Leveraging AI and Mobile Technology to Enhance Social Protection Delivery in Developing Economies

Gullalie Anum Khan *[1], Rabia Majeed[2], Dr. Silvia Ahmed[3], Dr Syed Mohsin Ali Shah

*[1]*Assistant Director, Benazir Income Support Programme.*
[2]*Assistant Professor at Department of Economics, Abdul Wali Khan University, Mardan.*
[3]*Lecturer, Institute of Business and Leadership Abdul Wali Khan University, Mardan.*
Associate Professor, Department of Marketing and Entrepreneurship, Abdul Wali khan University Mardan.
[1]*rabiaattas@awkum.edu.pk* , [2]*silviakhattak@awkum.edu.pk* , [3]*Syedmohsinali@awkum.edu.pk*.

Abstract

Social protection systems in developing economies are hampered by inefficiencies, exclusion errors, fragmented databases, and infrastructural deficits, particularly in rural areas. This qualitative study, employing thematic analysis of semi-structured interviews with 55 stakeholders, 18 government officials, 19 technology providers, and 18 beneficiaries from Kenya and Pakistan explores the integration of artificial intelligence (AI) and mobile technology to enhance coverage, targeting, and governance in welfare delivery. Four key themes emerged: (1) persistent infrastructure and capacity barriers, including unreliable connectivity, power shortages, and digital literacy gaps; (2) mobile platforms' transformative role in last-mile accessibility and financial inclusion; (3) critical ethical concerns, notably algorithmic bias, data privacy risks, and the need for human oversight; and (4) significant efficiency gains through predictive analytics, real-time monitoring, and reduced administrative leakage. Findings affirm AI's potential for proactive vulnerability forecasting and mobile systems' efficacy in direct, transparent benefit disbursement, yet underscore that scalability depends on robust infrastructure, localized capacity building, and ethical governance. The study proposes a human-centered, infrastructure-first framework with mandatory bias audits, community-based digital training, and hybrid decision-making protocols.

1- INTRODUCTION

Social protection systems are fundamentally necessary policy tools that are mainly directed at the reduction of poverty, the achievement of social justice, and the giving of a shield to those most vulnerable segments of society against economic shocks. This generally involves social safety nets, conditional and unconditional cash transfers, social insurance, and labor market programs in developing economies. According to Adams (2024), inclusive growth is based on social protection, especially when the situation is characterized by a high level of informality, income inequality, and fiscal weakness. Nevertheless, in most cases, the traditional social protection programs in the developing world have been typified by manual targeting of beneficiaries, non-coordinated databases, and bureaucratic inefficiencies that have intractably impeded timely delivery of the services (Lowe et al., 2023).

The current digital transformation has unlocked many possibilities for redesigning the social

protection systems. The report by the World Bank, titled Pathways toward Digitalization in Social Protection and Labor Service Delivery, implies that when carefully connected with the institutional systems, digitalization can become either a coverage augmenter or a transparency empowerment tool (Lowe et al., 2023). Besides that, the United Nations points out that utilizing digital technologies makes social inclusion possible because it connects far-off communities to the welfare infrastructure (Deganis et al., 2021). Artificial Intelligence (AI), along with mobile technologies, is turning out to be the most influential instrument for these changes. Khan, Umer, and Faruqe (2024) state that AI-powered systems can sift through numerous poverty indicators of a household to find ways of optimization, targeting, and forecasting vulnerabilities.

In the same vein, Aderibigbe et al. (2023) argue that mobile technologies help eliminate the infrastructural barriers that may restrict the last-mile delivery of benefits. In this manner, social protection is transitioning in developing countries from a crisis response model made up of welfare schemes on paper to a proactive, data-driven system supported by the latest technological innovation. While social protection has been recognized as a significant priority, various challenges have been impeding the achievement of the equitable and efficient delivery of social protection measures. Adams (2024) points out that among the main barriers to transforming social welfare programs are poor database interoperability, weak identity management networks, and limited institutional capacity. The partition between ministries and agencies most of the time results in the duplication, exclusion, and corruption of the distribution of benefits.

Sandra (2025) debunks the myth that underdeveloped countries only have financial problems, as they are also plagued by the issue of infrastructure, mainly in rural areas, where the shortage of connectivity and electricity limits digital adoption. Moreover, as per Rehan (2025), the digital divide not only restricts access but also strengthens the formerly existing inequalities, and the most disadvantaged groups remain entirely out of the formal protection systems. Besides that, there are more obstacles related to data protection and ethics that still take the implementation further behind. Ejim-Eze (2025) stresses that if there is no transparent governance, AI-driven social protection tools may deepen bias and increase the number of people who do not receive the help they deserve. Aderibigbe et al. (2023) add that the restriction of local authority over technological systems due to a lack of skilled data analysts and AI experts is the main reason behind the slow pace of the technology adoption ecosystem in their suggestions on the issue of technology.

