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Pledgecircle: a Mobile-first, Whatsapp-Integrated Platform and the Digital Transformation of Communal Giving in Uganda

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Abstract

Communal giving, known locally as *Ekibina* or through various other cultural names, is a deeply entrenched socio-economic practice in Uganda, serving as a critical safety net and catalyst for community development. However, traditional models are constrained by geographical limitations, inefficiency, lack of transparency, and security risks. This paper proposes and analyses "PledgeCircle," a theoretical mobile-first fundraising platform designed to digitize and scale this practice. By leveraging Uganda's high mobile penetration rate and the ubiquitous use of WhatsApp, PledgeCircle integrates a USSD/SMS backbone with a WhatsApp Business API front-end to create an accessible, secure, and transparent system for managing communal funds. This research examines the socio-technical design principles of such a platform, its potential impact on financial inclusion, the challenges of implementation, and its role in the broader digital transformation of informal financial ecosystems in Sub-Saharan Africa. We argue that a context-aware, hybrid-technology model like PledgeCircle can significantly enhance the efficiency, reach, and trust in traditional giving circles, fostering greater financial resilience and community empowerment. Furthermore, this digital platform can bridge institutional voids by providing unified access to distributed services and scaling through network effects to include previously excluded market participants (Agarwal & Assenova, 2023). It facilitates the formalization of monetary and financial relations, thereby enhancing financial inclusion for unbanked populations by enabling access to structured financial services (Rodima-Taylor, 2022; MUGAMBA, 2025). This approach allows for the integration of local tech mediators who can facilitate access to global digital services for small-scale entrepreneurs, overcoming issues of accessibility and technology adoption (Keskinen et al., 2021). The integration of such a platform with widely used communication channels like WhatsApp, leveraging its Business API, offers a strategic advantage for reaching diverse rural communities and facilitating various activities, from virtual training modules to crowdfunding initiatives (Prasad et al., 2021) (Ngowi, 2021). For instance, in Kenya, the use of WhatsApp in conjunction with mobile money services like M-Pesa has already demonstrated significant potential for crowdfunding, allowing communities to organize for social and economic development by providing services that would otherwise be unavailable (Matanji, 2019). The architecture of such platforms often incorporates features like those found in successful digital initiatives like SmartChama, which focused on digitizing financial activities for informal groups, or eKichabi, which leveraged mobile money agents as intermediaries for USSD applications to bridge technological divides (Chidziwisano et al., 2020; Raghunath et al., 2024). These digital multisided platforms, by providing accessible and affordable

services, effectively address issues of financial isolation and socioeconomic disparities, particularly in regions where conventional banking infrastructure is limited or non-existent (Adelaja et al., 2024) (Agarwal & Assenova, 2023) (Taera & Lakner, 2025). Such platforms act as a stepping stone to financial inclusion, expanding access to formal credit for previously unbanked individuals by bridging credit market voids and providing a pathway to more structured financial services (Agarwal & Assenova, 2023). This increased accessibility to financial instruments can significantly reduce poverty levels and enhance economic autonomy, as evidenced by successful implementations in other developing economies (Liu et al., 2025). Specifically, these digital platforms enable individuals to overcome liquidity constraints, fostering investments in productive activities, education, healthcare, and consumption, which are crucial for poverty alleviation (Liu et al., 2025). Moreover, digital platforms, by addressing the urban-rural divide in access to financial services, contribute to broader economic development across Sub-Saharan Africa, where traditional financial infrastructure is often lacking in rural areas (Liang et al., 2024).

Chapter one

1. Introduction

In Uganda, as in much of Sub-Saharan Africa, formal financial institutions often fail to reach large segments of the population. In this context, informal financial practices have flourished, acting as vital pillars of economic resilience. Among the most significant of these is communal giving, a practice where groups of individuals contribute money regularly to a common pool, which is then given in whole or in part to each member on a rotating basis or used for communal projects. Known as *Ekibina* among the Baganda, *Chilemba* in the west, or like a rotating savings and credit association (ROSCA), this system is built on a foundation of deep social trust and reciprocity. This cooperative financial model, however, often faces scalability challenges, limited transparency, and security concerns inherent in manual cash-based systems, highlighting the need for digital transformation to enhance its efficacy and reach (Rastogi et al., 2024). Indeed, while traditional savings and credit cooperatives have significantly contributed to rural livelihood sustainability by promoting entrepreneurship and employment, their operational effectiveness is often hampered by cultural barriers and insufficient financial literacy (Kyeyune & Ntayi, 2025). Digital platforms, by contrast, can mitigate these challenges by offering improved transparency and fostering financial literacy through integrated educational modules, thereby enhancing the operational effectiveness and reach of these cooperative models (Kyeyune & Ntayi, 2025). The Ugandan government has increasingly prioritized these cooperatives to enhance financial inclusion and economic empowerment in rural communities, recognizing their potential for sustainable economic growth in regions often characterized by limited access to formal financial services and educational resources (Kyeyune & Ntayi, 2025). This focus on cooperative models like Savings and Credit Cooperative Organizations addresses the challenges of isolation, small-scale transactions, and inherent risks in rural microfinance by fostering greater financial inclusion and stability through community-led initiatives (Benami & Carter, 2021; Mpiira et al., 2013). Nonetheless, despite their potential, informal financial groups and SACCOs in Uganda still encounter significant obstacles, including poor financial management and governance, a lack of trust, and susceptibility to fraud, which hinder their ability to deliver sustained economic empowerment (Marus et al., 2020; Hinman & Matovu, 2010).

Despite its importance, the traditional model faces critical challenges:

Geographical Limitation: Participation is typically restricted to physical communities.

