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Marketing to the Digitally Empowered: How PalmPay Uses Blockchain to Reach the Unbanked in Iringa Municipal

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Abstract: In the digital era, access to financial services has become a cornerstone for economic empowerment and inclusive growth. However, millions in developing regions such as Tanzania remain unbanked, lacking access to formal financial systems. With the growth of fintech innovations, platforms like PalmPay have emerged as crucial tools for bridging this financial gap. PalmPay, a mobile money and financial services platform, has gained widespread popularity across African markets for offering secure, convenient, and user-friendly digital transactions. When integrated with blockchain technology, PalmPay becomes even more effective by enhancing transparency, data security, and trust—elements that are often limited in developing economies. This study explored how PalmPay, as a blockchain-enabled digital financial platform, has been used to reach and serve the unbanked population in Iringa Municipal through strategic digital marketing approaches. Using a purposive sample of 58 respondents, data were collected through qualitative interviews and structured questionnaires focusing on awareness, trust, and adoption influenced by blockchain, as well as the effectiveness of digital marketing strategies. Findings revealed that while most respondents were aware of PalmPay, many had only a partial understanding of blockchain, mainly associating it with improved security and transparency. Trust and adoption were driven by PalmPay's ability to provide real-time, traceable, and secure transactions, although a digital trust gap persisted among less digitally literate users. Mobile-based marketing campaigns, particularly SMS and in-app promotions, were most effective when localized and supported by personal engagement from community agents or peers. Word-of-mouth influence remained a strong driver of adoption, underscoring the need for community-based and culturally sensitive outreach strategies.

Keywords: PalmPay; Blockchain Technology; Digital Financial Services; Unbanked Population; Digital Marketing Strategies; Mobile-Based Campaigns; Trust and Adoption; Perceived Security and Transparency

1. Introduction

In the digital age, access to financial services has become a cornerstone for economic empowerment and inclusive growth. Yet, millions in developing regions such as Tanzania remain unbanked, lacking access to formal financial systems. With the rise of fintech solutions, platforms like PalmPay are emerging as vital tools for bridging this gap. PalmPay, a mobile money and financial services platform, has gained popularity across several African markets by offering secure, convenient, and user-friendly digital transactions. When integrated with blockchain technology, PalmPay becomes even more powerful, providing not just financial access but also transparency, data security, and trust in a market where these elements are often scarce. Digital marketing plays a pivotal role in expanding PalmPay's reach, especially among the unbanked and underbanked populations in areas like Iringa Municipal. By combining blockchain's transparent and decentralized architecture with targeted mobile-based market-

ing strategies, PalmPay can effectively engage users who were previously excluded from the formal economy. This study explored how PalmPay leverages blockchain features to build trust, promote adoption, and deliver tailored marketing content that resonates with the needs and behaviors of digitally empowered yet financially excluded individuals.

The rise of fintech and mobile money solutions has significantly impacted financial inclusion and the broader financial landscape. Fintech innovations leverage advanced technologies like blockchain and AI to offer secure, accessible digital financial services [1]. These solutions, including mobile payment systems and digital wallets, are bridging the gap for unbanked and underbanked populations by providing low-cost, user-friendly alternatives to traditional banking [2]. Mobile money services, in particular, have shown promise in increasing financial access, especially in emerging markets [3]. However, challenges such as regulatory hurdles, digital literacy, and security concerns persist [1,2]. Despite these obstacles, fintech continues to grow rapidly, reshaping the financial services industry and presenting both opportunities and challenges for incumbent institutions [4]. Strategic collaboration and investment in digital infrastructure are crucial for leveraging fintech to achieve universal financial inclusion [2].

Mobile money solutions have emerged as a powerful tool for enhancing financial inclusion in developing countries, particularly in Tanzania. These services provide low-cost digital transfers, payments, and other financial services to underserved populations [5]. The rapid expansion of mobile money in Tanzania has led to over 31.8 million registered accounts and 153,369 agents, processing transactions valued at US\$1.8 billion monthly [6]. This growth has been facilitated by the Bank of Tanzania's "test and learn" approach, allowing innovation while protecting customers [6]. Mobile money adoption has enabled households to smooth consumption during economic shocks and maintain investments in human capital [7]. However, challenges remain, including poor network coverage, lack of user knowledge, and high transaction fees [5]. Future advancements in fintech, such as blockchain and AI, may further bridge the financial gap for unbanked populations [2].

Blockchain technology is transforming the fintech sector by enhancing trust, efficiency, and security. It offers transparent transactions, reducing fraud risks through continuous validation and trust scoring mechanisms [8]. The technology enables lower operational costs by eliminating intermediaries and automating processes with smart contracts, facilitating microtransactions [9]. Blockchain also supports decentralized identity verification, potentially helping the unbanked establish financial identities [10]. The adoption of blockchain in fintech has led to revenue growth, cost savings, and increased competitiveness [9]. However, challenges such as scalability, regulatory uncertainty, and interoperability issues persist [9,11]. Despite these challenges, blockchain technology is paving the way for next-generation fintech solutions with enhanced scalability, resilience, and transparency [8,11].

Blockchain technology is modernizing digital marketing by enhancing security, transparency, and trust in e-commerce transactions [12]. It enables secure, tamper-proof transactions, building consumer trust through data integrity and fraud prevention [13,14]. Blockchain facilitates targeted marketing campaigns by providing accurate, up-to-date customer insights while ensuring data privacy compliance [14,15]. The technology also supports seamless cross-border payments, eliminating intermediaries and making marketing processes more efficient and cost-effective [13]. Additionally, blockchain-powered loyalty programs enhance customer retention [12]. However, challenges such as scalability, implementation costs, and regulatory uncertainties hinder widespread adoption [12]. Despite these obstacles, blockchain's potential to transform digital marketing and e-business is significant, offering innovative solutions for customer engagement and operational efficiency [14,15].

Digital marketing plays an important role in promoting financial inclusion and enhancing the performance of financial institutions. Studies have shown that digital marketing partially mediates the relationship between financial technology and financial inclusion [16]. In rural areas, digital financial services are increasingly adopted, despite challenges such as language barriers and poor internet connectivity [17]. Marketing information systems contribute positively to achieving financial inclusion goals, with banks maintaining accurate internal records and regularly updating data [18]. For microfinance institutions, digital marketing significantly improves operational efficiency, although its impact on loan portfolio expansion is often considered minimal [19]. To maximize the benefits of digital marketing for financial inclusion, recommendations include tailored awareness campaigns, improved digital literacy, enhanced infrastructure, and the design of financial services based on local needs [17,18].

Studies in Tanzania reveal limited awareness and understanding of blockchain technology and mobile financial services among the public. Maagi [20] found that 74.7% of procurement professionals were unaware of blockchain applications in supply chains. Similarly, Nfuka and Rusu [21] reported low awareness of Fourth Industrial Revolu-

tion technologies, including blockchain, among project managers. However, mobile financial services have gained some traction. Abdinoor and Mbamba [22] identified factors influencing adoption, including awareness, perceived usefulness, and benefits, while cost remained a barrier. Wilson & Mbamba [23] found that ease of use and service quality positively influenced mobile payment acceptance. Both studies highlighted the need for increased awareness and understanding. These findings indicate a significant knowledge gap regarding blockchain and related technologies among Tanzania's unbanked population, suggesting a need for targeted education and awareness campaigns to promote the adoption and utilization of these technologies in various sectors.