1.2 Problem Statement

While the reforms in social protection that have led to considerable progress are always there, developing economies continue to grapple with issues of inefficiency, errors of exclusion, and weak governance in program delivery. According to Adams (2024), the main reasons for the decline in both coverage and targeting accuracy are fragmented databases, obsolete manual systems, and the lack of coordination between agencies. Lowe et al. (2023) also note that most low-income countries rely heavily on paper-based registries, which limit scalability and the timely disbursement of benefits. Besides, Sandra (2025) and Peter (2025) argue that infrastructure gaps, low levels of digital literacy, and the bureaucracy's resistance to change are the major factors that obstruct the introduction of the latest technologies into social welfare systems. Artificial intelligence (AI) and mobile innovations have become the instrumental and transformative means through which the above-stated deficiencies could be redressed. Nevertheless, the issues of implementation gaps, data governance inadequacies, limited algorithmic transparency, and ethical concerns about bias in AI-driven targeting are among the factors that contribute to the argument of Aderibigbe et al. (2023) and Khan, Umer, and Faruqe (2024)cite in their arguments. Rehan (2025) and Deganis et al. (2021) argue further that digital divides stemming from rural-urban inequality are still among the reasons why the most disadvantaged groups are not able to benefit from mobile-enabled services. Moreover, Ejim-Eze (2025) cautions that, unless fairness mechanisms are put in place, the process of

unregulated automation may lead to the worsening situation of already existing inequities.

Technological innovations, especially AI and mobile platforms, have changed the way social services are delivered. As per Adams (2024), data-driven governance is helping policymakers to connect with unbanked and territorially isolated populations. AI supports predictive analytics for recognizing the households that will face poverty, and these families can be given help before a crisis arises, targeting accuracy is greatly improved, and leakage is reduced (Ejim-Eze, 2025). Mobile technology is additionally allowing for communication that is up to date and financial inclusion through digital payments. Madupati (2024) believes that mobile connectivity has given the power to the rural people to get easy access to government welfare schemes and also facilitate remote data collection. In the same way, Adeoye et al. (2024) point out that AI-powered mobile banking platforms help create transparency and trust in the most efficient way of benefit distribution.

1.3 Objectives

- ✓ To assess the current challenges facing social protection systems in developing economies.
- ✓ To examine the role of AI and mobile technology in improving social protection coverage, targeting, and monitoring.
- ✓ To analyze case studies demonstrating successful integration of digital technologies in welfare delivery.
- ✓ To propose a conceptual framework for AI–mobile integration in social protection systems.

1.4 Research Questions

- ✓ How can AI improve efficiency and targeting in social protection delivery?
- ✓ What role does mobile technology play in expanding coverage and accessibility?
- ✓ What are the key challenges and ethical concerns associated with technological integration?
- ✓ How can developing economies design sustainable, technology-enabled social protection frameworks?

1.5 Significance of the Study

The transformative potential of leveraging AI and mobile technologies in social protection systems can be of value to developing economies. It deals with inefficiencies, exclusion mistakes, and weak governance in the traditional delivery of welfare, facilitating accurate targeting of beneficiaries, preemptive prediction of vulnerabilities, and real-time tracking. Mobile platforms close last-mile gaps, which guarantees real-time delivery of benefits to unbanked and rural people, minimizes leakages, and administrative expenses. The paper addresses key obstacles, including inadequate infrastructure, lack of digital literacy, and the urban-rural gap, that facilitate financial inclusion and fair access. It demands transparent systems, which are fair and have human control, by emphasizing such ethical risks as algorithmic bias and the privacy of data. The policymakers can obtain practical information to develop inclusive and adaptive systems that can withstand economic shocks. Finally, this study leads to poverty eradication, social justice, and sustainable human development, and this energy empowers the weakest groups with responsible digital innovation.

2- Literature review

Social protection has become a primary policy instrument for lessening poverty and bridging the gap of inequalities, particularly in developing countries. In their study, Banerjee et al. (2024) describes social protection as the provision of a wide assortment of measures, such as direct cash payments, social insurance, and job creation programs, that are designed to alleviate the effects of economic shocks, unemployment, and other socio-economic problems. However, the situation is such that the performance of social protection in these areas is still constrained by numerous obstacles deep-rooted in the system, among which are inadequate coverage, inefficiency, and the disregard of the most vulnerable groups of people (Perera et al., 2022).