Inefficiency: Collection and distribution of funds are manual, time-consuming, and often require physical meetings.
Lack of Transparency: Mismanagement or simple human error can lead to disputes, as record-keeping is often informal.
Security Risks: Transporting and storing cash present significant security risks.
Concurrently, Uganda is experiencing a digital revolution. With a mobile penetration rate of over 70% and widespread adoption of mobile money services like MTN Mobile Money and Airtel Money, the infrastructure for digital finance is robust. Furthermore, WhatsApp has become the de facto standard for communication, used for everything from personal chats to business transactions and community organizing. This pervasive digital ecosystem provides a fertile ground for developing innovative solutions to modernize informal financial practices, thereby addressing the existing challenges of scalability, transparency, and security inherent in traditional models This convergence of established informal financial systems and emerging digital capabilities presents a unique opportunity to leverage ubiquitous mobile technology to enhance financial inclusion and economic empowerment for underserved populations (Namawejje et al., 2022). This research explores how integrating WhatsApp and mobile money into informal financial groups, specifically SACCOs, can overcome these limitations by digitizing operations, improving transparency, and broadening outreach, ultimately enhancing their capacity to promote financial inclusion and stability within communities (Kyeyune & Ntayi, 2025). By bridging traditional community-based financial systems with modern digital tools, this approach can facilitate greater access to formal financial services for unbanked populations, thus strengthening the economic resilience of communities (Han, 2024).
This paper explores the intersection of these two realities. It presents "PledgeCircle" as a conceptual mobile-first platform designed to digitally transform communal giving by integrating with the tools Ugandans already use daily. This research aims to outline the architecture, benefits, and potential hurdles of such a system, positioning it as a catalyst for financial inclusion and community development.

Chapter Two
2. Literature Review & Context
This section delves into existing literature on informal financial systems, digital financial services, and their potential convergence within the Sub-Saharan African context, particularly in Uganda, and Africa at large, to establish a theoretical foundation for PledgeCircle's proposed model. It examines how the proliferation of digital financial services, including mobile money, has transformed financial landscapes, offering new avenues for financial inclusion among previously unbanked populations (Ebong & George, 2021). It further investigates the evolution of informal financial practices, from traditional savings groups to formalized SACCOs, and analyses how technological advancements can enhance their operational efficiency and outreach (Aboagye & Anong, 2020). Additionally, this review synthesizes findings on the impact of mobile money adoption on financial well-being and poverty reduction, particularly in economies with distinct financial systems (Yu & Ibtasam, 2018). This analysis sets the stage for understanding how platforms like PledgeCircle can bridge the gap between informal financial structures and the formal financial system, leveraging existing digital infrastructure to foster greater financial inclusion and economic development (AUTHOR_ID, 2024). The integration of digital banking platforms, mobile money, and fintech innovations has proven instrumental in closing the financial gap for marginalized communities by reducing transaction costs and fostering financial literacy (S, 2025).

2.1 Traditional Communal Giving in Uganda

Communal giving is more than a financial transaction; it is a socio-cultural institution. It fosters social cohesion, provides interest-free credit, and enables large capital accumulation for individuals who would otherwise be excluded from formal banking. The strength of these systems lies in social collateral; the trust and peer pressure within a group ensure compliance and repayment. However, this reliance on social collateral often limits their scalability and reach, restricting participation to individuals within close-knit communities (Aron, 2018). The proliferation of mobile money and digital financial services offers a promising avenue to overcome these inherent limitations, enabling broader participation and enhanced efficiency within communal financial structures (Ebong & George, 2021). These digital innovations, especially prevalent in developing economies, have facilitated financial inclusion by providing accessible financial services where traditional banking infrastructure is scarce or non-existent (Aron, 2017; Dao et al., 2025). Furthermore, the transformative impact of fintech on financial inclusion, particularly for unbanked populations, underscores its potential to bridge critical gaps in traditional financial access (Adelaja et al., 2024). FinTech's role in lowering the costs of financial service provision makes it possible to profitably serve populations at the base of the pyramid, offering new business models and expanded services (Rowan et al., 2018). For instance, the global issuance of green bonds surpassed $575 billion in 2023, and microfinance initiatives have extended mobile money penetration to over 70% of Sub-Saharan Africa's adult population, demonstrating the scalable potential of innovative financial instruments (Taera & Lakner, 2025). This is particularly relevant in the African region, where FinTech is recognized as a driving force for inclusive finance, economic development, and reducing inequality by addressing high transaction costs and limited banking access (Tidjani & Madouri, 2024). Such innovations are crucial in environments like Uganda, where formal financial service usage is influenced by social learning and financial literacy efforts, highlighting the potential for digital platforms to foster greater engagement and improved financial well-being (Agabalinda & Alain, 2020). These advancements underscore the critical role of digital innovation in extending financial services to underserved populations, thereby mitigating the constraints of traditional financial infrastructure. The subsequent sections will elaborate on how PledgeCircle specifically integrates these digital advancements to enhance the operational frameworks of communal giving, addressing the scalability and outreach limitations inherent in traditional models. This integration leverages the ubiquity of mobile technology to democratize access to financial services, offering a robust solution for enhancing financial inclusion (Kerouat, 2024; Azmeh & Al-Raeei, 2024).