Blockchain technology's features significantly influence user trust and adoption. Immutability and traceability positively affect trust, while anonymity has a negative impact [24]. Security, traceability, and privacy (STP) in blockchain systems contribute to users' perceptions of transparency and reliability, which in turn foster trust and satisfaction [25]. Key characteristics of blockchain that influence trust include reliability, integrity, tamper-proofing, immutability, versatility, transparency, and privacy [26]. These features create a decentralized, tamper-proof environment that ensures data integrity and protects user privacy, ultimately encouraging users to trust the technology [26]. While research on blockchain's trust-building effects has increased, there remains a need for further empirical investigations into individual blockchain features and their impact on user trust [24,25].

Digital marketing strategies play a fundamental role in engaging unbanked populations, particularly in emerging economies. Banks in Nigeria are leveraging diverse approaches, including social media, email marketing, and content marketing, to reach financially vulnerable customers [27]. Indonesian digital banks are utilizing Instagram to attract unbanked youth through targeted content and performance analysis [28]. In response to the COVID-19 pandemic, financial institutions are adapting their strategies to promote digital payments and support MSMEs through digital marketing initiatives [29]. Nigerian banks are developing innovative product portfolios, employing traditional marketing schemes, and implementing inclusive technologies to extend services to unbanked and financially vulnerable customers [30]. These strategies aim to enhance customer engagement, improve financial literacy, and accelerate the adoption of digital financial services in emerging markets.

Recent studies in Tanzania highlight the growing importance of digital marketing and financial services in engaging underserved populations. While digital marketing adoption among agricultural cooperatives remains low, its potential to increase efficiency and reduce costs is recognized [31]. SMEs in Tanzania have shown a positive correlation between digital marketing strategies and performance, emphasizing the need for proper utilization of these tools [32]. In the financial sector, microinsurance facilitated by digital financial services has played a significant role in promoting financial inclusion for low-income individuals [33]. Mobile payment services, a key driver of Tanzania's economy and financial inclusion, face intense competition. Research suggests that service quality, mediated by customer experience, positively influences word-of-mouth and repurchase behaviors in this sector [34]. These findings underline the importance of digital strategies in reaching and engaging underserved populations in Tanzania.

Despite the rapid growth of mobile financial services in Tanzania, particularly through platforms like M-Pesa, Tigo Pesa, and PalmPay, a large segment of the population in semi-urban and rural regions such as Iringa Municipal remains financially excluded. According to national financial inclusion reports, many individuals in these areas continue to operate outside the formal financial system due to barriers such as limited trust in digital platforms, lack of financial literacy, insufficient documentation, and concerns over data privacy and fraud. While mobile money platforms have reduced some access barriers, they have not fully addressed the underlying issues of trust, transparency, and user engagement, especially among the unbanked. PalmPay, a mobile-based fintech platform, has emerged with the potential to revolutionize financial access by integrating blockchain technology, which offers decentralized security, immutable transactions, and transparent data sharing. These blockchain features, when effectively marketed, can help build trust and drive adoption among the unbanked. However, the marketing of such advanced technologies to digitally marginalized communities presents significant challenges. Many unbanked individuals are unfamiliar with blockchain or skeptical of digital financial platforms due to past experiences with scams or system failures. As a result, PalmPay must employ innovative, culturally relevant, and trust-oriented digital marketing strategies to reach and retain users in Iringa Municipal. Currently, there is a limited body of research examining how blockchain-enhanced platforms like PalmPay can be marketed effectively to unbanked populations in rural Tanzanian contexts. The disconnect between technological potential and user adoption remains a critical issue. Without a deeper understanding of how blockchain-enabled trust can be communicated through digital marketing,

PalmPay and similar platforms risk failing to penetrate the very communities they aim to serve. This sought to fill this gap by investigating how PalmPay leverages blockchain technology in its digital marketing strategies to reach and empower the unbanked in Iringa Municipal. It aims to explore the perceptions of the unbanked population, evaluate the effectiveness of marketing approaches used, and identify challenges and opportunities for improving financial inclusion through digital innovation.

The main objective of this study is to examine how PalmPay utilizes blockchain technology in its digital marketing strategies to reach and empower the unbanked population in Iringa Municipal. Specifically, the study aims to assess the level of awareness and understanding of PalmPay and blockchain technology among unbanked individuals; to explore how blockchain features such as transparency, security, and decentralization influence trust and adoption of PalmPay's services; and to investigate the digital marketing strategies employed by PalmPay to engage unbanked users and promote financial inclusion in the local context.

The main contribution of the study was that it provided valuable insights into how blockchain technology, when integrated with digital marketing strategies through platforms like PalmPay, supported efforts to reach and empower the unbanked population in Iringa Municipal. The study revealed how blockchain's core features, such as transparency, decentralization, and security, had the potential to build trust among financially excluded individuals. It also contributed to understanding how targeted and culturally relevant digital marketing approaches helped promote awareness, influence adoption, and enhance engagement with PalmPay's services. By doing so, the study added to the existing body of knowledge on financial inclusion, fintech innovation, and the strategic role of digital marketing in underserved communities.

The remaining sections of the paper are arranged as follows: Section two contains the methodology of the study, while Section three contains results and discussion, and Section four comprises the conclusion and recommendations.

2. Methodology

This study employed a research design that was primarily qualitative in nature, supported by descriptive quantitative data. This approach was chosen to provide a comprehensive, exploratory understanding of how PalmPay utilizes blockchain in its digital marketing to reach the unbanked in Iringa Municipal. While often referred to as a "mixed-methods" design in a broad sense, the analysis is more accurately characterized as qualitative data enriched with quantitative descriptors, rather than aiming for statistical inference or model testing.

The target population for this study comprised unbanked individuals, existing PalmPay users, local business owners, and relevant community leaders within Iringa Municipal. A purposive sampling technique was employed to select participants who could provide rich, information-rich insights based on their experiences. The final sample size for the study was 58 participants. It is important to acknowledge that this sample size is a study limitation in terms of statistical generalizability; however, it was deemed adequate for the study's exploratory purpose. The goal was not to achieve broad numerical representation but to secure a diverse range of in-depth perspectives from deliberately chosen participants, ensuring a breadth of qualitative insights into PalmPay's strategies and their perceived effectiveness.

Data collection involved a combination of instruments. A structured questionnaire was administered to a subset of participants to gather descriptive quantitative data on demographics, smartphone penetration, and financial service usage. Concurrently, semi-structured interviews were conducted with selected unbanked individuals, PalmPay agents, and local business owners to elicit qualitative data on experiences, perceived benefits, and challenges. Field notes were also taken during observations.

Data analysis proceeded in two phases. Quantitative data from the questionnaires were analyzed using descriptive statistics (frequencies and percentages) to identify basic patterns and profiles. For the qualitative data from interviews, a systematic thematic analysis was employed, following the guidelines of Braun & Clarke [35], to identify recurring patterns and key narratives.

Ethical considerations were paramount throughout the study. Informed consent was obtained from all participants. To expand on the procedures for confidentiality and data handling: All participant-identifying information was anonymized during transcription and analysis. Digital data was stored on a password-protected secure server, and any physical notes were kept in a locked facility. All data will be securely destroyed five years after the completion of the study, in accordance with the data management plan. The study received ethical clearance from the

relevant institutional review board in Tanzania before commencement.