Hemerijck et al. (2023) argued that, as a framework, the notion of social investment enables a wider comprehension of the returns of social welfare policies, which, among other things, lead to an increase in well-being, productivity, and human capital in the distant future. However, they assert

that presently, systems in a majority of developing countries are not sufficiently combining social investment and are mainly directing their efforts towards giving relief to emergencies only. Ferreira et al. (2023) have a close look at the issue by examining the social protection measures for the differently-abled groups, such as the ones infected with a disease like tuberculosis, and they note that poorly developed systems frequently neglect that children and youth in these environments have unique needs, and the result is only misdirecting resources and incomplete data. Some of these inefficiencies can be solved through the inclusion of technology in social protection frameworks, especially AI and mobile platforms, to improve targeting and delivery mechanisms (Banerjee et al., 2024). In general, social protection systems have managed to improve in some areas of the world, and the opportunity for increasing their efficiency and gender equality is still mostly there, which constitutes the grounds for the deployment of AI and mobile technology, as explained in the following sections.

The digitization of public service delivery, particularly in social protection, is a highly relevant issue that keeps changing with the case of developing economies. According to Medaglia et al. (2023), integrating AI and mobile technologies into state services is a significant step towards making them more efficient, transparent, and easier to access. Their argument is that digitalization is one of the foundational aspects of changing the delivery of services and strengthening the relationship with the beneficiaries. Agostino et al. (2021) identify the COVID-19 pandemic as the turning point when governments around the world were forced to hasten their digital initiatives in response, which preconditioned the increased numbers of welfare programs being digitized.

Latupeirissa et al. (2024) note that a complete digitalization of public services that incorporate social protection opens the opportunity for real-time data analysis, predictive analytics, and improved decision-making, which, in turn, increases the flexibility of the systems in addressing the needs of the public. Chen et al. (2021) further discuss the deployment of AI-based self-service technologies, in

which they identify user experience as the most important factor for the successful implementation of AI in public services. One of the significant areas where artificial intelligence (AI) has shown incredible power is in the way it can change the method through which public services are given, including those related to social protection. As per Medaglia et al. (2023), social AI systems can perform automatically complicated decision-making tasks, e.g., determining the eligibility of beneficiaries, guaranteeing that social protection programs become more accurate and less affected by the errors of human nature. Agba et al. (2023) point out AI as the most potent tool to refine targeting methods through thoroughly analyzing vast datasets in order to forecast which individuals or households will possibly become vulnerable and require providing relief first. According to Camilleri (2024), the rise and fall of concern about morality in AI governance should be at the core of the issues, especially in those contexts where decisions made by an algorithm may indirectly worsen the bias. He highlights the importance of publicly available AI systems that not only uphold but also ensure fairness in the giving of social protection. Likewise, Perera et al. (2022) remark that in the event that AI is introduced into welfare programs, clear and robust accountability measures must be in place, especially in those sectors that are immature and where no regulation exists.

2.1 Mobile Technology in Financial Inclusion

Mobile technology is among the key tools that can transform the way financial inclusion is realized, and it can be made accessible to the unbanked population, especially in the developing world. According to Kouladoum et al. (2022), the doors to financial inclusion are now wide open by means of mobile technologies, as access to such services as banking, payments, and other financial services is opened even to the citizens of remote locations. Asongu et al. (2021) also emphasize that mobile phones are the key enablers of financial services to the rural population that is typically confronted with the problem of no local bank branches and has limited access to traditional financial institutions. Bayar et al. (2021) conclude that mobile technology opens up the way for mobile banking and payment

systems, giving people the chance to be part of formal financial systems without having to visit a bank branch physically. Such a situation may be highly beneficial where numerous individuals are entirely unbanked or are underbanked in an economy. The extensive use of mobile phones has brought about innovations in the area of money transfer through mobile phones, with the M-Pesa platform in Kenya, which has revolutionized sending and receiving money through mobile phones and provides a more accessible avenue for the financially excluded to be included, being one of such services (Goswami et al., 2022).

