

From Cash to Digital: Palm pay's Impact on Financial Inclusion in Emerging Markets in Iringa Municipality- Tanzania.

Theobald Francis Kipilimba

Department of Economics and Accounting, Faculty of Business and Economics, University of Iringa, Tanzania

Corresponding Author: Email address: kipilimbatheo@gmail.com

Abstract: *This study investigated the impact of Palm Pay, a digital payment platform, on financial inclusion in Iringa Municipality, Tanzania, focusing on its adoption, benefits, and challenges. Using a mixed-methods approach, data were collected from 120 respondents, including individuals and small business owners, through structured questionnaires and in-depth interviews. The findings revealed that Palm Pay significantly enhanced financial accessibility, with 62.5% of respondents utilizing it for digital payments and 41.7% for savings. Key benefits included convenience, cost-effectiveness, and improved financial management. However, challenges such as limited digital literacy, financial barriers, and infrastructure limitations hindered broader adoption, with 50% of respondents reporting significant digital literacy challenges and 58.3% facing infrastructure and regulatory barriers. The study concludes that while Palm Pay has transformative potential, addressing these barriers through targeted awareness campaigns, improved digital literacy programs, affordable pricing, and infrastructure development is essential for maximizing its impact on financial inclusion in emerging markets. These findings provide valuable insights for policymakers, financial service providers, and stakeholders aiming to leverage digital platforms to empower underserved populations.*

Keywords: Financial Inclusion, Palmpay, Emerging Markets, Digital Literacy, Cashless Economy, Mobile money Service.

1.0 INTRODUCTION

The transition from cash-based transactions to digital financial services has been a defining trend in emerging markets, transforming how individuals and businesses interact with financial systems. In many regions, limited access to traditional banking infrastructure has hindered financial inclusion, leaving a significant portion of the population unbanked or underbanked. However, the rise of fintech solutions has presented new opportunities to bridge this gap, with mobile-based payment platforms playing a pivotal role in enhancing financial accessibility. Palm Pay, a leading digital financial service provider, has emerged as a key player in advancing financial inclusion in emerging markets, including Iringa Municipality. By offering mobile money transfers, digital payments, and access to micro-loans, Palm Pay has created an alternative financial ecosystem that reduces dependence on cash transactions. The platform's user-friendly interface and accessibility via mobile devices have made it an attractive option for individuals and small businesses seeking efficient and secure financial solutions. This study explored Palm Pay's impact on financial inclusion in Iringa Municipality by assessing its role in expanding access to financial services, enhancing economic participation, and addressing barriers to digital finance adoption.

Financial inclusion is fundamental for economic growth, poverty reduction, and empowering communities in Tanzania [1, 2]. Despite financial sector liberalization in the 1990s, access to formal banking services remains low, with only 14% of adults having access as of 2013 [3]. Challenges hindering financial inclusion include costs, lack of technology, awareness, and regulatory requirements [3]. However, the introduction of mobile money and banking has increased financial inclusion [2]. Education and lack of money are key factors influencing financial inclusion, with inclusion positively impacting income [2]. Financial literacy is a strong driver of financial inclusion, suggesting that efforts to promote inclusion should be accompanied by financial literacy campaigns [4]. To address these issues, recommendations include strengthening the financial sector, enhancing credit access, and providing financial services to small and medium enterprises [1].

Digital payment platforms and fintech innovations are revolutionizing financial inclusion in emerging markets, particularly in Africa. Mobile money services have significantly increased access to financial services for the unbanked population [5, 6]. These platforms offer user-friendly, low-cost solutions that facilitate faster transactions, reduce cash reliance, and promote financial literacy [5]. The adoption of mobile money has been shown to improve financial inclusion by 12-14% in African countries [6]. Initiatives like M-Pesa in East Africa and M-Gurush in South Sudan demonstrate the potential of digital financial services to transform economic landscapes and create job opportunities [7]. However, challenges such as regulatory barriers, digital literacy, and infrastructure limitations must be addressed to maximize the impact of these innovations [8]. Collaborative efforts between governments, private sector stakeholders, and development organizations are crucial for sustainable and equitable financial inclusion [5].

Financial technology (FinTech) has significantly contributed to financial inclusion in Nigeria over the past decade, improving access to financial services and making transactions faster [9]. Mobile network technology has been particularly instrumental in bringing more people into the financial system [9]. The adoption of cashless payment systems has enhanced equal access to financial products

and services, especially in rural areas [10]. However, challenges persist, including high customer attrition, cyber-attack threats [9], poor system interoperability, and over-concentration of FinTech services in urban areas [11]. Electronic payment channels have shown a positive impact on financial inclusion, but their elitist nature may limit access for all segments of the population [12]. To deal with these issues, recommendations include improving regulatory frameworks, enhancing system interoperability, and redirecting FinTech activities to priority rural areas [9, 11].