2.2 The Rise of Mobile Money and Digital Finance

The success of M-Pesa in Kenya ignited a wave of mobile financial services across Africa. In Uganda, mobile money has become deeply embedded, processing transactions worth nearly UGX 100 trillion (approx. USD 26 billion) in 2022 (Bank of Uganda, 2022). It has successfully demonetized person-to-person (P2P) transfers and bill payments, proving that populations classified as "unbanked" are highly capable of adopting sophisticated digital financial tools. This widespread adoption underscores the potential for mobile platforms to extend beyond basic transactions to more complex financial products, such as those offered by capital markets or for social development initiatives like mobile sukuk (Jahan et al., 2021). Such initiatives demonstrate how combining traditional Islamic finance concepts with mobile technology can broaden financial inclusion and channel capital towards social good, particularly in regions with significant unbanked populations (Jahan et al., 2021) (Girma & Huseynov, 2023). The rapid expansion of digital banking services, including mobile money, internet banking, and digital wallets, has significantly contributed to bridging the gap between unbanked populations and formal financial systems

by enabling remote access to services (S, 2025). This digital transformation has facilitated a paradigm shift from traditional, face-to-face banking interactions to virtual engagements, fundamentally altering consumer financial behavior and accessibility (Tep et al., 2019). This evolution is particularly crucial in developing economies, where digital banking services have emerged as a pivotal force in advancing financial inclusion by offering essential financial services to underserved populations (S, 2025). This is achieved by overcoming geographical barriers and reducing the operational costs associated with traditional brick-and-mortar banking, thereby promoting economic growth and stability (Meniago, 2025; Tay et al., 2022). The increased accessibility and affordability of digital financial services, such as mobile money and digital banking, facilitate greater participation in the formal economy, empowering individuals and small businesses to access credit, savings, and insurance (Ebong & George, 2021). Consequently, digital financial services have become a primary driver of financial inclusion, especially in emerging economies where traditional banking infrastructure is often limited and insufficient to reach the entire population (Ingale, 2025; Ebong & George, 2021). This accelerated digitization, spurred by factors like the COVID-19 pandemic, provides new opportunities for digital financial inclusion, ensuring that marginalized communities can access vital financial resources (Tay et al., 2022). The advancements in digital banking, for example, have significantly contributed to financial inclusion by providing accessible, affordable, and convenient financial services, particularly in regions with diverse economic and regulatory landscapes (Nnaomah et al., 2024).

2.3 The Role of WhatsApp as a Platform

WhatsApp is not merely an app in Uganda; it is a critical utility. Its low data usage, simplicity, and feature set (groups, broadcast lists, media sharing) have made it the primary channel for business and community communication. The WhatsApp Business API provides a structured way for businesses to interact with customers, offering potential for automated notifications, payment links, and customer support features that are ideal for a service like PledgeCircle. This widespread adoption positions WhatsApp as a robust platform for delivering digital financial services, overcoming geographical barriers and reducing the operational costs associated with traditional banking (Johri et al., 2024) (Tiony, 2023). Moreover, the platform's ubiquitous presence and user-friendly interface make it an ideal conduit for disseminating financial literacy and educational content, thereby enhancing the capacity of underserved populations to engage effectively with digital financial products (Ebong & George, 2021). The integration of financial services within a widely adopted messaging platform like WhatsApp can significantly lower the barriers to entry for new users, particularly in regions where trust in traditional financial institutions is low and mobile penetration is high (Khub et al., 2024). This integration enables the provision of a suite of financial services, including credit, savings, insurance, and payment transactions, to marginalized groups who might otherwise be excluded from the formal financial system (Buteau et al., 2021; Khub et al., 2024). This approach capitalizes on existing user behavior and digital infrastructure, fostering a more inclusive financial ecosystem through familiar and accessible channels. The inherent network effects of messaging applications further amplify their potential as financial service delivery mechanisms, fostering organic growth and community engagement. Personalized communication through such platforms is also vital for reaching underserved populations with relevant and accessible financial information, directly contributing to financial inclusion by tailoring offerings to specific needs (Benjamin et al., 2024). Furthermore, the integration of AI-driven chatbots within WhatsApp can provide instant, personalized financial advice and support, further enhancing user engagement and financial literacy among unbanked populations. This personalized approach, coupled with efficient customer communication strategies, can significantly

improve the uptake and effective utilization of financial products and services, thereby strengthening financial inclusion efforts (Benjamin et al., 2024). This highlights how technology, particularly mobile-based platforms, can drastically reduce the cost of delivering financial services compared to traditional brick-and-mortar banking systems, making them more affordable and accessible for a wider population (Nisha, 2018; Shirono, 2024).

2.4 The Gap in the Market

While several digital savings and loan apps exist, few are designed explicitly for the cultural nuance of African communal giving. They often mimic Western models of individual savings or rely on complex interfaces that exclude non-tech-savvy users. A platform that respects the social dynamics of *Ekibina* while layering on digital efficiency represents a significant opportunity. Such an approach could leverage existing social structures, like those prevalent in Ghana, where informal financial services are widely used alongside formal financial institutions, albeit with a substantial portion of the adult population remaining outside formal financial services (Aboagye & Anong, 2020). This highlights a critical need for digital financial solutions that are culturally attuned and user-friendly, particularly in regions where mobile money is predominantly utilized for borrowing rather than saving, indicating distinct financial behaviors (Warsame & Abdalla, 2024). Consequently, there is a clear demand for innovative digital financial products that not only integrate with prevalent communication platforms but also accommodate localized financial practices and community-based lending models (Yu & Ibtasam, 2018). Addressing this gap requires a human-centric artificial intelligence approach to simulate dynamic financial profiles and predict customer intentions, as implementing such AI projects remains challenging for many financial service providers not well-versed in computer programming (How et al., 2020). This underscores the importance of developing localized financial literacy content and incorporating innovative initiatives, such as gamification and digital platforms, to enhance financial education and inclusion (Amana & Tamunomiegbam, 2024).

Chapter Three

3. The PledgeCircle Model: A Hybrid Architecture

PledgeCircle is designed for maximum accessibility, recognizing the diversity of users from tech-savvy urbanites to those in rural areas with feature phones.