3. Results and Discussion

This section presents and interprets the findings obtained from the field based on responses from a sample of 58 participants. The data collected aimed to address the study's main objectives, focusing on the respondents' levels of awareness and understanding of mobile financial platforms and blockchain technology, perceptions of trust influenced by blockchain features, and the effectiveness of digital marketing strategies targeting unbanked individuals. The presentation of results is organized thematically in alignment with the research objectives and questions. Quantitative findings are supported with frequency and percentages, while qualitative insights are illustrated through selected respondent quotations. The discussion further connects the results with existing literature to provide a contextual understanding of the patterns observed in the data.

3.1. Awareness and Understanding of PalmPay and Blockchain

The study assessed respondents' awareness and understanding of PalmPay and blockchain technology through three sub-indicators. It explored how familiar participants were with PalmPay as a digital financial platform, their basic understanding of how blockchain functions, and the sources through which they received information about these technologies. The findings revealed varying levels of awareness, with many respondents indicating that social media and peer influence played a significant role in shaping their knowledge.

3.1.1. Awareness of PalmPay as a Digital Financial Platform

The study's findings on the awareness of PalmPay as a digital financial platform, as shown in **Figure 1**, in Iringa Municipal, revealed a mixed but generally promising landscape regarding the reach of the service among the target population. Out of the 58 participants, 10 individuals reported not being aware of PalmPay, indicating a segment of the unbanked population that remained completely disconnected from the platform's outreach. These individuals often represented the most remote or digitally isolated segments of the community, or those who relied exclusively on traditional cash transactions and word-of-mouth networks that had not yet introduced them to the service. For instance, a respondent from a peripheral village, who was classified as "not aware," explained:

"...PalmPay? I have not heard of it. My phone is mainly for calling my children and sometimes for mobile money with M-Pesa if I need to send money, but nobody has ever told me about PalmPay. I get my money from selling farm produce, and I keep it at home or use the local shop to send some to my relatives. If it's something new, I think it needs to come to us in a way we understand, perhaps through our village leaders or the market where we sell our goods. Just hearing about a new app for money from someone on the radio wouldn't make me trust it..."

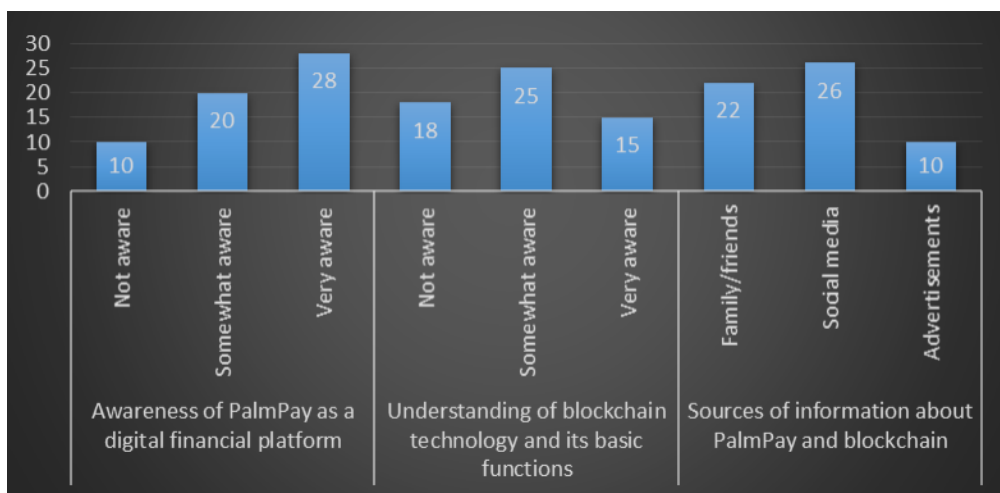


Figure 1. Awareness and Understanding of PalmPay and Blockchain.

A larger group of 20 participants demonstrated being “somewhat aware” of PalmPay. This group typically recognized the name or had heard mentions of the platform, often from peers, local agents, or general advertisements, but lacked a comprehensive understanding of its features, how to use it, or its distinct advantages. Their awareness was often superficial, reflecting initial exposure without deeper engagement or clear informational reinforcement. A young trader in the Iringa central market, representing this “somewhat aware” category, commented:

“...I’ve seen the blue PalmPay posters around, and my friend told me he uses it for cheap transfers. I even downloaded the app once, but then I got busy. I know it’s for sending money and maybe paying bills, but I’m not sure how it’s different from the other mobile money services I use, or why I should switch. No one really sat down with me to explain how it works step-by-step, or what makes it special, so I just use what I’m familiar with. There’s a lot of things to learn about these apps, and sometimes, you just stick with what you know unless there’s a very clear reason to change...”

Significantly, the majority of the sample, comprising 28 participants, reported being “very aware” of PalmPay as a digital financial platform. This group included existing PalmPay users, some local business owners who accepted or considered accepting digital payments, and community leaders who were more digitally literate and engaged. Their awareness extended beyond mere recognition to an understanding of key services offered, often citing specific benefits such as low transaction fees or promotional offers. An active PalmPay user and small shop owner articulated his high awareness, stating:

“...Oh, PalmPay! Yes, I know PalmPay very well. I use it almost every day for receiving payments from customers and for sending money to my suppliers. It has made my business much easier because the fees are lower than some other services, and the transactions are very fast. I learned about it from a PalmPay agent who came to our area and explained everything clearly. They even helped me set up my account. I also tell my customers about it, especially when they need to send money cheaply. For me, it’s not just an app; it’s a reliable tool that helps my business run smoothly and connects me to my customers who are also using it. I even show others how to use it when they ask, because I see the benefit it brings...”

These varied levels of awareness highlighted the crucial role of direct engagement and sustained educational efforts, particularly through local agents and trusted community channels, in bridging the knowledge gap and converting passive recognition into active adoption among Iringa’s unbanked population.

3.1.2. Understanding of Blockchain Technology and Its Basic Functions

The investigation into the understanding of blockchain technology and its basic functions among the 58 respondents in Iringa Municipal, as per **Figure 1**, revealed a significant range of comprehension, ranging from complete unfamiliarity to a general grasp of its core benefits, yet rarely extending to technical depth. A substantial portion of the sample, 18 individuals, expressed that they were “not aware” of blockchain technology. These respondents typically represented those with lower digital literacy, primarily focused on the immediate utility of mobile financial services without concern for the underlying technological infrastructure. Their understanding was limited to the functionality of sending and receiving money, often equating “digital money” with the act of using their phone for transactions. One such respondent, a farmer from a rural sub-location, unequivocally stated:

“...blockchain? I have never heard that word before. Is it something to do with the network? For me, what matters is that I send money, and it reaches my family quickly, and that when I sell my maize, I get my payment on my phone. The phone works, the money moves, that is enough for me. Whether it is ‘blockchain’ or ‘stonechain,’ I don’t care, as long as my money is safe and the charges are fair. When the agent showed me how to use PalmPay, he talked about how it is safe and fast, but he didn’t use any big words like ‘blockchain.’ I wouldn’t have understood anyway...”