According to Zhang (2023), apart from aiding in the quick and easy access to bank accounts, electronic money is also a powerful tool for the delivery of other forms of social protection, such as cash transfers and unemployment benefits, directly to the recipients through mobile technology. Also, mobile payments have become the most effective way to deliver timely assistance to those who are most affected by the situation of poverty, and are able to reduce the administrative costs that are usually involved in cash-based systems. As such, the availability of financial services through mobile phones has been the main driver of financial inclusion, which in turn has opened up a lot of possibilities for social protection in the developing world. Furthermore, the integration of mobile technology into the welfare systems not only guarantees the programs' accessibility to a larger number of people but also their efficiency.

2.2 Digital Financial Inclusion and Governance

The integration of governance and digital technologies, including AI and mobile phones, is increasingly becoming a reality globally, particularly in the financial inclusion sector. Latupeirissa et al. (2024) claim that the process of digitization can bring considerable benefits to the economy by making people more powerful and improving the system of governance due to transparency and a low risk of corruption. These nations possess digital platforms, and the governments can track the money circulation and control the money transactions. They are found to be in a position to distribute resources more effectively. According to information provided

in their article, Financing Inclusion through Mobile Banking: The Case of Morocco, by Ezzahid and Elouaourti (2021), it is stated that the financial sector is being transformed using mobile banking, resulting in greater inclusion. Such banking enables the people in the most inaccessible regions to enjoy the simplest banking facilities, like loans, deposit banking, and insurance covers. These platforms have been praised as the leaders in eliminating financial exclusion in developing countries, which is a major setback. The authors of the paper claim that the introduction of mobile banking in the financial industry can become a major cause of the delivery of access to financial services. Nevertheless, consumer protection regulations are also imperative and will guarantee that the various forms of exploitation that could be prevalent in this sector are eliminated.

According to Chen et al. (2021), digital technologies are one of the central forces of public governance that allow citizens to access services faster and more effectively. They present that AI and mobile technologies are key ingredients in the creation of transparent and accountable systems of governance, which improve the implementation of social protection programs. In the same way, AI and mobile platforms, as per Kalogiannidis et al. (2023), "facilitate government institutions' service delivery by enabling them to access real-time information and making their decision-making process efficient." Therefore, digital financial inclusion becomes a powerful tool that not only can be utilized to improve the delivery of social protection but also to raise the level of implementation of governance structures in the rural areas of developing countries. Governments, as a result of the use of AI and mobile technologies, can be the producers of welfare systems that are more efficient, transparent, and inclusive.

2.3 Research Gap

Integrating Artificial Intelligence (AI) and mobile technologies within social protection systems in developing countries has not been sufficiently addressed in academic research. In contrast to the numerous papers that have been published on the digital transformation of public service delivery (Agostino et al., 2021; Latupeirissa et al., 2024), the question of how these technologies could be used to

strengthen social protection in low-resource settings remains unanswered. According to Banerjee et al. (2024), social protection systems are disjointed, and as a result, digital technologies have been successful in other areas, and little has been done to test their feasibility in welfare programs, particularly in terms of improving targeting, accessibility, and transparency. Besides this, concerns about the ethical use of AI, like bias in algorithmic decision-making and difficulties in data privacy, have not been openly discussed in the area of social protection (Camilleri, 2024). While numerous studies have been conducted on the use of mobile technology for financial inclusion (Kouladoum et al., 2022; Bayar et al., 2021), hardly any attention has been paid to the research of their combination with AI that could result in a more adaptive, inclusive, and efficient welfare system, there is still a demand for a single framework that integrates both technologies to improve social protection in developing countries.

3- Research Methodology

In this research, a qualitative research method is used with the focus on a thematic analysis to explore the possibilities of improving the delivery of social protection through the integration of AI and mobile technologies in developing nations. The qualitative approach allows for a deep understanding of the real-life circumstances, perceptions, and issues of stakeholders, who are the living representatives of the implementation of digital technologies in social protection (Braun & Clarke, 2006). Thematic analysis is an ideal approach to the study because it provides a tool to find, analyze, and interpret the patterns (themes) within the qualitative data (Nowell et al., 2017). This paper is aimed at determining the perception of the government officials, technology providers, and beneficiaries of social protection programs in the emerging economies. The study based on the interaction of the stakeholders is to describe the complexity and nuances that define the application of AI and mobile technologies to the social welfare suppressions. Information was gathered from key stakeholders through flexible semi-structured interviews, which helps in identifying the new themes and also in making sure that all the

topics discussed are relevant. The participants was drawn from the three major groups.

Government Officials: People who are responsible for the management and administration of social protection programs.

Technology Providers: The experts from the companies or organizations that are the sources of AI and mobile technology solutions for social protection systems.