Financial inclusion has become a fundamental global agenda for economic development and poverty alleviation in Tanzania. Mobile money services have played a significant role in expanding financial access, particularly for the unbanked population [13]. The National Financial Inclusion Framework (NFIF) has been instrumental in facilitating this success, despite some challenges [13]. Studies show that formal education and lack of money are key factors influencing financial inclusion, with increased inclusion positively impacting income levels [2]. However, obstacles such as poor network coverage, lack of knowledge, high transaction fees, and insufficient infrastructure still hinder full adoption, especially in rural areas [14]. To enhance financial inclusion further, innovative strategies are needed, focusing on outreach, accessibility, technology, financial literacy, and trust-building. Personal finance education programs targeting vulnerable groups could improve both financial inclusion and income in Tanzania [2].

The adoption of mobile financial services among unbanked and underbanked populations is influenced by several key factors. Perceived usefulness, cost, and social influence significantly impact adoption, while ease of use, risk, and trust have less influence [15]. The demand for financial services and difficulties accessing traditional banking channels act as strong drivers for adoption [16]. However, lack of trust in technology and low technology readiness can hinder adoption [16]. A study extending the UTAUT model with perceived credibility found that all factors directly determine behavioral intention to adopt payment bank services, with perceived credibility being the strongest influencer [17]. The model explained 67.5% of variance in behavioral intention. These findings suggest that service providers should focus on enhancing customer confidence, trust, and security while emphasizing positive safety measures in marketing campaigns to promote adoption among underbanked and unbanked populations [17].

The adoption of mobile financial services in Tanzania is influenced by several key factors. Perceived usefulness and social influence positively impact adoption [15, 18, 19]. Perceived ease of use shows mixed results, with some studies finding it significant [19] and others not [15]. Cost is consistently identified as a barrier to adoption [15, 18, 19]. Perceived risk negatively affects adoption [19, 20], while relative advantage and convenience positively influence it [20]. Network coverage also plays a role in adoption [19]. Individual awareness and perceived benefits are positively related to adoption [18]. Demographic characteristics such as sex, age, and income level moderate adoption [18]. These findings highlight the need for service providers to focus on increasing awareness, demonstrating usefulness, and addressing cost and risk concerns to promote mobile financial service adoption in Tanzania.

The research papers highlight the impact of ICT and financial technologies on local businesses and the economy in Iringa, Tanzania. Mobile phone banking has seen high adoption among small business owners, primarily for money transfers, due to accessibility and convenience [21]. However, people with disabilities face economic barriers in accessing credit and entrepreneurship education for their income-generating activities [22]. The ICT innovation ecosystem in Iringa has created new job opportunities and micro-entrepreneurs, although technical and economic limitations hinder rural communities from fully capitalizing on ICT advancements [23]. Iringa Municipality has experienced population growth, mainly due to in-migration, leading to both positive outcomes such as increased income levels and market expansion, and negative effects like high commodity prices and increased rental costs [24]. These studies together demonstrate the complex interplay between technology adoption, economic development, and population dynamics in Iringa.

Digital financial services (DFS) offer significant opportunities for financial inclusion in emerging markets, but face several challenges in scaling up. High costs and low returns are fundamental barriers to DFS adoption [25, 26]. This drives other challenges, including lack of trust and perceived risks among users [26]. For banks in emerging economies, DFS present both opportunities and challenges as they compete with non-bank innovators offering digital alternatives [27]. Successful implementation of DFS requires overcoming technological, regulatory, and market-related hurdles [28]. However, DFS also present opportunities for banks to reach underserved populations and transform their marketing strategies [27, 28]. To address these challenges and capitalize on opportunities, financial institutions need to develop comprehensive digital strategies, leverage innovative technologies, and focus on building trust among users [26, 28].

The scaling of digital financial services in Tanzania presents both opportunities and challenges. Mobile technology offers significant growth potential for the banking industry, particularly in reaching underbanked segments [29]. However, the success of digital innovations like mobile money systems in emerging markets requires an exploratory strategy rather than simple replication, as evidenced by the contrasting experiences of M-PESA in Kenya and Tanzania [30]. While digitalization brings benefits, it also increases cybersecurity risks. Tanzania faces challenges such as limited digital literacy, data privacy concerns, and inadequate infrastructure, but there are opportunities in emerging technologies, government initiatives, and increased awareness [31]. Security

issues remain a significant concern for mobile banking adoption in Tanzania, necessitating robust measures to protect consumers and financial institutions [29]. Addressing these challenges while leveraging opportunities is crucial for the successful scaling of digital financial services in Tanzania.

The persistent challenge of financial exclusion remains a significant barrier to economic development in emerging markets, particularly in regions like Iringa Municipality, Tanzania, where a large portion of the population remains unbanked or underbanked. Despite the proliferation of mobile money services, many individuals and small businesses still rely heavily on cash transactions, which are often inconvenient, insecure, and limit access to formal financial services. While digital payment platforms like Palm Pay have emerged as potential solutions, there is limited empirical evidence on their effectiveness in driving financial inclusion in semi-urban areas like Iringa Municipality. This study sought to address this gap by investigating the extent to which Palm Pay has impacted financial inclusion, the factors influencing its adoption, and the challenges hindering its scalability, thereby providing insights into how digital financial services can be optimized to bridge the financial inclusion gap in emerging markets.

The study aimed to assess the impact of Palm Pay on financial inclusion in emerging markets, focusing on Iringa Municipality. Specifically, it examined the level of awareness and adoption of Palm Pay among individuals and small businesses, evaluated its benefits in enhancing financial accessibility through digital payments, savings, and credit access, and identified the challenges and barriers that affected its adoption and effective use in the region.