The largest segment of the population, comprising 25 individuals, was “somewhat aware” of blockchain technology. This group often associated blockchain with concepts like “security,” “transparency,” or “modern technology,” frequently without being able to articulate how these attributes were achieved through the technology. Their

understanding was largely derived from indirect exposure, such as overhearing conversations, general media mentions, or explanations from agents who simplified the concept. These individuals recognized it as an important, albeit complex, element behind secure digital transactions. A young entrepreneur, who had heard bits and pieces about new technologies, elaborated on his “somewhat aware” status:

“...I know blockchain is a new technology, like the internet, but for money. People say it makes things secure, so hackers cannot steal your money, and that everything is clear, so you can see where your money goes. I heard someone say it’s like a big book where everything is written down, and you can’t change it. So, for PalmPay, I assume it’s part of what makes it safe. But if you asked me to explain how it works exactly, or what ‘decentralized’ means, I honestly couldn’t tell you. I just know it’s good for trust in digital payments. It gives me a feeling of reassurance, even if I don’t fully get the technical side...”

A smaller, yet significant, group of 15 participants demonstrated being “very aware” of blockchain technology’s basic functions. These respondents, often younger, more digitally savvy individuals or those with some exposure to financial technology news, could articulate key concepts such as immutability, decentralization, or enhanced security, and linked these directly to PalmPay’s operational integrity. While still not possessing a deep technical understanding comparable to a blockchain developer, they understood its fundamental value proposition within the context of digital financial services. One participant, a university student who was an early adopter of digital financial platforms, provided a clear perspective on his higher level of awareness:

“...I understand blockchain as the technology that makes digital transactions extremely secure and transparent. It’s like a public ledger that cannot be altered once a transaction is recorded, which means it’s very difficult for fraud to occur. It’s decentralized, so no single company or government controls it entirely, which gives me more trust, especially with my money. For PalmPay, I believe they are leveraging this technology to ensure the integrity of their transactions, making it reliable for users like me. I read articles and watch videos about it, because I think it’s the future of finance, especially for places where traditional banking is less accessible or less trusted. It’s not just about speed; it’s about building an unshakeable foundation of trust...”

PalmPay had effectively integrated blockchain technology to enhance its digital financial services, yet most users lacked a direct understanding of how the underlying system functioned. Trust in the platform was largely influenced by the perceived benefits of enhanced security and transparency, rather than any in-depth knowledge of blockchain mechanics. As a result, trust and adoption were shaped more by user experience than technical awareness. These findings pointed to the need for marketing and educational efforts to focus on communicating the practical, visible advantages of using PalmPay in simple, relatable language, rather than emphasizing complex technical explanations that might alienate or confuse the target audience.

The varied understanding of blockchain among PalmPay users in Iringa can be explained through adoption theories. Technology Acceptance Model (TAM) shows that users valued PalmPay’s usefulness and ease of use rather than its technical details, while Unified Theory of Acceptance and Use of Technology (UTAUT) highlights the role of agents and peer influence in shaping trust. From a Diffusion of Innovation perspective, most remained in early stages of awareness, with only a few digitally literate users grasping its decentralization and security functions. Thus, adoption was driven more by practical benefits and trust than by deep technical knowledge.

3.1.3. Sources of Information about PalmPay and Blockchain

The investigation into the sources of information about PalmPay and blockchain among the 58 respondents in Iringa Municipal provided, as in **Figure 1**, critical insights into the most effective channels for disseminating information within the community, especially concerning new digital financial services. The findings highlighted the strong influence of interpersonal communication and evolving digital platforms, while traditional mass media played a lesser role for this particular product.

The most frequently cited source of information was family/friends, reported by 22 participants. This underscored the pervasive influence of word-of-mouth in Iringa, where trust often originates from close social networks. Individuals were more likely to consider a new financial service if it was recommended or actively used by someone

they knew and trusted, such as a family member or a close friend. This peer-to-peer validation often served as the initial bridge over skepticism, particularly for the unbanked who might be wary of formal institutions or unfamiliar technologies. A respondent who learned about PalmPay from his brother expressed this sentiment clearly:

"...my brother was the one who told me about PalmPay. He started using it to send money to his children for school fees, and he said the charges were very small compared to what we used before. At first, I was hesitant because it was new, but he showed me on his phone how easy it was, and he helped me download the app. If it wasn't for him, I probably would not have bothered to try. You trust what your family tells you, especially when it comes to money. He even explained that it was safe, though he didn't use the word 'blockchain,' he just said it was 'new technology that makes it very secure...'"

Social media emerged as another significant source, cited by 26 participants, reflecting the growing digital engagement even among segments of the unbanked or newly banked population in Iringa. Platforms like WhatsApp, Facebook, and Instagram were often used to share information about promotions, new features, or general discussions about mobile money. While some participants actively sought information on these platforms, others encountered it passively through shared content from their network. A younger respondent, who frequently used social media, elaborated on this influence:

"...I saw many posts about PalmPay on Facebook and WhatsApp groups. My friends would share links or screenshots of promotions, especially when there were bonuses for signing up or referring others. Sometimes I would see short videos explaining how to pay bills or buy airtime. I didn't fully understand the 'blockchain' part from social media, but the convenience and the offers were clear. Social media helps because you see many people using it, and it feels more modern and accessible. It's a quick way to see what's new, and if many people in my circle are talking about it, it makes me curious to try..."

In contrast, Advertisements were cited by only 10 participants as their primary source of information. This category encompasses traditional advertisements such as radio, television, billboards, or print media, as well as digital ads that appear on websites or within other applications. While these channels provided broad exposure, their effectiveness in driving initial awareness and detailed understanding among the unbanked seemed limited compared to more direct or personalized channels. The lack of interactive engagement in traditional advertisements meant that they often only introduced the brand name without building deep comprehension or trust. An older respondent, typical of those who relied on traditional media, noted:

"...I have heard of PalmPay on the radio, sometimes. They say it's for mobile money, but I don't pay much attention because there are so many of these services now. I prefer to get information from someone who can explain it face-to-face, like the agent in the market, rather than just hearing a quick advertisement. The ads don't tell you much about how it truly works or if it's really safe for people like me who are not very good with phones. I need to be shown..."

These findings jointly accentuated the dominance of human-mediated and peer-driven communication channels in informing the unbanked about new financial services like PalmPay in Iringa. While social media played an increasingly important role, direct interaction, personal recommendations, and localized outreach proved to be more impactful than broad advertising in fostering initial awareness and building the necessary trust for adoption.

The findings on sources of information about PalmPay and blockchain align with key adoption theories. From a Diffusion of Innovation perspective, word-of-mouth through family and friends acted as a trusted channel in the persuasion stage, while social media accelerated exposure among younger users. UTAUT emphasizes *social influence* and *facilitating conditions*, both clearly evident in peer recommendations and agent demonstrations, which build confidence more effectively than impersonal advertising. Consistent with TAM, interpersonal and interactive sources of information highlighted the platform's perceived usefulness and ease of use, whereas traditional advertisements failed to convey these attributes meaningfully. This shows that for unbanked populations, human-centered and socially embedded channels remain the most powerful in shaping awareness and trust.

3.2. Trust and Adoption Influenced by Blockchain Features

The study examined how blockchain features influenced users' trust and adoption of PalmPay, focusing on perceived security and privacy of transactions, transparency of the platform, and overall confidence in using PalmPay for financial activities. Respondents shared varying experiences, but many associated the use of blockchain with increased safety, openness, and reliability, which played a significant role in shaping their willingness to adopt and continue using the platform.