3.1 Core Features:

1. **Circle Creation & Management:** A circle admin can create a group, set contribution amounts, schedules (e.g., weekly, monthly), and add members via phone numbers.
2. **Multi-Channel Contribution Collection:** Integrations with major Mobile Money APIs (MTN, Airtel) allow for seamless digital collections. Contributions can be triggered via USSD push, WhatsApp reminders, or manually initiated by members.
3. **Transparent Ledger:** Every transaction is recorded on a distributed ledger visible to all circle members in real-time, eliminating disputes over who has paid.
4. **Automated Payouts:** Once the pool is complete, funds can be automatically disbursed to the designated recipient's mobile money account.
5. **WhatsApp Integration:** This is the core of the user experience.

Pledge Circle Hybrid Model Architecture

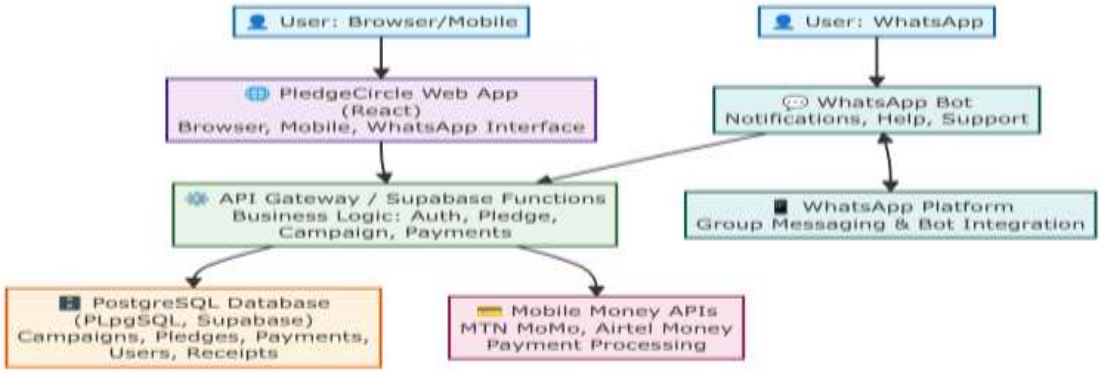


Figure 1PledgeCircle Hybrid Model Architecture

Pledge Circle Detailed Component Architecture

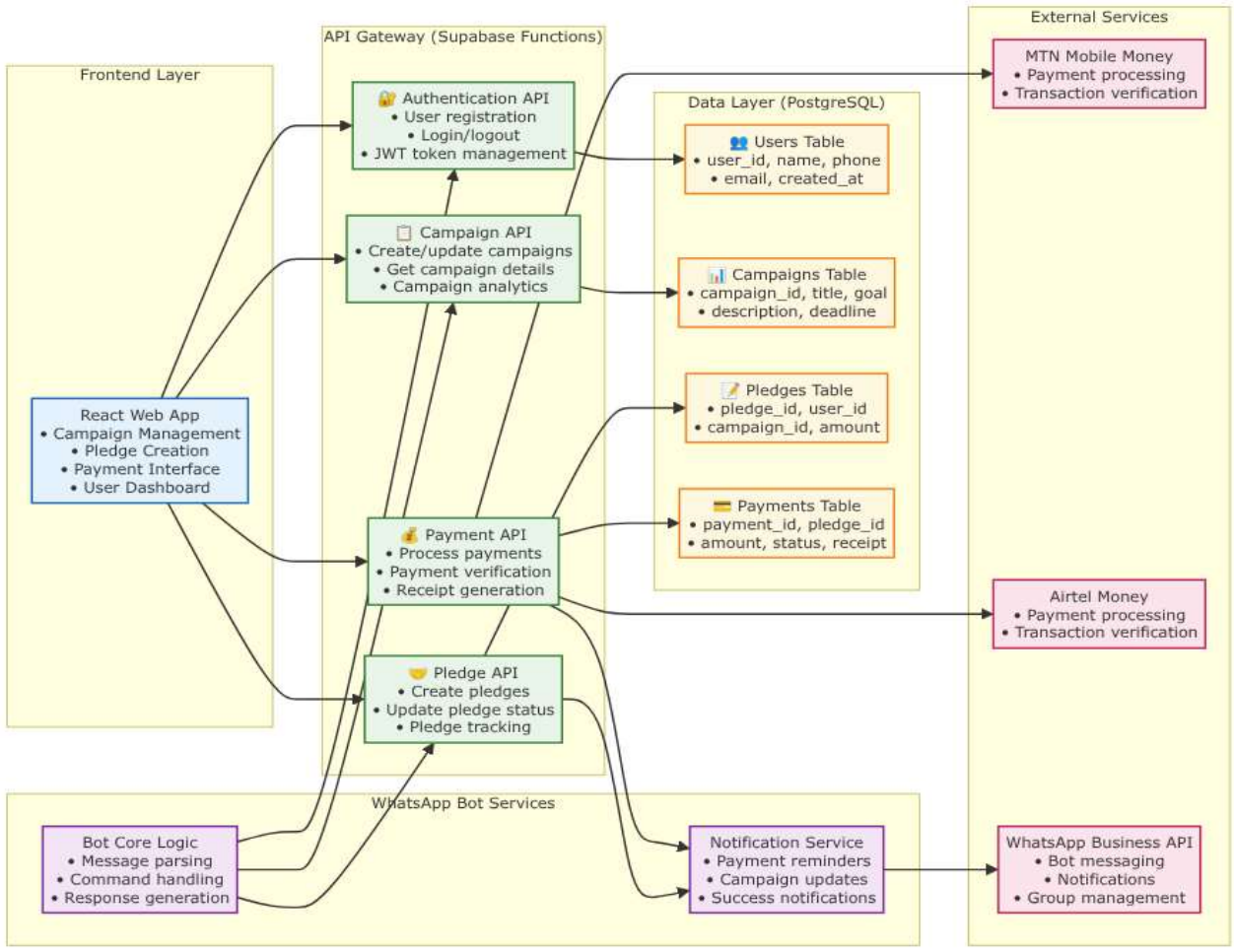


Figure 2. Pledge Circle Detailed Component Architecture

Entity Relation Diagram

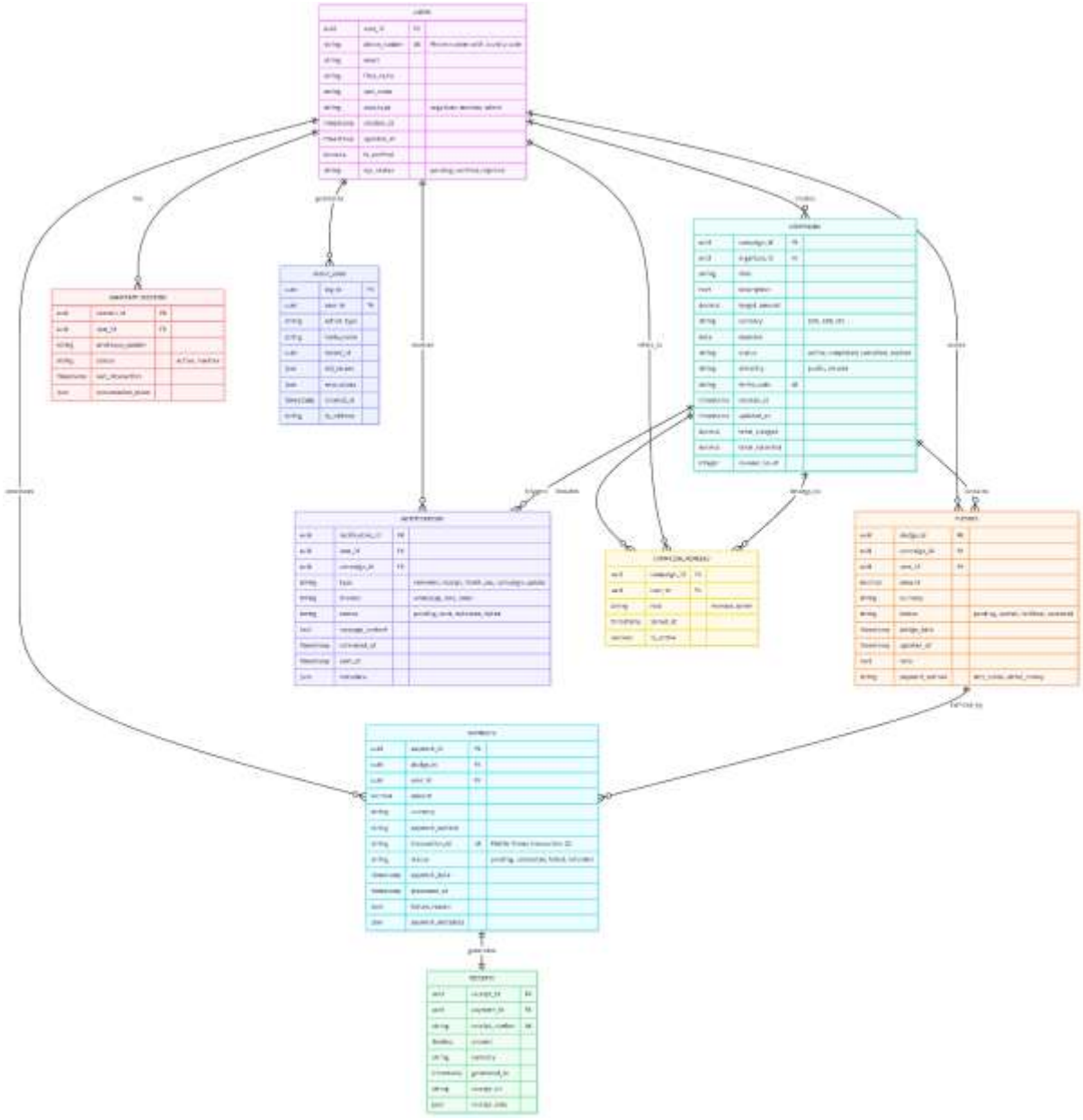
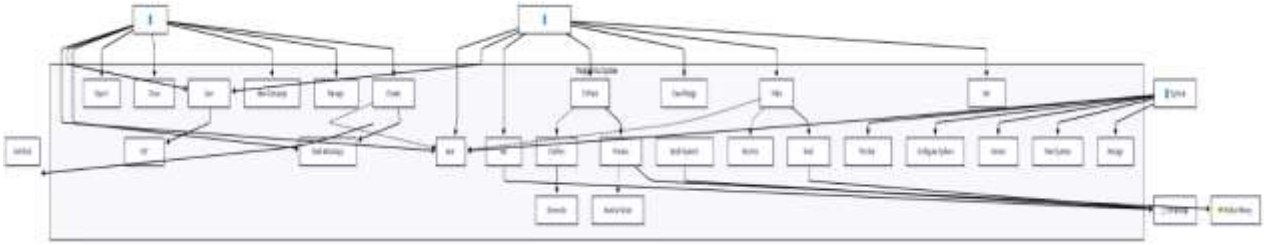