The study contributed to a deeper understanding of how Palm Pay influenced financial inclusion in Iringa Municipality by providing insights into its adoption, benefits, and challenges. It offered valuable data on the extent to which digital financial services improved access to payments, savings, and credit for individuals and small businesses. Additionally, the findings helped policymakers, financial institutions, and fintech providers develop strategies to enhance digital finance adoption and address barriers such as digital literacy, trust, and infrastructure limitations, ultimately supporting efforts to expand financial inclusion in emerging markets.

2.0 METHODOLOGY OF THE STUDY

2.1 Research Design:

This study employed a descriptive research design to assess the impact of Palm Pay on financial inclusion in Iringa Municipality. A mixed-methods approach was used, incorporating both quantitative and qualitative data collection techniques to provide a comprehensive understanding of Palm Pay's adoption, benefits, and challenges.

2.2 Population and Sample:

The target population comprised individuals and small business owners in Iringa Municipal who had either adopted or were potential users of Palm Pay. A sample size of 120 respondents was selected using a stratified random sampling technique to ensure a representative distribution across different demographic and economic groups. Data were collected through structured questionnaires and in-depth interviews, allowing for both statistical analysis and qualitative insights.

2.3 Variable Measurement:

The quantitative data were analyzed using descriptive statistics, including frequencies and percentages to identify trends. Qualitative responses were analyzed thematically to capture user experiences, challenges, and perceptions regarding the platform. The study ensured reliability and validity by pre-testing the questionnaire and using triangulation to cross-verify findings from different data sources. Ethical considerations were observed by obtaining informed consent from participants and maintaining confidentiality in data handling and reporting.

3. RESULTS AND DISCUSSION

This section presents the findings of the study on Palm Pay's impact on financial inclusion in Iringa Municipality, based on data collected from a sample of 120 respondents. The results were analyzed to assess the level of awareness and adoption of PalmPay, the benefits it provided in enhancing financial accessibility, and the challenges that affected its usage. Quantitative data were examined using statistical techniques, while qualitative insights from respondents helped to contextualize the findings. The discussion interprets these results in relation to existing literature and the broader implications for digital financial services in emerging markets.

3.1 Level of Awareness and Adoption of PalmPay

This section examines the level of awareness and adoption of PalmPay among individuals and small businesses in Iringa Municipal. It explores the awareness of PalmPay's features and services, the adoption rate and usage trends within the community, and the

factors that influenced the decision to either adopt or reject the platform. The findings provide insights into how well the platform has penetrated the local market and the key drivers behind its acceptance or resistance.

3.1.1 Awareness of PalmPay's features and services among individuals and small businesses

In examining the level of awareness regarding PalmPay's features and services among individuals and small businesses in Iringa Municipal, the study as per data on table 1, found that half of the respondents (60 out of 120) were very aware of the platform's offerings. Respondents who indicated a high level of awareness highlighted PalmPay's convenience and accessibility, with many pointing to its ability to facilitate secure digital transactions. One participant stated:

"...I have been using PalmPay for a while now, and it makes sending money and paying bills so easy. The app has all the features I need for my business—like transaction history and payment reminders. I don't need to go to the bank anymore..."

This statement reflects how PalmPay's features had become well-integrated into the daily routines of many respondents, especially small business owners who found the platform useful for managing payments and transactions.

On the other hand, 30 participants (25%) reported being somewhat aware of PalmPay's services. These individuals had heard about the platform but were not fully informed about its range of features. They had a basic understanding of its payment functions but were unsure of the broader financial services it offered, such as savings options or access to credit. One respondent shared:

"...I've heard of PalmPay from friends and relatives, but I've never really looked into it. I use it to send money sometimes, but I'm not sure about the other services..."

This statement illustrates that while there was recognition of the platform, its full scope was not widely understood, particularly in the context of financial inclusion services.

Finally, 30 respondents (25%) admitted to being not aware of PalmPay at all. These individuals were unfamiliar with the platform's existence or its benefits, indicating that there is still a gap in digital financial literacy. As one participant explained:

"...I've never heard of PalmPay. I mostly use cash for transactions because I don't trust digital payments. I don't know how to start using it..."

This response sheds light on the challenges faced by individuals who are not only unaware of PalmPay but may also have concerns about adopting digital payment solutions due to a lack of knowledge or trust.

While the study revealed that a significant portion of respondents were aware of PalmPay's features and services, there remains a substantial group that has yet to fully understand or adopt the platform. This gap highlights the need for more targeted awareness campaigns and educational initiatives to promote digital financial services in the region.

Table 1: Showing the level of Awareness and Adoption of PalmPay

Sub-Indicator	Very Aware	Somewhat Aware	Not Aware
Awareness of PalmPay's features and services among individuals and small businesses	60 (50%)	30 (25%)	30 (25%)
Adoption rate and usage trends of PalmPay among individuals and small businesses	84 (70%)	24 (20%)	12 (10%)
Factors influencing the decision to adopt or reject	72 (60%)	24 (20%)	24 (20%)

3.1.2 Adoption rate and usage trends of PalmPay among individuals and small businesses

The study as per data on table 1, revealed interesting insights into the adoption rate and usage trends of PalmPay among individuals and small businesses in Iringa Municipal. The data indicated that 70% of the respondents were "very aware" of PalmPay and had adopted it for their transactions. Many participants expressed how PalmPay had become an integral part of their financial activities. One business owner noted:

"...using PalmPay has streamlined our payment processes. It's quick, reliable, and has significantly reduced the cash handling risks we previously faced. Most of our customers prefer it now..."