3.2.1. Perceived Security and Privacy of Transactions Using PalmPay

The assessment of perceived security and privacy of transactions using PalmPay among the respondents in Iringa Municipal, as per data shown in **Figure 2**, revealed a varied landscape of trust, which significantly influenced their willingness to adopt and consistently use the platform. While PalmPay is built on a foundation that implicitly leverages blockchain principles for security, the participants' understanding of this underlying technology directly correlated with their expressed trust levels.

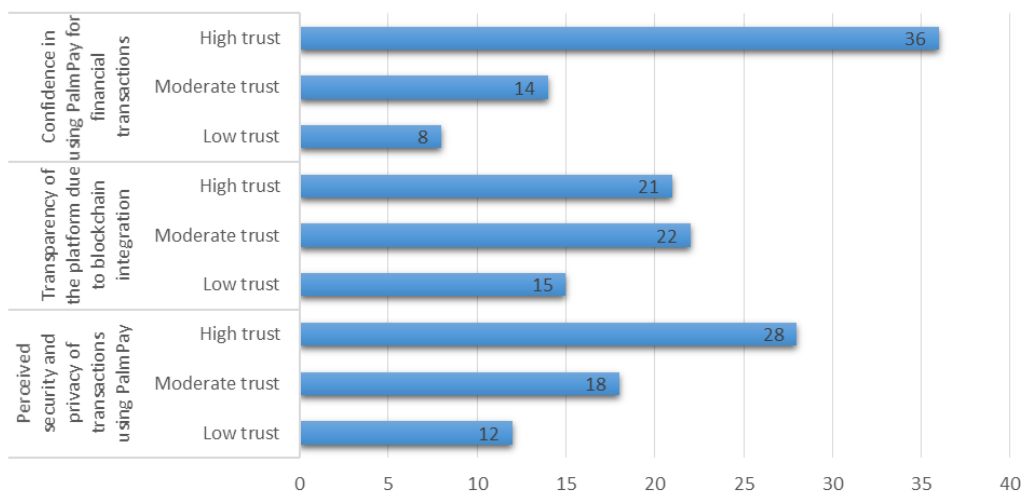


Figure 2. Trust and Adoption Influenced by Blockchain Features.

A notable segment of the population, specifically 12 individuals, exhibited “low trust” in the security and privacy of their transactions on PalmPay. These respondents often articulated general anxieties about digital platforms, frequently drawing on past experiences with mobile money fraud on other services or a general apprehension towards technology they did not fully comprehend. Their disbelief was rooted in a lack of transparent information about how their funds and personal data were protected, often leading them to prefer traditional cash transactions or well-established, familiar mobile money services. One such respondent, who maintained low trust, voiced their concerns:

“...I heard stories of people losing money on these phone apps. How do I know my money is truly safe there? What if someone hacks into my phone? Nobody has really explained to me how PalmPay keeps my money safe from thieves or from the company itself. For me, cash is still king because I can see it, and I know where it is. If I put my money on the phone, it feels like it's just floating somewhere, and I have no control. They say it's secure, but I haven't seen enough proof to risk all my savings...”

Encouragingly group, consisting of 18 participants, demonstrated “moderate trust” in PalmPay's security and privacy. These individuals typically acknowledged the convenience and potential benefits of digital transactions but still harbored lingering doubts or concerns that prevented them from fully committing to the platform for all their financial needs. Their trust was often conditional, based on positive initial experiences or assurances from trusted sources like friends or agents, but they lacked a deeper understanding of the security mechanisms at play.

A respondent with moderate trust explained their cautious approach:

“...I use PalmPay sometimes, especially when my friend sends me money through it because it arrives quickly. And yes, they use a PIN, which makes me feel a bit safer. But I don’t keep large amounts of money on it. I still worry about my privacy, like who can see my transaction history or my personal details. I don’t really understand how they protect all that information. I mean, they say it’s safe, and I haven’t had a problem yet, but I’m not entirely convinced it’s as secure as a bank, where I can physically go and talk to someone if there’s an issue...”

The largest group, consisting of 28 participants, reported “high trust” in the security and privacy of transactions using PalmPay. This group often comprised regular users who had positive experiences, understood the basic principles of digital security (such as PIN protection and transaction confirmations), or had been adequately educated about PalmPay’s security measures. While few explicitly mentioned “blockchain” as the source of their trust, their confidence stemmed from the perceived reliability, speed, and safety of the platform’s operations, often citing the clear transaction records and quick resolution of any minor issues they encountered. A highly trusting respondent, who regularly used PalmPay for business, articulated their confidence:

“...for me, PalmPay is very secure. Every transaction requires my PIN, and I get an SMS notification immediately. I can always see my transaction history clearly, so I know exactly where my money went and when. I also like that they constantly remind us to keep our PIN secret and not share it with anyone. I’ve heard they have very strong systems to prevent fraud, and I haven’t faced any issues since I started using it. I feel my money is safer there than carrying cash around. The way it tracks everything makes me feel like there’s no way someone can secretly take my money or tamper with my transactions...”

These findings suggest that while direct technical understanding of blockchain was limited, the features it enables, such as clear transaction records, robust authentication, and perceived immutability, translated into tangible benefits that fostered user trust. The challenge, therefore, lay in effectively communicating these security benefits to those with lower digital literacy and building confidence through consistent, positive user experiences and targeted education.

Perceptions of security and privacy in PalmPay transactions among respondents in Iringa Municipal reflected key adoption dynamics explained by technology theories. According to TAM, users with “high trust” found PalmPay useful and easy to use because features like PIN authentication and instant transaction records directly reinforced perceived usefulness. Those with “moderate trust” represent the UTAUT dimension of facilitating conditions, where initial positive experiences and peer assurances influenced confidence, but lingering doubts limited full adoption. Meanwhile, individuals with “low trust” reflect the early “knowledge” stage in Diffusion of Innovation, where lack of understanding and past experiences with fraud slowed acceptance. Generally, while blockchain’s technical details were little understood, the trust-enhancing functions it enabled, security, transparency, and accountability, proved decisive in shaping user confidence and adoption of PalmPay.

3.2.2. Transparency of the Platform Due to Blockchain Integration

The study, as in **Figure 2**, also investigated the transparency of the platform due to blockchain integration as a critical factor influencing trust and adoption of PalmPay among respondents in Iringa Municipal. While few participants used the term “blockchain” directly, their perceptions of transparency often stemmed from features that blockchain technology inherently supports, such as immutable records and clear transaction histories.

A segment of 15 individuals expressed “low trust” in the platform’s transparency. These respondents typically felt a lack of control or visibility over their transactions beyond the immediate confirmation message. They often struggled to reconcile discrepancies or verify the legitimacy of charges, leading to suspicion and a preference for cash transactions where the physical exchange offered a clearer, albeit less convenient, record. Their understanding of transparency was often linked to physical receipts or direct interaction, which digital platforms inherently lack. One respondent, who voiced low trust in transparency, articulated:

“...when I send money, I just see a message on my phone that it went through. But if there’s a problem, or

if the amount is wrong, how do I check it? Can I see a full record of all my transactions somewhere, and know that nobody can change it? With paper, I keep my receipt. With the phone, it's just numbers on a screen. I once had an issue with a mobile money service where the agent said a transaction failed but it actually went through, and it was very difficult to prove. So, unless I can clearly see every step, and know it cannot be hidden or changed, I am worried. The digital way feels like a black box sometimes..."