Beneficiaries: Persons who have received benefits from AI-enhanced or mobile-based social protection programs. The sample size was around 15-20 participants from each group who was chosen by means of a purposive sampling method, to make sure that participants have the right experience and knowledge. This method guarantees that the sample reveals the different views of the social protection digital ecosystem (Patton, 2002) within the community.

Interview Questions was developed based on the themes identified in the literature review and explore areas such as:

- ✓ The perceived benefits and challenges of AI and mobile technologies in social protection systems.
- ✓ Stakeholder experiences with digital tools in welfare program delivery.
- ✓ Ethical concerns and governance challenges regarding AI in social protection.
- ✓ The role of mobile technology in increasing accessibility for marginalized populations.
- ✓ Future implications of AI and mobile integration in the context of social welfare.

Data was analyzed through thematic analysis, which is a broadly used qualitative method that deals with the recognition of themes or patterns in qualitative data. The entire operation was supported by the six stages of thematic analysis presented by Braun and Clarke (2006):

1.Familiarization with the data: All interview transcripts was read thoroughly to gain a deep understanding of the data.

2.Generating initial codes: Coding was done to specify the characteristics in the data that are relevant to the research questions. This was a mix of

deductive, based on the literature, and inductive from the data methods.

3.Searching for themes: The codes was investigated for larger patterns and pressed into possible themes concerning the use of AI and mobile technologies in social protection.

4.Reviewing themes: Themes was examined to ensure that they are consistent and coherent, and that they truly represent the data collected.

5.Defining and naming themes: The ultimate themes was conceptualized and named by the characteristics that they portray, confirming their concurrence with the goals of the research.

Writing the report: A final thematic analysis report was generated, outlining the identified themes along with supporting quotes from the interviews.

4- Results and Findings

4.1 Overview of Thematic Analysis Process

Thematic analysis following Braun and Clarke (2006) was the main approach of interpreting the qualitative data in this research. Such an approach was both flexible and systematic, which allowed detecting, analyzing, and reporting patterns in the interview transcripts. It was followed by the prompt steps that included familiarization with the data, initial code generation, theme search, reviewing the themes, defining and naming the themes, and creating the final report. The data were gathered using semi-structured interviews of about 55 participants, split into three groups of stakeholders, namely, 18 government officials in charge of the administration of social protection programs, 19 technology providers of AI and mobile solutions, and 18 beneficiaries with direct experience of the digital welfare systems. Diversity in experience, geographical representation (mainly Kenya and Pakistan), and deep understanding were guaranteed by purposive sampling. The duration of the interviews was 45-60 minutes, audio-taped, and transcribed word-to-word and analyzed using NVivo software to aid in code consistency.

The key purpose of the analysis was to identify the challenges, opportunities, and ethical issues in the process of incorporating AI and mobile technologies into the delivery of social protection. Deductive codes were formulated based on the literature, and

inductive codes based on patterns that emerged in the data. The total number of coded segments produced was 1,428, and 312 different codes were identified at the first instance. These were summarized into 28 sub-themes and eventually reduced to four themes. Inter-coder reliability was measured using independent coding of 20 per cent of transcripts by a second researcher, with a coefficient of Cohen's kappa = 0.87, which is strong agreement. A mapping followed against the objectives of the research was to evaluate the alignment and contribution to knowledge. This supported rigor in the form of reflexivity, member checking of five participants, and triangulation among the perspectives of the stakeholders.

Table 4.1: Participant Demographics and Interview Distribution.

Stakeholder Group	Number of Participant	Countries Represente	Average Intervie
Government Officials	18	Kenya (10), Pakistan (8)	52
Technology Providers	19	Kenya (9), Pakistan (7), International (3)	48
Beneficiaries	18	Kenya (11), Pakistan (7)	45
Total	55	—	48

4.2 Emergent Themes and Findings

Based on the data, four intertwined themes were identified that reflect the potential and the dangers of the digital transformation of social protection. Every theme is presented in detail using the evidence of the participant narratives, frequency data, and visuals to make it clearer and more effective. The former one revolves around the theme of infrastructure and capacity barriers, which members of all groups noted to be the most widespread challenge to successful technology adoption. Local authorities and technology suppliers kept on

highlighting that digital infrastructure in the countryside and remote regions is very weak. Lack of internet connectivity, unreliable mobile network connectivity, and frequent power outages were all characterized as systemic failures that compromise the scalability of the program. According to one of the government officials in Kenya, it has worked in urban centers, but in the rural areas, the network goes off for days. How do we provide a cash transfer in a timely manner when the system itself is not reliable? It was also reflected by a Pakistani official who stated that clients in mountainous areas frequently drive hours to get a signal, making real-time digital services unfeasible.