Additionally, 20% of the respondents were "somewhat aware" of PalmPay and had started using it occasionally. These individuals acknowledged the benefits of PalmPay but had not fully integrated it into their daily routines. A participant remarked:

"...I have used PalmPay a few times, mainly for paying bills and receiving payments from clients. It's convenient, but I still find myself relying on cash for many transactions. Maybe with more experience, I'll shift more towards PalmPay..."

Interestingly, 10% of the respondents were "not aware" of PalmPay, reflecting a segment of the population that had not adopted the platform. These participants either had limited exposure to PalmPay or faced challenges that prevented them from using it. One interviewee mentioned:

"...I have heard about PalmPay, but I haven't used it. I'm not very tech-savvy, and I'm more comfortable with the traditional ways of handling money. It would take some convincing and support for me to transition to a digital platform..."

The study highlighted a varied adoption landscape, with a significant majority embracing PalmPay, while some remained hesitant or uninformed. The varied responses accentuated the importance of targeted awareness campaigns and user support to encourage broader adoption. As one respondent aptly summarized:

"...for PalmPay to reach its full potential in Iringa, there needs to be continuous education and support. People need to see the tangible benefits and feel confident in using the platform. With time and effort, I believe more people will adopt it and experience its advantages..."

3.1.3 Factors influencing the decision to adopt or reject

The study dug into the factors influencing the decision to adopt or reject PalmPay among individuals and small businesses in Iringa Municipal. The data as shown on table 1, revealed that 60% of the respondents were "very aware" of the platform and had adopted it, often citing ease of use, security, and efficiency as major motivators. One respondent shared:

"...PalmPay has transformed our business operations. The user-friendly interface and quick transactions have made it a vital tool for us. We no longer worry about the security risks associated with handling cash..."

Another respondent highlighted the convenience factor, stating:

"...with PalmPay, I can manage my payments and finances from my phone. It has saved me a lot of time and hassle compared to going to the bank. The digital receipts and transaction history are also very helpful for tracking expenses..."

On the other hand, 20% of the respondents were "somewhat aware" of PalmPay and had either partially adopted or were considering adopting it. These individuals often mentioned a mix of curiosity and caution as driving their decision. One small business owner remarked:

"...I have heard positive things about PalmPay, and I have used it a few times. However, I am still getting used to the idea of digital payments and need more time to fully trust the system. I see its potential, but old habits die hard..."

Additionally, another participant expressed a need for more information and support, saying:

"...PalmPay seems promising, but I am not entirely sure how it integrates with my current business setup. More training and guidance would help me make the switch with confidence..."

Interestingly, 20% of the respondents were "not aware" of PalmPay, which significantly influenced their decision to reject the platform. These individuals either had limited exposure to PalmPay or were hesitant due to lack of familiarity and perceived complexity. One interviewee explained:

"...I prefer sticking to what I know. PalmPay sounds complicated, and I am not comfortable with digital transactions. I would need a lot more assurance and education to consider using it..."

The decision to adopt or reject PalmPay in Iringa Municipal was heavily influenced by a combination of factors, including the perceived convenience, security, and reliability of the platform, as well as challenges related to internet connectivity, trust, and a lack of knowledge. While the platform has found a significant user base, particularly among individuals who are more digitally literate, there remains a substantial group that requires additional education, reassurances about security, and better infrastructure to fully embrace digital financial services. These outcomes emphasize the need for continued efforts to raise awareness and build trust in digital payment platforms like PalmPay in order to foster greater adoption.

3.2 Benefits of PalmPay in Enhancing Financial Accessibility

The study provided important insights into the benefits of PalmPay in enhancing financial accessibility among users. It was found that the utilization of PalmPay for digital payments significantly improved transactional convenience and efficiency for both individuals and businesses. Access to savings options through PalmPay was also highlighted, offering users an easy and secure way to manage their finances. Additionally, the perceived impact of PalmPay on financial convenience and inclusion was noted, with many respondents expressing that PalmPay had positively transformed their financial behaviors and allowed greater participation in the formal financial system.

3.2.1 Utilization of PalmPay for digital payments

The utilization of PalmPay for digital payments was a significant aspect of the study, with 62.5% of the respondents (75 out of 120) actively using the platform for various types of transactions as shown on table 2. These users reported that PalmPay had become an essential tool in their daily financial activities, including sending money, paying bills, and making purchases. Many of these respondents noted the convenience of conducting transactions from their mobile devices, which allowed them to bypass traditional banking methods and engage in financial activities with ease. One respondent, who regularly used PalmPay for business transactions, shared:

"...PalmPay has been a game-changer for my business. I use it every day to pay suppliers and receive payments from my customers. The convenience of not having to go to the bank is invaluable, especially with the busy schedule I have. It's made managing cash flow so much easier..."