Figure 3. Entity Relationship Diagram – PledgeCircle

UML Use Case



Campaign State Transition Diagram

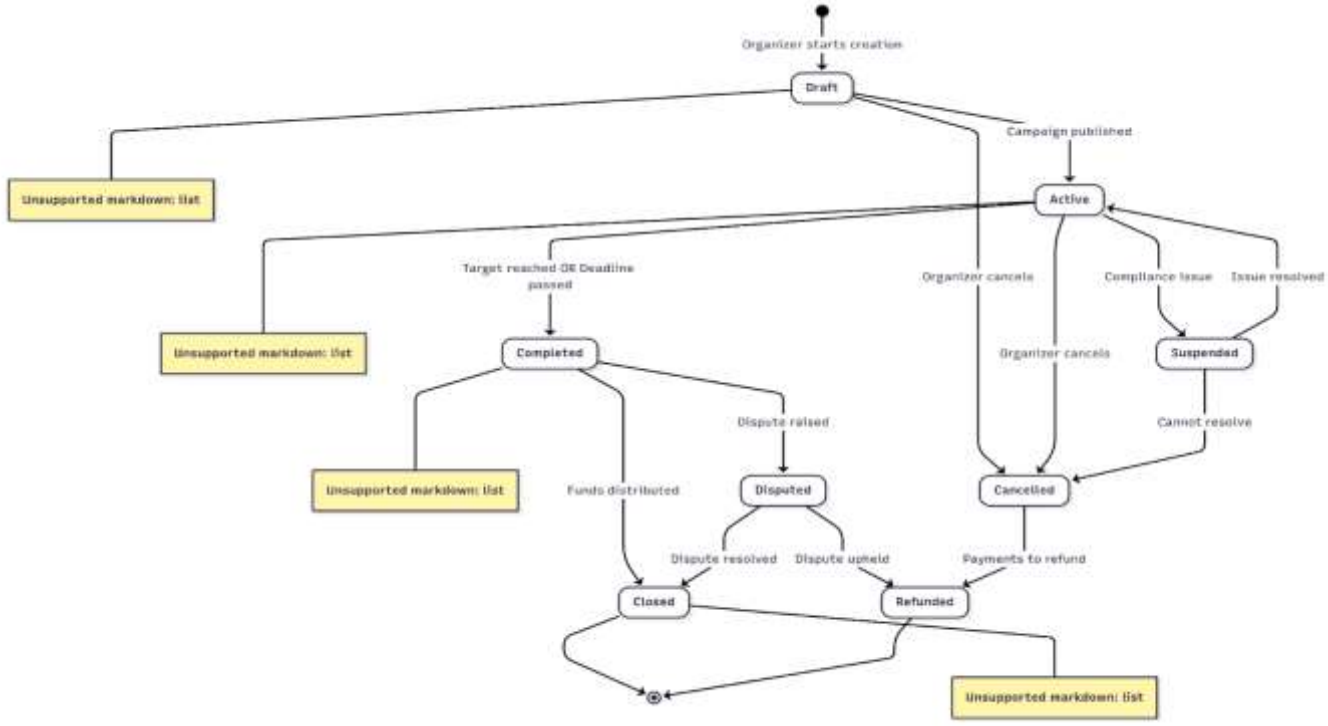


Figure 4 Campaign State Transition Diagram

Technical Infrastructure & Deployment