The largest group, comprising 22 participants, demonstrated "moderate trust" in the transparency of PalmPay. These individuals generally relied on the digital records provided by the app or SMS notifications, and found them sufficient for most of their daily transactions. They appreciated the immediate confirmation of successful transfers and the ability to view a transaction history within the app. However, their understanding of transparency did not extend to the underlying mechanisms that guaranteed immutability or a distributed ledger. Their trust was practical, based on observed functionality rather than a deep technical comprehension. A respondent with moderate trust explained:

"...when I send money with PalmPay, I get a clear message that it was sent, and the recipient also gets one. And when I check my app, I can see all my recent transactions. That's good, I know what money came in and what went out. It's much better than trying to remember everything. I haven't had any issues where money disappeared or where the records didn't match. So, for me, it's transparent enough. I don't really know about 'blockchain' but the system shows me what happened, and that's what matters..."

A significant number of 21 participants expressed "high trust" in the transparency of PalmPay, often correlating this with the platform's reliability and the clear, verifiable nature of its transaction records. While they might not have explicitly used "blockchain" in their explanations, their responses indicated an appreciation for the features that blockchain provides, such as unalterable records and a traceable history of transactions. These users felt empowered by the ability to review their financial activity with confidence, which contributed to their overall adoption and sustained usage of PalmPay. A regular user with high trust in transparency articulated:

"...PalmPay is very transparent. When I send money, I always get the full details – the amount, the recipient's name, and the charges. And if I need to confirm anything, I can go into my transaction history, and everything is listed there, clearly and permanently. I trust that those records cannot be changed by anyone, not even by PalmPay. It gives me peace of mind because I know exactly where my money is going, and if there's any dispute, I have a clear record. This level of clarity is what makes me feel secure and confident in using the platform for all my important financial dealings..."

These findings suggest that while the technical term "blockchain integration" might not have resonated directly with most users, the practical benefits of transparency that blockchain offers, such as verifiable transaction histories and immutable records, were indeed recognized and valued by a substantial portion of the participants. Effective communication strategies that highlight these tangible benefits, rather than the underlying technical jargon, are crucial for fostering higher levels of trust and, consequently, greater adoption among the unbanked in Iringa.

PalmPay's transparency aligned with TAM, as users linked immutable records to both usefulness and ease of access. Through the UTAUT lens, SMS alerts and in-app histories acted as facilitating conditions that enhanced trust. Consistent with the Diffusion of Innovation, many respondents progressed from awareness to adoption once they recognized the reliability of permanent transaction records.

3.2.3. Confidence in Using PalmPay for Financial Transactions

The final aspect of trust and adoption examined in the study was the confidence in using PalmPay for financial transactions among the respondents, as shown in **Figure 2** in Iringa Municipal. This indicator directly measured their willingness to rely on PalmPay for their various financial needs, reflecting the culmination of their awareness, understanding of security, and perceived transparency.

A small but significant group of 8 individuals displayed "low confidence" in using PalmPay for their financial transactions. These participants often overlapped with those who had low awareness or deep-seated distrust of digital systems. Their lack of confidence stemmed from a combination of fear of errors, potential fraud, and a strong

preference for tangible cash, seeing it as the only truly secure form of money. For them, the benefits offered by digital platforms did not outweigh the perceived risks, leading to minimal or no engagement with PalmPay for critical financial activities. One respondent from this group articulated their low confidence:

"...I only use PalmPay if someone sends me money, and then I try to cash it out immediately. I would never use it to pay for things or send my own money because I don't trust it completely. What if the network fails? What if the money gets lost? I've heard stories about people mistakenly sending money to the wrong number, and then it's very difficult to get it back. For big amounts, I prefer to keep my money where I can see it, or use the bank. These phone things are still too new and too risky for my important money..."

A larger group of 14 participants expressed "moderate confidence" in using PalmPay for financial transactions. These individuals typically used PalmPay for less critical transactions, such as buying airtime, small payments, or receiving remittances. While they appreciated the convenience for these specific uses, they were hesitant to fully transition their main financial activities to the platform. Their confidence was often situational, dependent on the type and amount of transaction, and they often maintained a diversified approach, using other mobile money services or cash alongside PalmPay. A participant with moderate confidence shared their usage patterns:

"...I use PalmPay to buy airtime because it's very quick and easy, and sometimes for small payments at the shop if they accept it. But for larger sums, or for sending money to my family in the village, I still prefer the service I've used for many years. I'm not fully confident yet to use PalmPay for everything. I need to be absolutely sure that if anything goes wrong, there's someone I can easily talk to, or a clear process to recover my money. I haven't faced a big problem with PalmPay yet, but I'm still careful..."

Most strikingly, the majority of the respondents, 36 individuals, demonstrated "high confidence" in using PalmPay for financial transactions. This substantial group actively utilized PalmPay for a wide range of financial activities, including sending and receiving money, paying bills, and even saving. Their high confidence was a reflection of their positive user experiences, the perceived reliability of the platform, and, in some cases, an implicit trust in the underlying security features, even if they didn't fully grasp blockchain technology. They viewed PalmPay as a dependable and efficient tool that significantly simplified their financial lives. A highly confident user, who was also a small business owner, enthusiastically conveyed his reliance on the platform:

"...I have full confidence in PalmPay. It has completely changed how I manage my business and personal finances. I receive payments from customers directly into my PalmPay account, I pay my suppliers using it, and I send money to my family without any worries. The transactions are fast, and the records are always accurate. I feel very secure using it; I trust the system. For me, it's reliable, and it makes managing money so much easier and more efficient. I almost never carry cash anymore because I can do everything with PalmPay on my phone..."

These findings clearly indicated that despite varying levels of technical understanding of blockchain, the practical benefits of security, transparency, and ease of use, which are often enhanced by blockchain features, significantly translated into high user confidence and subsequent adoption of PalmPay for a diverse range of financial transactions in Iringa Municipal. The challenge for future initiatives lies in extending this high level of confidence to the remaining segments of the unbanked population through continued positive experiences and targeted, benefit-oriented communication.

3.3. Digital Marketing Strategies Used to Reach the Unbanked

This section specifically investigated the digital marketing strategies used to reach the unbanked population in Iringa Municipal, focusing on the tactical approaches employed by PalmPay. It examined the effectiveness of mobile-based marketing campaigns, assessed the relevance of content used in digital advertisements and promotions, and explored the pivotal role of community engagement and word-of-mouth influence through local agents or influencers in driving adoption among the unbanked.

3.3.1. Effectiveness of Mobile-Based Marketing Campaigns

The examination of the effectiveness of mobile-based marketing campaigns (SMS, in-app promotions) in reaching the unbanked population in Iringa Municipal, as in **Figure 3**, presented a slightly different picture, highlighting both the successes and the challenges of digital outreach in this demographic. The findings revealed that while these strategies were making an impact, their full potential was often contingent on the recipients' digital literacy and the relevance of the message.