This quote highlights how PalmPay's ability to facilitate seamless digital payments played a crucial role in enhancing the efficiency and effectiveness of financial transactions for business owners, ultimately saving them time and effort.

In addition to the 62.5% of respondents who were heavy users of PalmPay, 29.2% (35 out of 120) reported moderate usage of the platform for digital payments. These users occasionally relied on PalmPay for specific financial tasks, such as paying bills or transferring money to family members. While they recognized the platform's benefits, they did not utilize it as frequently or for as many activities as the primary users did. One of these respondents explained:

"...I've used PalmPay a few times to send money to my relatives or pay my utility bills, but I mostly use cash when I shop or handle business payments. It's convenient when I need it, but I don't rely on it all the time..."

This statement reflects the more limited engagement of these users with PalmPay. Although they acknowledged the benefits of using digital payments, their reliance on traditional methods like cash meant they had not fully embraced the platform for all their financial transactions.

Interestingly, 8.3% of respondents (10 out of 120) indicated that they had not utilized PalmPay for digital payments at all. These non-users expressed hesitation or a lack of interest in using digital payment solutions, often due to concerns about security, a lack of understanding of the platform, or a preference for traditional cash-based transactions. One of the respondents shared:

"...I've never used PalmPay. I'm not sure how it works, and I don't feel comfortable using my phone for payments. I've always paid in cash, and it's just easier for me that way..."

This response reflects the disbelief and lack of trust in digital payment methods that some individuals still have, even when these services are readily available. For these non-users, factors such as unfamiliarity with the technology and concerns about security played significant roles in their decision to not adopt PalmPay for digital payments.

The utilization of PalmPay for digital payments was notably widespread among the respondents, with a majority of users actively adopting the platform for their financial transactions. However, a sizable portion of respondents only moderately engaged with PalmPay, and a smaller group remained hesitant to embrace it entirely. These results suggest that while PalmPay has made significant inroads in enhancing financial accessibility, efforts to improve education, security, and trust in the platform will be key to encouraging broader and more consistent adoption of digital payment methods in the region.

Table 2: Showing the benefits of PalmPay in Enhancing Financial Accessibility

Sub-Indicator	Utilized	Moderately Utilized	Not Utilized
Utilization of PalmPay for digital payments	75 (62.5%)	35 (29.2%)	10 (8.3%)
Access to savings options through PalmPay	50 (41.7%)	40 (33.3%)	30 (25%)
Perceived impact on financial convenience and inclusion	65 (54.2%)	40 (33.3%)	15 (12.5%)

3.2.2 Access to savings options through PalmPay

The access to savings options through PalmPay as shown on table 2, emerged as an important benefit for many respondents, with 41.7% (50 out of 120) of the participants utilizing the platform for saving money. These users highlighted how PalmPay's savings features had made it easier for them to manage their finances and save towards specific goals, all through a simple mobile interface. One respondent shared:

"...before I started using PalmPay for savings, I used to struggle with putting money aside. Now, I can easily set aside small amounts every week. It's automatic, and I don't have to worry about forgetting or spending the money. It has really helped me be more disciplined with my savings..."

This quote underlines how PalmPay's accessible and user-friendly savings features empowered individuals to save consistently, even if they did not have traditional banking options or a lot of disposable income. The convenience of saving directly from their phones made it a preferred method for many users, particularly those who lacked access to formal banking institutions or were looking for an easier way to set financial goals.

Additionally, 33.3% of respondents (40 out of 120) reported moderately utilizing PalmPay's savings options. These individuals engaged with the platform's savings feature occasionally, using it to set aside funds for specific purposes, such as emergencies or planned expenditures. While they recognized the benefit of PalmPay's savings function, they did not consistently use it as part of their routine financial management. One moderately engaged user explained:

"...I do use PalmPay's savings option from time to time, especially if I want to save for something like a holiday or a big purchase. But I also still have a savings account with the bank, so I'm not relying on PalmPay alone. It's a good option, but I prefer having more control over my savings with the bank..."

This response reflects the mixed approach of these users, who saw value in the platform but still preferred traditional savings methods for more substantial financial decisions. It also reveals the habit of using multiple financial tools to manage savings, which could be an indication of cautious engagement with digital savings options.

In contrast, 25% of the respondents (30 out of 120) had not utilized PalmPay's savings features at all. These non-users generally expressed a lack of awareness or interest in the platform's savings capabilities, preferring to save using other methods, such as cash or formal bank accounts. One such respondent noted:

"...I've heard about PalmPay's savings, but I haven't used it. I'm just not comfortable with saving money through my phone. I prefer using my bank account for that, where I can easily track my deposits..."

This response reflects the caution and lack of confidence some individuals had regarding digital savings. Despite the convenience offered by PalmPay, these users felt more secure using traditional methods, possibly due to concerns over the stability or security of mobile savings options. Moreover, some non-users cited a general lack of awareness about PalmPay's full range of services, including its savings features, which may have contributed to their decision to forgo using the platform for savings.