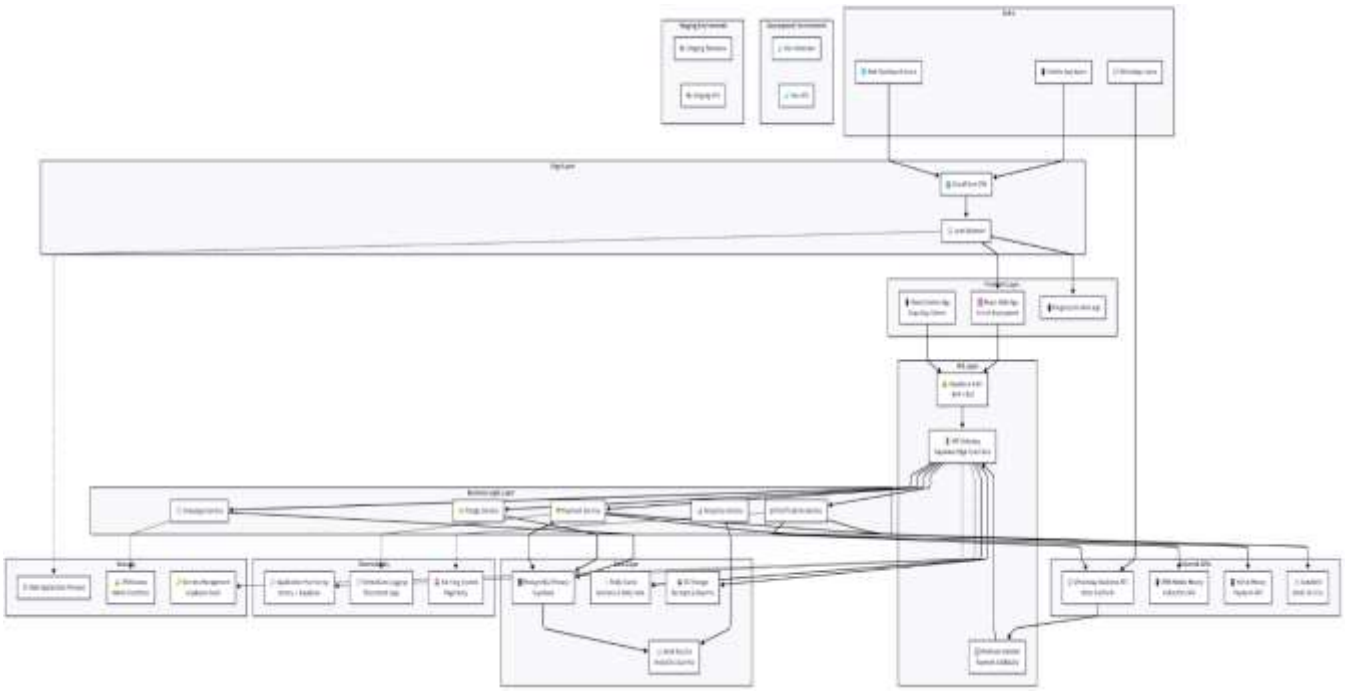


Figure 5 Technical Infrastructure & Deployment

Campaign Creation & Member Invitation Sequence

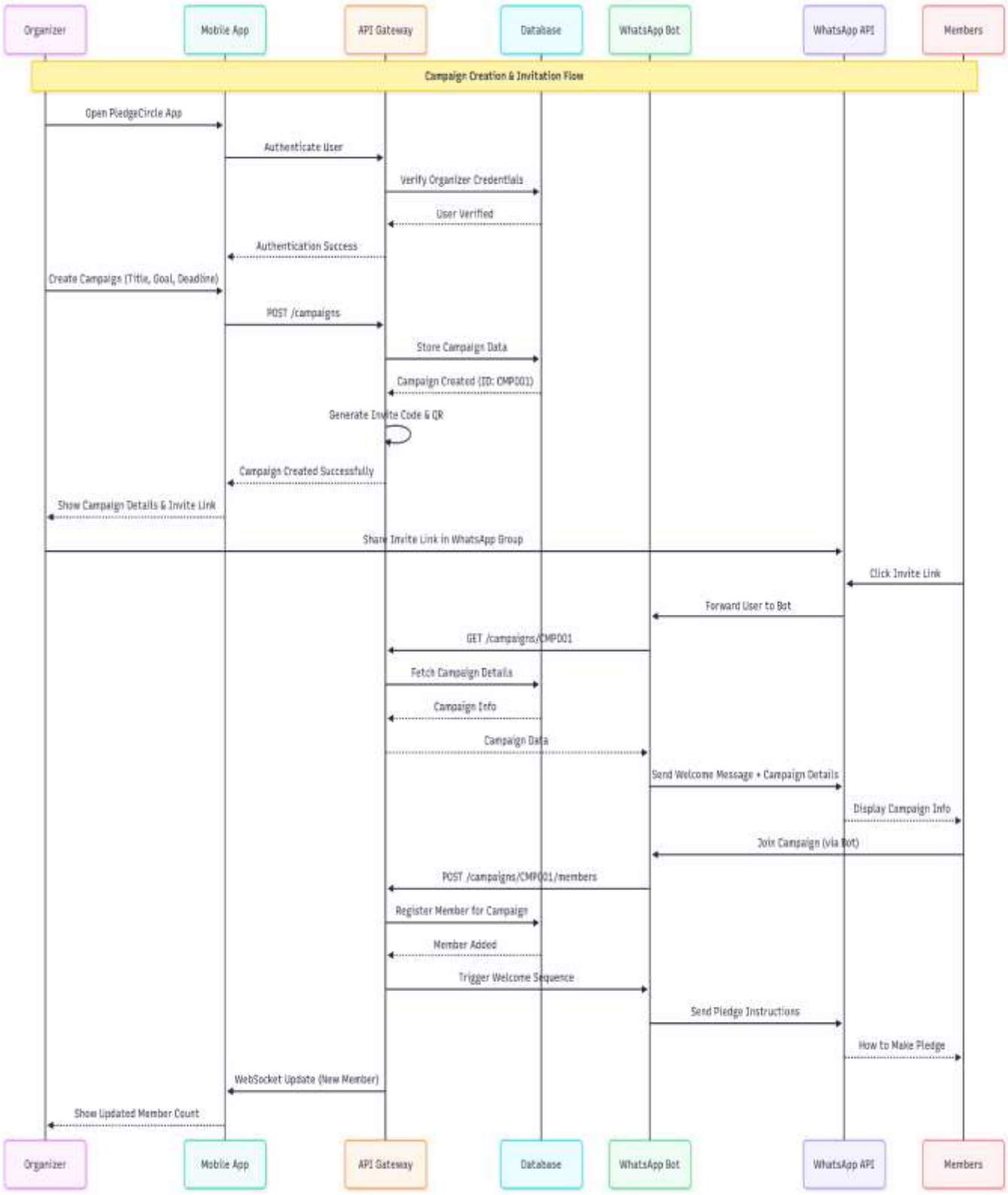


Figure 6Campaign Creation & Member Invitation Sequence

WhatsApp Bot Conversation Flow