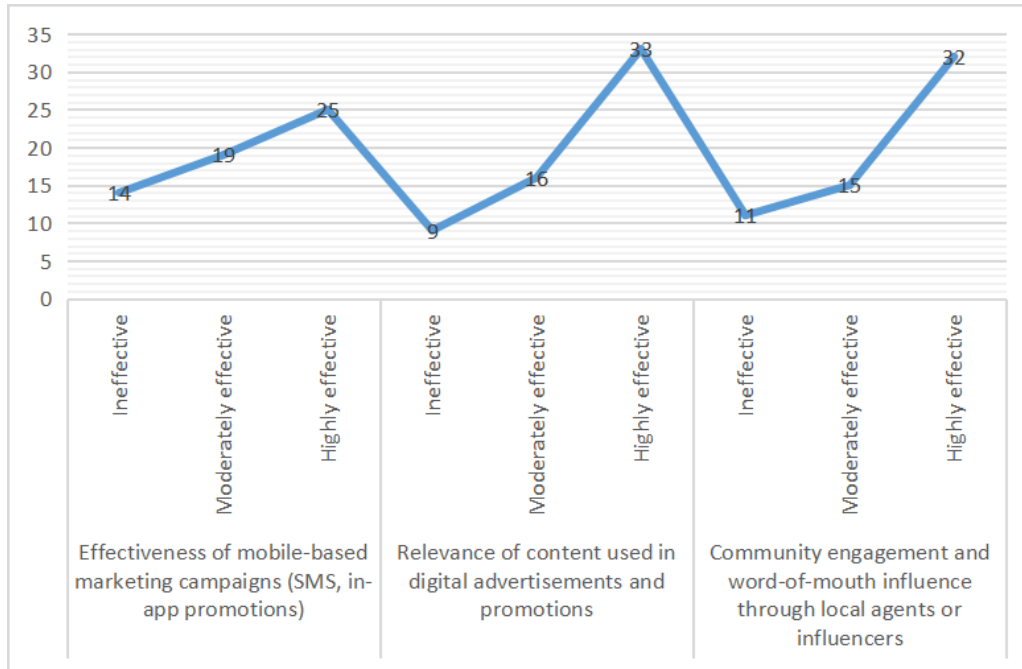


Figure 3. Digital Marketing Strategies Used to Reach the Unbanked.

A section of 14 individuals perceived these campaigns as “ineffective.” This group often included those with lower digital literacy, who struggled to interpret or act upon SMS messages, or who did not regularly interact with in-app promotions. Some felt overwhelmed by the volume of messages, while others simply dismissed them as spam, failing to distinguish between genuine information and unsolicited advertisements. Their disengagement suggested a need for more targeted or physically supported communication channels. A respondent, expressing the ineffectiveness of these campaigns for her, noted:

“...I get many SMS messages every day, and most of them are promotions for this or that. I just delete them. My phone is for calling and sometimes for M-Pesa. If PalmPay sends me a message, I probably just ignore it because I don’t know what it is, and it looks like all the other adverts. I need someone to actually explain something to me, not just send words on a screen that I might not even read properly. These messages don’t really help me understand anything new...”

Nineteen participants found the mobile-based campaigns to be “moderately effective.” This group acknowledged receiving and sometimes engaging with SMS or in-app promotions, particularly if the message was simple, directly relevant, or highlighted a clear benefit like a discount or bonus. However, their engagement often stopped at basic awareness, not necessarily leading to deeper understanding or consistent action. They might have noticed a promotion, but required further prompting or explanation to act on it. One respondent from this category described their experience:

“...I saw an advertisement for PalmPay inside another app I use, and sometimes I get SMS messages. They usually talk about low transaction fees or promotions for new users. I thought, ‘Oh, that sounds good.’”

But then I just put it aside. It made me aware of PalmPay, but it didn't make me rush to use it. I needed more details, like how to actually start, or if there were agents nearby to help me. The promotions were okay for getting my attention, but not enough to make me fully understand or sign up immediately..."

Importantly, the largest proportion, 25 participants, rated these mobile-based marketing campaigns as "highly effective." This group typically consisted of more digitally literate individuals, including younger users and those already comfortable with smartphone applications. They were able to easily understand and respond to SMS prompts, actively seek out in-app promotions, and appreciate the directness and convenience of receiving information this way. For them, these campaigns were direct calls to action that led to exploration and adoption of PalmPay's services. A young entrepreneur, who found the campaigns very effective, explained:

"...the SMS messages from PalmPay are very clear and straight to the point. They often announce new features or special offers for specific services, like a bonus for paying electricity bills. I also see many promotions directly within the PalmPay app, like banners for discounts on airtime or data. These are very effective for me because they are convenient, and they give me direct incentives to use the platform more. I actually read them and often act on them because they are relevant to what I need. It's a direct way for them to communicate with me, and it works..."

These findings highlight that while mobile-based marketing campaigns have strong potential, their effectiveness is highly dependent on the target audience's digital proficiency. For the unbanked, a layered approach combining basic, clear messaging through SMS and in-app promotions with complementary, human-led outreach and simplified content might be most impactful in ensuring broad comprehension and driving deeper engagement.

3.3.2. Relevance of Content Used in Digital Advertisements and Promotions

The analysis of the relevance of content used in digital advertisements and promotions provided fundamental insights into what truly resonated with the unbanked population in Iringa Municipal, highlighting that effective digital marketing extended beyond mere reach to the actual resonance and utility of the message. The findings, as shown in **Figure 3**, underlined the importance of tailoring content to address the specific needs, concerns, and aspirations of this demographic.

A small proportion of 9 individuals found the content to be "ineffective" in its relevance. These respondents often felt that the promotions were generic, did not speak to their immediate financial challenges, or used language and concepts that were difficult to understand. For them, the advertisements felt disconnected from their daily lives and lacked clear, tangible benefits that would motivate them to engage with PalmPay. One respondent, who found the content irrelevant, elaborated on their perspective:

"...sometimes I see these ads on my phone, but they just talk about 'digital payments' or 'new ways to bank.' What does that mean for me, a mama who sells vegetables at the market? Do they understand my need to quickly get paid, or to send money home without paying too much? The words they use are often big, or they show fancy pictures that don't look like my life. If an ad doesn't tell me simply, 'This can help you buy your goods faster' or 'This will save you money on school fees,' then I don't see how it applies to me..."

Sixteen participants perceived the content as "moderately effective" in its relevance. This group found some aspects of the digital promotions useful, particularly those highlighting basic functionalities like sending money or buying airtime. However, they felt that the content often lacked the depth needed to fully explain more complex features, address their specific concerns (e.g., security for larger sums), or provide clear instructions for first-time users. Their engagement was partial, indicating that while the content sparked some interest, it didn't fully convert that interest into a comprehensive understanding or consistent usage. A respondent in this category commented:

"...The ads sometimes show that PalmPay can send money to other networks, which is useful. Or they promote low transaction fees, which is a good thing for me. But they don't always explain everything. Like, how exactly do I withdraw money if there's no agent nearby? Or what happens if I make a mistake? The

content often focuses on the good things, but not how to solve problems or how to use it for bigger, more serious things. So, it's relevant for some small things, but not for everything I need..."