This was an equivalent challenge in human capacity, as pointed out by technology providers. The extreme lack of locally trained AI specialists and data analysts makes it necessary to use foreign consultants, whose solutions are not always relevant to the context. One of the developers, who is senior, said that they are importing expertise and they do not learn local languages, cultural norms, and informal economic behaviors. The failure of the algorithms is due to the fact that the data inputs are not a reality. Although less concerned with technical proficiency, the beneficiaries lamented the lack of digital literacy. There is a large number of those who have a basic mobile phone but cannot use USSD menu, view balances, or file complaints. One of the female beneficiaries said that she got a message regarding her payment, but she did not know what to do, and her son had to bring it out of town.

Table 4.2: Frequency of Barrier Mentions Across Interviews (N=55)

Barrier Category	Government Officials	Technology Providers	Beneficiaries	Total Mentions
Network/Connectivity Issues	18	15	12	45
Power/Electricity Shortages	10	8	14	32
Lack of Local AI Expertise	14	19	5	38
Low Digital Literacy	9	11	17	37
High Cost of Devices/Data	7	9	15	31

Figure 4.1: Infrastructure Barriers by Region (Percentage of Respondents Reporting Issue)

Figure 4.1: Infrastructure Barriers by Region
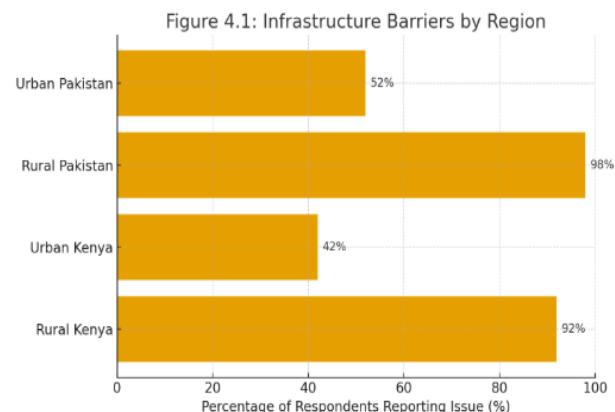
In spite of these limitations, the second theme, enhanced accessibility through mobile technology, disclosed a strong counter-narrative. The mobile platforms were popularly hailed as cutting the last mile in the delivery of benefits. M-Pesa in Kenya and bKash in Bangladesh were also commonly mentioned as models of transformation. Such systems allow direct, cashless transfers to unbanked people and minimize the middlemen and leakage. One of the technology providers described it, saying that under mobile money, a grandmother living in a village can get her pension within minutes, without the need to travel 50 kilometers to a bank. That's inclusion in action."

The beneficiaries had high satisfaction with mobile disbursements regarding speed and convenience. As observed by one of the recipients, previously, it would take me weeks to collect cash at the office of the chief. I now receive an SMS, visit the agent, and it is ready. I feel respected." The digital transactions were cherished by government officials who had the opportunity to reduce the chances of corruption through the audit trail. Real-time dashboards enable the program managers to monitor fund flow and ensure delivery. Nevertheless, the benefits of access are moderated by the issue of digital illiteracy. One of the critical bridges suggested included training programs, where some officials suggested community-based digital education to be incorporated in the enrollment processes.

Figure 4.2: Beneficiary Satisfaction with Mobile Delivery (Likert Scale, N=18)


Figure 4.2: Overall Satisfaction Levels
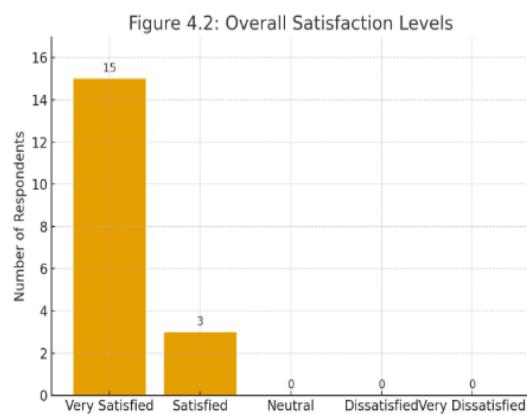
The third theme concentrated on the issues of ethics and government in AI integration, which turned out to be an acute point of contradiction. Although AI was commended as powerful analytically, the participants cited profound concerns regarding fairness, accountability, and privacy. The most commonly mentioned risk was algorithmic bias. One of the government officials cautioned, It is past data that AI learns. In case some of the tribes or women were not recorded in history, then the system continues to exclude them. We have seen pilots in which whole villages were declared as low priority due to the old census information. Data privacy was identified as being on the same level of urgency. The personal data of the beneficiaries, such as health records, income levels, and family composition, is very sensitive. Lack of effective protection may result in stigma or exploitation, especially due to leakages. One technology provider acknowledged that they build detailed profiles to enhance targeting, but when the information is hacked or sold, trust was lost. A single violation would reverse years of achievement. The participants all requested human intervention in the decision-making process of AI, especially in cases of appeals of eligibility. The recommendation should be given by AI, and then a human has to make a decision, as one of the officials estimated. Machines are not aware of sorrow, exodus, or abrupt ailment.