While a significant portion of respondents recognized the potential of PalmPay in offering easy access to savings options, the utilization was varied. A majority of users embraced the platform's savings features, with many appreciating its convenience and ability to automate saving. However, a portion of respondents remained either moderately engaged or hesitant to adopt this feature, indicating a need for more education and reassurances about the safety and reliability of digital savings methods. This variety in usage suggests that while PalmPay has made strides in enhancing financial accessibility through savings, continued efforts to raise awareness, build trust, and educate users on the benefits of saving digitally will be necessary to drive further adoption.

3.3.3 Perceived impact on financial convenience and inclusion

The study as per data on table 2, highlighted the perceived impact of PalmPay on financial convenience and inclusion among the respondents, providing valuable insights into its benefits in enhancing financial accessibility. A significant 54.2% of the participants reported that they utilized PalmPay extensively, appreciating its role in simplifying financial transactions and promoting inclusivity. One respondent shared:

"...PalmPay has made my financial life so much easier. I can pay bills, transfer money, and even save, all from my phone. It has brought a level of convenience that I never experienced with traditional banking methods..."

Another respondent echoed this statement, stating:

"...PalmPay has been a game-changer for my business. It has not only streamlined our payment processes but also enabled us to reach more customers who prefer digital transactions. It has truly made financial services more accessible to everyone..."

However, 33.3% of the respondents moderately utilized PalmPay, indicating they saw the benefits but had not fully integrated the platform into their financial routines. One participant remarked:

"...I use PalmPay for some transactions, especially when I need to make quick payments or transfers. While I appreciate the convenience it offers, I still rely on traditional methods for certain financial activities. It's a gradual process of adopting new technology..."

Another participant highlighted the need for more awareness and support, saying:

"...PalmPay is quite useful, but I think more people need to understand its full potential. I use it occasionally, but I know there are many features that I haven't explored yet. More information and user support would help in making better use of it..."

Interestingly, 12.5% of the respondents reported that they did not utilize PalmPay for financial transactions. These participants often cited a lack of familiarity and trust in digital platforms as the primary reasons. One interviewee explained:

"...I have heard about PalmPay, but I haven't used it. Digital transactions feel a bit intimidating to me. I prefer sticking to cash and traditional banking methods. Maybe with more assurance and education, I would consider using it..."

In general, the study accentuated the varied perceptions of PalmPay's impact on financial convenience and inclusion. While a majority embraced the platform and recognized its benefits, others remained cautious or uninformed. These insights emphasized the need for continuous education and support to encourage broader adoption and ensure that all users can fully benefit from the financial convenience and security that PalmPay offers.

3.3 Challenges and Barriers Affecting the Adoption and Effective Use of PalmPay

The challenges and barriers affecting the adoption and effective use of PalmPay were multifaceted, with respondents highlighting various factors that hindered their full engagement with the platform. Digital literacy and technological challenges were prevalent,

particularly among individuals with limited familiarity with mobile technology or digital financial services. Additionally, financial barriers and cost considerations played a significant role, as some users expressed concerns about the affordability of using the platform, particularly when it came to transaction fees or the cost of smartphones. Infrastructure limitations, such as unreliable internet access, and regulatory barriers, such as restrictions on mobile money services, also presented obstacles for many users.

Table 3: Showing the challenges and Barriers Affecting the Adoption and Effective Use of PalmPay

Sub-Indicator	Significant (%)	Moderate (%)	Insignificant (%)
Digital literacy and technological challenges	60 (50%)	40 (33.3%)	20 (16.7%)
Financial barriers and cost considerations	55 (45.8%)	40 (33.3%)	25 (20.8%)
Infrastructure limitations and regulatory barriers	70 (58.3%)	30 (25%)	20 (16.7%)

3.3.1 Digital literacy and technological challenges

Digital literacy and technological challenges emerged as per data on table 3, as significant barriers to the adoption and effective use of PalmPay for many respondents. In total, 50% (60 out of 120) of the participants reported facing significant digital literacy issues, with many individuals feeling uncertain or uncomfortable using mobile technology for financial transactions. One respondent shared:

"...I am not very good with smartphones, so using PalmPay was a struggle at first. I had to ask someone to help me set it up and even now, I'm not completely comfortable using all the features. It would be much easier for me if the app were simpler or if I had more guidance on how to use it..."

This quote echoes the challenges faced by individuals with limited digital skills, particularly among older users or those without prior experience using mobile banking services. For these respondents, the learning curve was steep, and it often required assistance from family members or peers who were more tech-savvy.

A substantial portion of the respondents, 33.3% (40 out of 120), reported experiencing moderate digital literacy and technological challenges. These individuals acknowledged that while they could navigate the PalmPay app to some extent, they were still not fully confident in their ability to make the most of the platform's features. One moderately affected user explained:

"...I can send money and pay bills on PalmPay, but when it comes to more complicated features, like savings or understanding transaction histories, I don't feel very confident. Sometimes, I don't know where to click or what certain features mean, and I end up avoiding them..."

This quote demonstrates how moderate digital literacy challenges led to limited use of the platform's features. Although these users could perform basic transactions, they struggled to maximize the full potential of PalmPay, and their usage remained confined to the most straightforward tasks.