Significantly, the largest group, comprising 33 participants, reported the content to be "highly effective" in its relevance. These respondents resonated strongly with advertisements and promotions that directly addressed their practical financial needs, such as managing daily income, facilitating remittances, or accessing convenient payment solutions. They particularly appreciated content that was simple, visually clear, and demonstrated how PalmPay could solve real-life financial challenges, often using relatable scenarios or testimonials. This group found the content empowering and directly applicable to their circumstances. A young female entrepreneur, who found the content highly relevant, explained:

"...the PalmPay ads I saw, especially on WhatsApp and Facebook, were very relevant to my business. They showed how easy it was to receive payments from customers without needing cash, or how I could pay my suppliers quickly even if they were in another town. They also emphasized how safe it was. They used simple language and showed real people like me using the app, not just abstract concepts. When they advertised low fees for sending money to the village, which was immediately relevant to my family. The content made me see how PalmPay could actually improve my daily life and help my business grow..."

These findings strongly suggest that for digital marketing to be truly effective in reaching the unbanked, the content must be highly contextualized and benefit-oriented. It needs to articulate clearly how PalmPay solves specific pain points for this demographic, using simple language, relatable visuals, and practical examples. Generic, technical, or overly complex messaging proved to be far less impactful, underlining the necessity of a user-centric approach to content creation for financial inclusion initiatives.

3.3.3. Community Engagement and Word-of-Mouth Influence through Local Agents or Influencers

The investigation, as in **Figure 3**, into community engagement and word-of-mouth influence through local agents or influencers proved to be a critical component of PalmPay's digital marketing strategy in reaching the unbanked population of Iringa Municipal. This approach leveraged existing social structures and trusted intermediaries, often proving more effective than purely digital methods for a demographic that values personal interaction and credibility.

A minority of 11 individuals perceived this engagement as "ineffective." This typically occurred in instances where local agents were not readily available, lacked sufficient training, or failed to build rapport within their communities. Some respondents expressed skepticism towards "influencers" if their recommendations felt unauthentic or solely driven by commercial incentives, rather than genuine belief in the product's benefits. For these individuals, the human element, if not properly executed, could even deter trust. One respondent who found this approach ineffective remarked:

"...there was one time someone came to our village talking about PalmPay, but they just read from a paper and didn't answer my questions properly. They seemed more interested in getting us to sign up quickly than in explaining everything. And some of these young people on social media, they just show off. I don't really trust them with my money advice. If someone is an agent, they need to be someone I know, someone trustworthy from my community, not just a stranger trying to sell me something..."

Fifteen participants found community engagement and word-of-mouth influence to be "moderately effective." This group recognized the potential of local agents and peer recommendations but noted inconsistencies in their effectiveness. They might have received initial information or encouragement from an agent or friend, but subsequent support or deeper understanding was lacking. Their engagement was often prompted by a trusted source, yet not fully sustained, indicating a need for more comprehensive training and ongoing support for the agents themselves. A participant in this category explained:

"...my neighbor told me about PalmPay, and he said it was good. So, I tried it. And there's an agent in the market who helps with cash-in and cash-out. That's helpful, because I know him. But sometimes he's

busy, and I can't always get the help I need if I have a complicated question. So, the word-of-mouth starts the process, but then it needs more consistent follow-up from the company through those agents, or training for people like us to handle things on our own..."

Crucially, the vast majority, 32 participants, reported that community engagement and word-of-mouth influence through local agents or influencers were "highly effective." For this significant segment, direct interaction with trusted local agents, community leaders, or credible peers was paramount in overcoming barriers of distrust, digital illiteracy, and unfamiliarity. These agents served as vital bridges, providing personalized explanations, practical demonstrations, and ongoing support, which built strong confidence and facilitated widespread adoption of PalmPay. A respondent, highly influenced by this approach, enthusiastically stated:

"...the PalmPay agent in our area is a very good man. He came to my shop, sat down with me, and showed me exactly how to download the app, how to register, and how to receive money from customers. He was patient and answered all my questions, even the small ones. And if I have any problem, I know I can go to him. Because of him, many people in our market started using PalmPay. When you see someone you know and trust using it, and they explain it to you simply, then you feel confident. This is better than any advertisement on the radio because you have a real person who can help you..."

These findings strongly emphasize that in reaching unbanked populations, particularly in contexts like Iringa, direct human interaction and leveraging existing social capital through well-trained and trusted local agents or credible community influencers are indispensable elements of an effective digital marketing strategy. While digital campaigns can raise initial awareness, it is the personalized guidance and word-of-mouth validation that ultimately drive trust, comprehension, and sustained adoption of digital financial services.

4. Conclusions

Findings from the research showed that PalmPay was widely recognized among respondents, especially for its practical financial functions, yet the understanding of the blockchain technology supporting it remained limited. Many individuals demonstrated strong awareness of the platform itself, often acquired through social media or word-of-mouth, but their knowledge of blockchain's role was generally surface-level. Rather than focusing on the technical foundation, users placed greater value on observable benefits like faster transactions, reduced fees, and clear digital receipts. This suggests that user trust was shaped more by consistent and positive digital experiences than by technical education or conceptual familiarity with blockchain systems. Trust and adoption of the platform were strongly influenced by perceptions of security, privacy, and transparency. A significant number of respondents expressed high levels of confidence in the platform, especially those who had used it frequently and experienced minimal complications. Features like real-time transaction notifications and easy access to transaction histories reinforced users' belief in the system's reliability. However, there remained a segment of users who were either disbelieving or hesitant, often due to past negative encounters with digital services or a lack of direct exposure to trustworthy demonstrations of the platform's safety features. The contrast between confident users and those who lacked trust reflected an ongoing digital trust gap that needs to be addressed through inclusive engagement. Mobile-based marketing efforts and digital outreach were central to raising awareness and promoting usage. Respondents reported that the effectiveness of marketing campaigns was closely tied to the relevance of the content, the simplicity of the message, and the presence of trusted individuals such as community agents or peers who could explain and endorse the service. While many respondents were positively influenced by SMS messages, in-app promotions, and relatable digital content, others only took an interest after seeing someone they trusted actively using the platform. These insights highlighted the importance of combining digital strategies with localized, human-centered approaches to reach the unbanked population more effectively and foster lasting user trust.

Recommendations

PalmPay must immediately transform its technical features into relatable benefits. This involves creating simplified Swahili materials that use analogies, like a "shared, unchangeable receipt book," to explain blockchain. The highly successful agent network should be formalized into a "Community Ambassador" program. Providing en-

hanced training will equip these agents to act as trusted educators, directly addressing the identified trust and knowledge gaps. Policymakers should invest in public digital infrastructure to improve rural internet reliability and fund national digital literacy initiatives. This creates the foundational ecosystem necessary for fintech to thrive. Concurrently, regulators must develop clear frameworks for blockchain transactions, defining consumer protection and data privacy standards. This will build systemic trust and encourage responsible innovation. For the academic community, researchers should pursue longitudinal studies to track the long-term adoption of blockchain services versus conventional mobile money.

Future research should build upon this study by conducting longitudinal analyses to evaluate the long-term sustainability and economic scalability of agent-led adoption models, while also employing experimental designs to isolate and quantify the specific value users place on blockchain's transparency and security features compared to core financial services. Furthermore, comparative studies across diverse geographic and demographic contexts, particularly focusing on hard-to-reach groups like women in patriarchal communities or older adults with no digital exposure, are essential to develop a more nuanced, generalizable framework for fintech inclusion that effectively blends technological innovation with culturally intelligent trust-building strategies.

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Conflicts of Interest

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