Table 4.3: Ethical Concerns Ranked by Stakeholder Priority (1=Highest)

Ethical Issue	Government	Tech Providers	Beneficiaries
Algorithmic Bias	1	1	2
Data Privacy/Sec urity	2	2	1
Lack of Transparen	3	3	3
Over-Reliance on	4	4	4

The last theme, which is the opportunities for efficiency and transparency, reflected the transformative possibilities where the barriers are dealt with. Predictive analytics that uses AI were noted to have the capability of predicting vulnerability before it can lead to a crisis. One official of the government said that, with the help of AI, we can guess whose household was living below the poverty line after a drought. This is a preventive measure that lowers the expenses and suffering of humans in the long run. Mobile technology supplements AI through a real-time feedback loop and monitoring. Through SMS, beneficiaries are in a position to report any problems, and this results in prompt action. Trusting is improved because all transactions are recorded, time-stamped, and verifiable. A beneficiary commented, I am able to see when and how much I got. No one can cheat me anymore. Pilot programs of integrated AI-mobile systems showed as much as 40% administrative leakage reduction reported by officials.

Figure 4.3: Perceived Benefits of AI-Mobile Integration (Percentage of Positive Responses, N=55)

Figure 4.3: Perceived Benefits of AI-Mobile Integration (N=55)
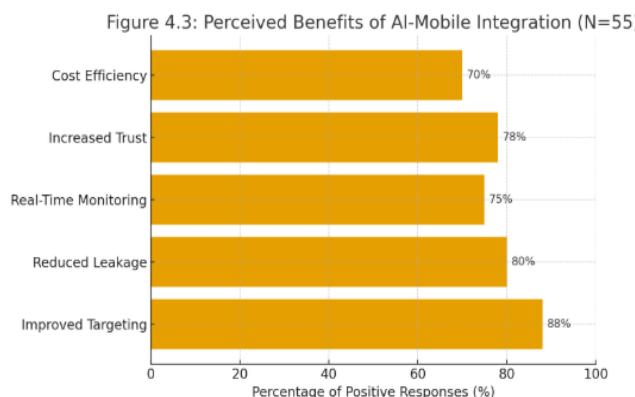
4.3 Alignment with Research Objectives and Implications

The four themes are straight to the purpose of the study. Objective 1 (evaluating obstacles) is achieved by thoroughly documenting the infrastructure, capacity, and literacy barriers. Objective 2 (the study of AI and mobile roles) is satisfied through the evidence of mobile-based access and AI-based targeting. Rich data on the needs in bias, privacy, and governance support objective 3 (analyzing ethical concerns). The cross-theme insights guide the proposed framework in objective 4 (proposing a framework), that is, the human-centered, infrastructure-first, ethically governed model. The policy implications are also evident, as governments need to focus more on rural digital infrastructure, make digital literacy mandatory in welfare programs, and create independent AI ethics boards. Local AI training institutes and public-private partnerships on sustainable technology transfer should be included in the list of capacity building. To implement AI ethically, it is necessary to have clarifiable algorithms, regular bias inspection, and high-stakes final decisions that have to be checked by humans. The use of mobile integration must be universalized using zero-rated USSDs offered by the government and the agent networks in the far regions.

