as weather forecasts and market prices, which helped improve productivity and reduce risks (World Bank, 2018). These factors contributed to increased income, better decision-making power within households, and enhanced entrepreneurial activities.

Despite these positive outcomes, the study also identified several barriers to the effective use of mobile phones. Patriarchal norms, limited digital literacy, infrastructure challenges, and socio-economic constraints continue to restrict women's ability to use mobile phones to their full potential. In many households, mobile phone ownership and usage were controlled by male family members, limiting women's autonomy in managing finances or accessing mobile services independently. Moreover, limited digital literacy among rural women, coupled with poor network coverage and high data costs, posed significant challenges to effective mobile phone use (Rahman, 2014; Shrestha & Karki, 2021). These barriers

hindered rural women's full participation in the digital economy and reduced the transformative potential of mobile phones in their lives.

The findings of this study underscore the potential of mobile technology to bridge the digital divide and empower rural women in Nepal. Mobile phones can serve as powerful tools for enhancing women's economic opportunities by providing access to financial services, agricultural knowledge, and markets. As seen in this study, mobile phones have already begun to improve financial autonomy by enabling women to engage in mobile banking and manage their finances independently. Additionally, mobile technology plays a key role in improving agricultural productivity, which is vital for rural women who depend on agriculture for their livelihoods (Agarwal, 2018).

Moreover, mobile phones offer new entrepreneurial opportunities by facilitating direct access to markets and customers, thus increasing income and economic independence. By overcoming geographical barriers, mobile phones enable rural women to engage in e-commerce and sell goods to a broader customer base, both locally and nationally. This shift has significant implications for women's autonomy and participation in the economy, suggesting that mobile technology could play a critical role in enhancing women's socio-economic standing in rural Nepal.

However, to fully realize the potential of mobile phones for economic empowerment, efforts must be made to overcome the barriers identified in this study. Gender-sensitive mobile technology initiatives, digital literacy programs, and improvements in infrastructure are essential to ensure that rural women can access and effectively use mobile technology to improve their economic status.

6.2 Limitations and Areas for Future Research

While this study provides valuable insights into the role of mobile phones in the economic empowerment of rural women in Nepal, there are several limitations that should be acknowledged. First, the study was limited to a specific geographical area – Sindhupalchowk – meaning the findings may not be universally applicable to all rural regions in Nepal. Further research could explore the role of mobile technology in other rural areas of Nepal, with a focus on different ethnic and socio-economic groups, to gain a more comprehensive understanding of the challenges and opportunities related to mobile phone usage.

Second, the relatively small sample size (25 women) limits the generalizability of the findings, suggesting a need for larger-scale and longitudinal research. Future studies should also explore the interplay between mobile phones, social capital, and community networks, and investigate non-economic dimensions of empowerment, such as political and social inclusion.

Finally, while this study focused on the economic impact of mobile phones, future research could examine other dimensions of empowerment, such as political participation, social inclusion, and health outcomes. Mobile phones have the potential to affect various aspects of women's lives, and exploring these additional dimensions could provide a more holistic view of the role of technology in empowering rural women.

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