On the other hand, 16.7% (20 out of 120) of the respondents reported that digital literacy and technological challenges had an insignificant impact on their ability to adopt and use PalmPay. These individuals were generally more comfortable with technology and had either prior experience using mobile money platforms or were quick to adapt to new digital tools. One such respondent noted:

"...I have used mobile money before, so getting the hang of PalmPay was easy for me. The interface is user-friendly, and I was able to learn how to use all the features pretty quickly. I didn't face many issues at all, and it felt almost like a natural extension of other services I've used..."

This response highlights how familiarity with digital tools and previous exposure to mobile banking services allowed these individuals to bypass some of the challenges others faced, leading to smoother adoption and greater confidence in using the platform.

While a majority of respondents faced significant or moderate challenges related to digital literacy and technological competence, a smaller group of users reported minimal barriers. For those who struggled, the lack of familiarity with mobile financial platforms created a notable barrier to adoption, affecting their confidence in fully utilizing PalmPay. The need for better education and support

for users unfamiliar with digital technology was a common theme in the interviews, as many respondents expressed a desire for more accessible guidance and user-friendly features to help them navigate the platform with ease. Dealing with these challenges could help foster wider adoption and ensure that all users, regardless of their digital literacy levels, can take full advantage of PalmPay's capabilities.

3.3.2 Financial barriers and cost considerations

Financial barriers and cost considerations were a recurring theme among the respondents when discussing the challenges, they faced in adopting and effectively using PalmPay. According to data on table 3, a significant portion of the participants, 45.8% (55 out of 120), expressed that the costs associated with using the platform were a major concern. For these individuals, the charges for transactions, as well as the costs of acquiring and maintaining a smartphone, were viewed as prohibitive. One respondent shared:

"...I want to use PalmPay more often, but every time I send money, there's a fee. Over time, these fees add up, and it becomes too expensive. I also had to buy a smartphone just to use the app, and that wasn't cheap either. Sometimes, I wonder if it's really worth it when I can just go to the bank and pay less in fees..."

This quote discloses the frustration many users felt about the costs involved, particularly for those who may not have a steady income or have limited financial resources. These respondents often weighed the benefits of using PalmPay against the additional expenses, and for some, the financial burden outweighed the convenience of the platform.

For 33.3% (40 out of 120) of the respondents, financial barriers and cost considerations were seen as moderate challenges. These users acknowledged that while the platform's fees were not insignificant, they were still manageable. However, the cost of accessing the service was still a limiting factor in their usage. One moderately affected user noted:

"...I don't mind the fees too much, but there are times when I feel like I can't afford to send money through PalmPay as often as I would like. For instance, if I need to send a large amount, the fees are higher, and it becomes too costly for me. I have to plan my transactions carefully to avoid these extra costs..."

This comment highlights how even though the costs were not entirely prohibitive, they still impacted how frequently and effectively the platform was used. For these respondents, the decision to use PalmPay was often contingent on the size of the transaction and their available funds.

In contrast, 20.8% (25 out of 120) of the respondents felt that financial barriers and cost considerations had an insignificant impact on their adoption and use of PalmPay. These users were generally more financially secure or had already factored the costs into their budgeting. One such respondent remarked:

"...the fees don't bother me because I'm able to budget for them. I've been using PalmPay for almost all my transactions now, and I find the convenience outweighs the cost. I'm happy to pay a small fee for the convenience of managing my money from my phone..."

This quote imitates the experience of users who saw the costs as a minor inconvenience, one that they were willing to pay for the ease and speed that PalmPay provided. For these respondents, PalmPay had become an integral part of their financial lives, and they were willing to absorb the fees because they saw the platform as adding significant value to their daily financial activities.

The study highlighted how financial barriers and cost considerations played a pivotal role in shaping users' adoption and usage of PalmPay. While some respondents found the costs prohibitive, others adapted to the fees and were willing to pay for the added convenience. The financial burden was particularly acute for low-income users, who were more sensitive to transaction fees and the costs of acquiring and maintaining the necessary technology. Dealing with these financial concerns, either by reducing transaction fees or providing more affordable access to smartphones, could potentially broaden the platform's adoption and usage, especially among users who are currently hesitant due to cost-related issues.

3.3.3 Infrastructure limitations and regulatory barriers

Infrastructure limitations and regulatory barriers as exemplified on table 3, emerged as significant obstacles for many respondents when discussing their experiences with adopting and using PalmPay. A majority of the participants, 58.3% (70 out of 120), cited infrastructure issues such as poor internet connectivity, limited mobile network coverage, and inconsistent electricity supply as major factors that hindered their ability to use the platform effectively. One respondent explained:

“...there are times when I can’t even open the PalmPay app because my network is too weak, or I don’t have enough data. It’s frustrating when I need to make a quick transaction, and I can’t because of the poor internet connection. Sometimes I have to wait until I’m at a place with better signal, and by then, I might miss the chance to make a timely payment...”

This response was shared by others who emphasized how unreliable internet services in certain areas, especially in rural parts of Iringa, severely limited their ability to access and use PalmPay consistently. The lack of reliable infrastructure, particularly for those living in remote areas, presented a considerable barrier to adopting digital financial services effectively.