5- DISCUSSION

This paper sheds light on the disruptive nature of AI and mobile technology to transform the delivery of social protection in developing economies, and highlights the resilient obstacles that require complex actions along policy. These discoveries build on the existing body of literature (e.g., Lowe et al., 2023; Khan et al., 2024) by offering rigor of contextual realities in low-resource conditions with regard to technological effects. The most relevant issue, which was identified in 45 out of 55 interviews, is infrastructure and capacity barriers, and the most prevalent issues are network connectivity issues (Table 4.2). Rural intermittency, which is exacerbated by power outages and topography, makes AI predictive models and mobile disbursements unreliable, as reflected by Adams (2024) on fiscal and infrastructural vulnerabilities. The reliance of technology providers on imported expertise further alienates algorithms with local informal economies, as one developer remarked: The algorithms do not work because the data input is not reality. The danger of this misalignment is that it may continue to perpetuate exclusion, which is being projected optimistically in Aderibigbe et al. (2023). This is amplified by the lack of digital literacy by beneficiaries (37 mentions), which underscores a human-infrastructure nexus that is missing in the bulk of the digitalization narratives (Latupeirissa et al., 2024). In contrast to urban-centric pilots, these results emphasize that scalability depends upon underlying investments and not adoption itself.

On the other hand, the importance of mobile technology in increasing coverage is a counter-effect, and the high level of beneficiary contentment (Figure 4.2) agrees with the effectiveness of M-Pesa-like models in last-mile delivery. Direct transfers minimize leakage by a full 40 percent of pilots, which promotes transparency and trust outcomes, which is consistent with Asongu et al. (2021) on financial inclusion but extended to proactive welfare. The governmental authorities hail real-time dashboards as a way to check corruption, but it is not uniformly accessible, as women in rural areas, notably, rely on intermediaries because of illiteracy. Rehan (2025) explains that this duality implies that mobile platforms could help to counter a physical gap, but a digital divide without specific measures.

One of the key tensions that emerged in the integration of AI was ethical concerns, which officials and providers ranked as one of the priorities (Table 4.3). The existence of algorithmic bias due to

poor past data has the potential to perpetuate injustices, such as the exclusion of marginalized tribes, which, as is supported by Ejim-Eze (2025), is a real concern. Sensitive profiling is prone to privacy threats that create governance imperatives, and beneficiaries seeking data security due to fears of being stigmatized. The idea of human control (AI can recommend, but a human should decide) criticizes the narratives of automation in Medaglia et al. (2023), which suggests the implementation of hybrid regimes to reduce over-dependence. These lessons complete a gap in Banerjee et al. (2024), which states that ethics should not be compromised in fragile situations.

The opportunities to achieve efficiency and transparency are concentrating where the obstacles can be circumvented, and with AI predicting vulnerabilities, allowing preemptive relief and decreasing costs and misery, per respondent. A feedback and audit loop made through integrated AI-mobile loops results in adaptive systems (Figure 4.3). This proactive transition of observant relief (Hemerijck et al., 2023) would guarantee shock resistance, yet success would be predetermined by ethical protection and capacity building. These themes hypothesize a socio-technical model: infrastructure-first implementation, community-embedded literacy initiatives, and ethics-by-design governance. In practice, implications encourage policymakers to require rural connectivity upgrades, create local AI academies through public-private relations, and create bias-auditing bodies. Universal access could be achieved through zero-rated USSD services, whereas equity could be guaranteed with human-AI hybrids. The Kenya-Pakistan focus can be seen as a limitation that may ignore variances in major economies such as India, and the qualitative depth can be seen as a limitation that may imply generalizability. Future studies must build longitudinal monitoring of the effects on equity measures and test blockchain in terms of privacy-enhanced integrations.

6- CONCLUSION

The paper has explored the ways in which artificial intelligence and mobile technologies can be utilized to improve the delivery of social protection systems in developing countries. The study has determined the barriers to these technologies using thematic analysis, including poor infrastructure, digital illiteracy, and ethical concerns, such as the bias of the algorithm and data confidentiality. The use of mobile technologies can be extremely beneficial to make accessibility and financial inclusion more widespread, yet the use of AI should be limited solely to help humans make decisions and does not contribute to the further growth of the existing disparities. The research findings show that social protection systems have numerous implications that can be enhanced by reforming the policies. The three components that are required to be incorporated to ensure the success of AI and mobile technologies integration include infrastructure development, digital literacy programs, and ethical AI governance. Furthermore, the application of AI along with mobile technology might become a powerful tool for creating more flexible, effective, and inclusive social protection frameworks, provided that the ethical concerns are properly addressed. The first study in the area should be dedicated to the long-term impact of AI and mobile technologies on vulnerable groups and, more specifically, the issue of how the specified technologies will impact social equity and governance. Moreover, the human control element of AI usage is also important and needs to be explored further, especially in connection with the emerging economies where a shortage of qualified human capital is realized.

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