In addition to infrastructure issues, regulatory barriers were also a significant concern for many respondents. Many users expressed frustration with the complex and sometimes unclear regulations surrounding mobile money services. One respondent noted:

“...there have been times when I couldn’t use PalmPay because of regulatory issues, especially when the government changed certain rules about mobile money services. Sometimes I hear that PalmPay or other platforms are being restricted, and I worry that I might lose access to my money or face complications using the service...”

This quote highlights the uncertainty created by regulatory changes and how it led to distrust or hesitation among users. Many respondents mentioned how frequent changes in policies, such as limits on transactions or new government fees, made them apprehensive about fully embracing the platform. Regulatory uncertainty contributed to a sense of instability, especially for those who were already struggling with other challenges like financial barriers or limited digital literacy.

Meanwhile, 25% (30 out of 120) of the respondents acknowledged that infrastructure limitations and regulatory barriers had a moderate impact on their use of PalmPay. While they recognized the challenges of poor network coverage and occasional regulatory changes, they were still able to use the platform with some degree of success. One moderately affected respondent shared:

“...I don’t face these problems all the time, but sometimes it’s really frustrating. I can use PalmPay when I’m in town or when I have access to good Wi-Fi, but when I’m at home, it’s harder to use. Also, I heard some rumors about regulatory changes, but I haven’t personally had any major issues yet...”

This quote illustrates the mixed experience of users who were somewhat impacted by infrastructure and regulatory issues but could still navigate them with some effort. For these respondents, the challenges were inconvenient but not completely disabling, and they still found value in using PalmPay when conditions allowed.

On the other hand, 16.7% (20 out of 120) of the respondents felt that infrastructure limitations and regulatory barriers had an insignificant impact on their ability to adopt and use PalmPay. These users generally lived in areas with more reliable mobile network coverage and infrastructure, and they had fewer concerns about regulatory changes. One respondent remarked:

“...I have no issues with PalmPay at all. I use it regularly, and I’m not really affected by the infrastructure or regulatory problems that others talk about. I think the service works just fine for me...”

This comment reflects the experience of users who benefited from a more stable infrastructure and who were less affected by the regulatory landscape. For these respondents, PalmPay operated smoothly, and they did not encounter significant barriers to their usage.

The study, generally highlighted the considerable impact that infrastructure limitations and regulatory barriers had on the adoption and effective use of PalmPay. For the majority of respondents, unreliable network coverage and changes in regulations created substantial challenges that interfered with their ability to consistently access and use the platform. These barriers were particularly pronounced in more remote areas, where poor internet connectivity and inconsistent electricity made digital financial services difficult to rely on. Addressing these infrastructure challenges, such as by improving network coverage and providing clearer, more stable regulatory frameworks, could significantly enhance the accessibility and reliability of PalmPay, enabling a broader user base to fully take advantage of its services.

4. CONCLUSION AND RECOMMENDATIONS

The study aimed to examine the impact of PalmPay on financial inclusion in Iringa Municipality, focusing on the awareness, adoption, benefits, and challenges faced by individuals and small businesses. The findings revealed that while a significant proportion of respondents were aware of the features and services of PalmPay, there were varying levels of adoption and usage across different demographic groups. The adoption rate was influenced by factors such as digital literacy, access to financial resources, and

infrastructure limitations. Respondents who were more digitally literate and had access to the necessary technology and financial resources were more likely to adopt PalmPay and use it regularly.

In terms of benefits, PalmPay was recognized for its potential in enhancing financial accessibility, particularly through digital payments. A majority of users reported that PalmPay had made it easier for them to carry out transactions, particularly for small businesses. However, access to savings options through the platform was not as widely utilized, indicating that while the platform facilitated day-to-day transactions, its role in supporting long-term financial inclusion through savings needed further development. Furthermore, respondents acknowledged the platform's positive impact on financial convenience, with many highlighting how it simplified their financial management and reduced the need for physical banking visits.

Despite the benefits, the study also highlighted several challenges and barriers that hindered the effective use and widespread adoption of PalmPay. Infrastructure limitations, such as poor internet connectivity and network coverage, were cited as significant challenges, especially for those living in rural areas. Regulatory barriers, including frequent changes in government policies regarding mobile financial services, also created uncertainty for users, impacting their confidence in the platform. Furthermore, financial barriers such as transaction fees and the cost of acquiring smartphones were prominent concerns. These challenges, coupled with varying levels of awareness and digital literacy, indicated that while PalmPay has potential, addressing these barriers is crucial for fostering broader adoption and ensuring its effectiveness in enhancing financial inclusion in Iringa Municipality.

Based on the findings of the study, it is recommended that PalmPay enhance its user education and awareness campaigns to address the knowledge gap among individuals and small businesses, particularly in rural areas. Efforts should be made to improve digital literacy, ensuring that more people understand how to use the platform effectively. Moreover, PalmPay could collaborate with local infrastructure providers to improve internet connectivity and mobile network coverage in underserved areas, which would help overcome the technological barriers faced by many users. To further increase adoption, the platform should also explore more affordable solutions or incentives, such as reduced transaction fees or access to micro-loans, to address financial barriers and encourage greater usage. Finally, clearer and more stable regulatory frameworks would contribute to user trust, ensuring that PalmPay's services are reliable and secure for a larger portion of the population.

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