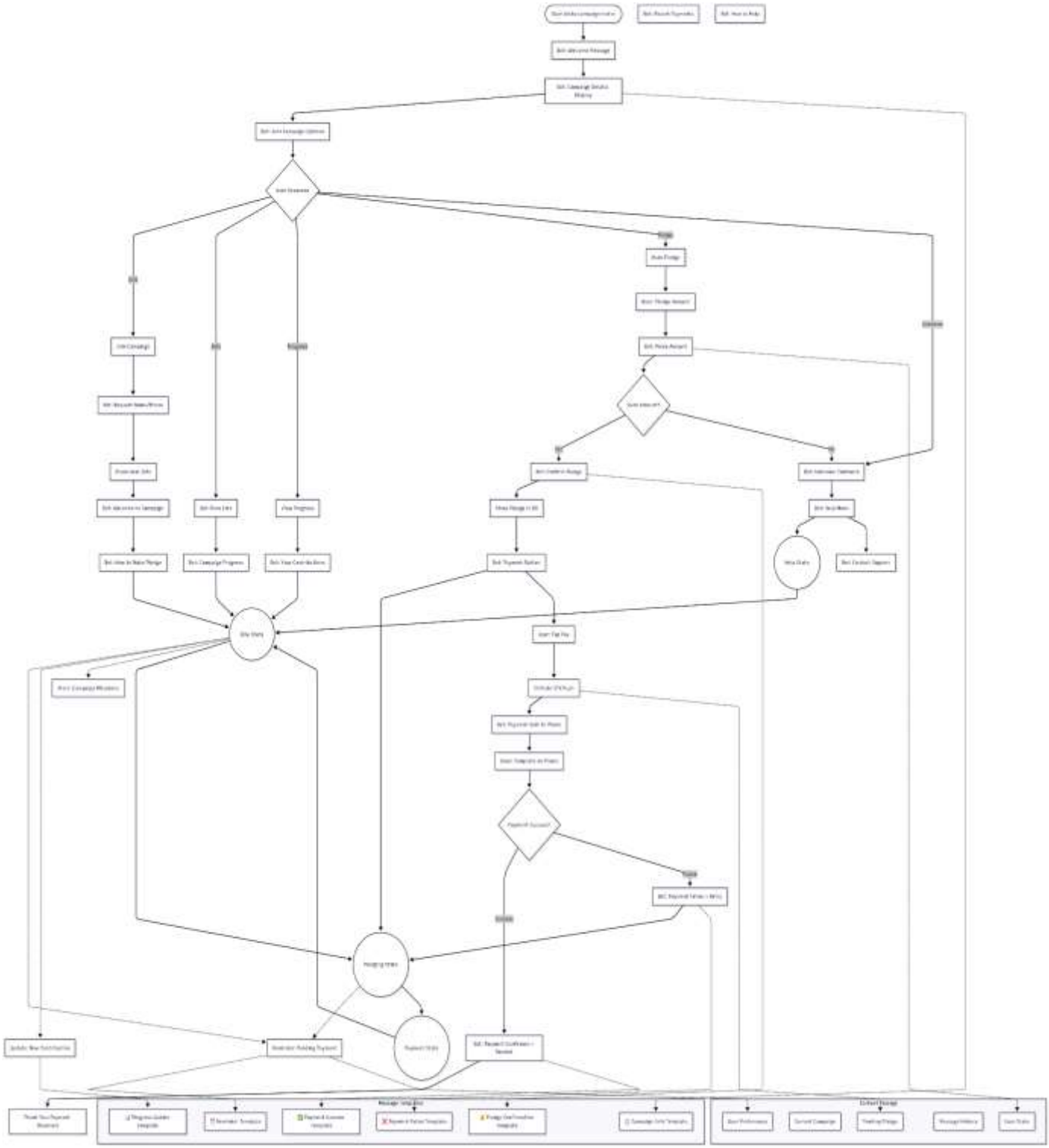


Figure 7 WhatsApp Bot Conversation Flow

Automated Reminder Workflow

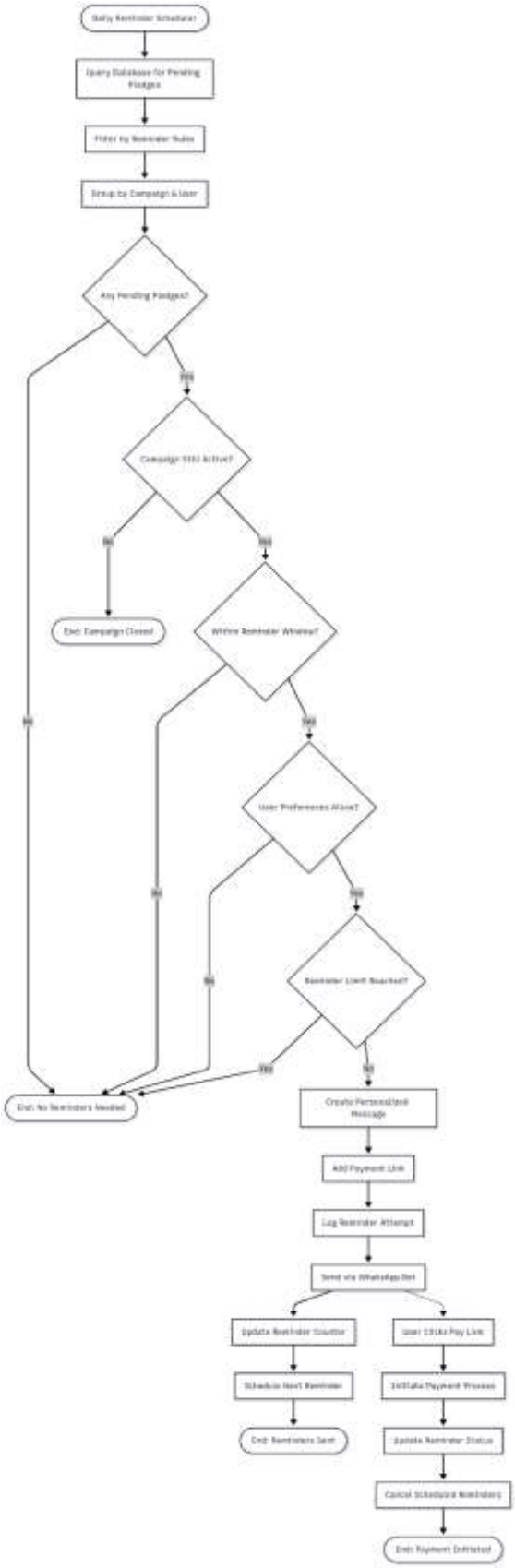


Figure 8 Automated Reminder Workflow

Pledge Circle System Flow and User Journey

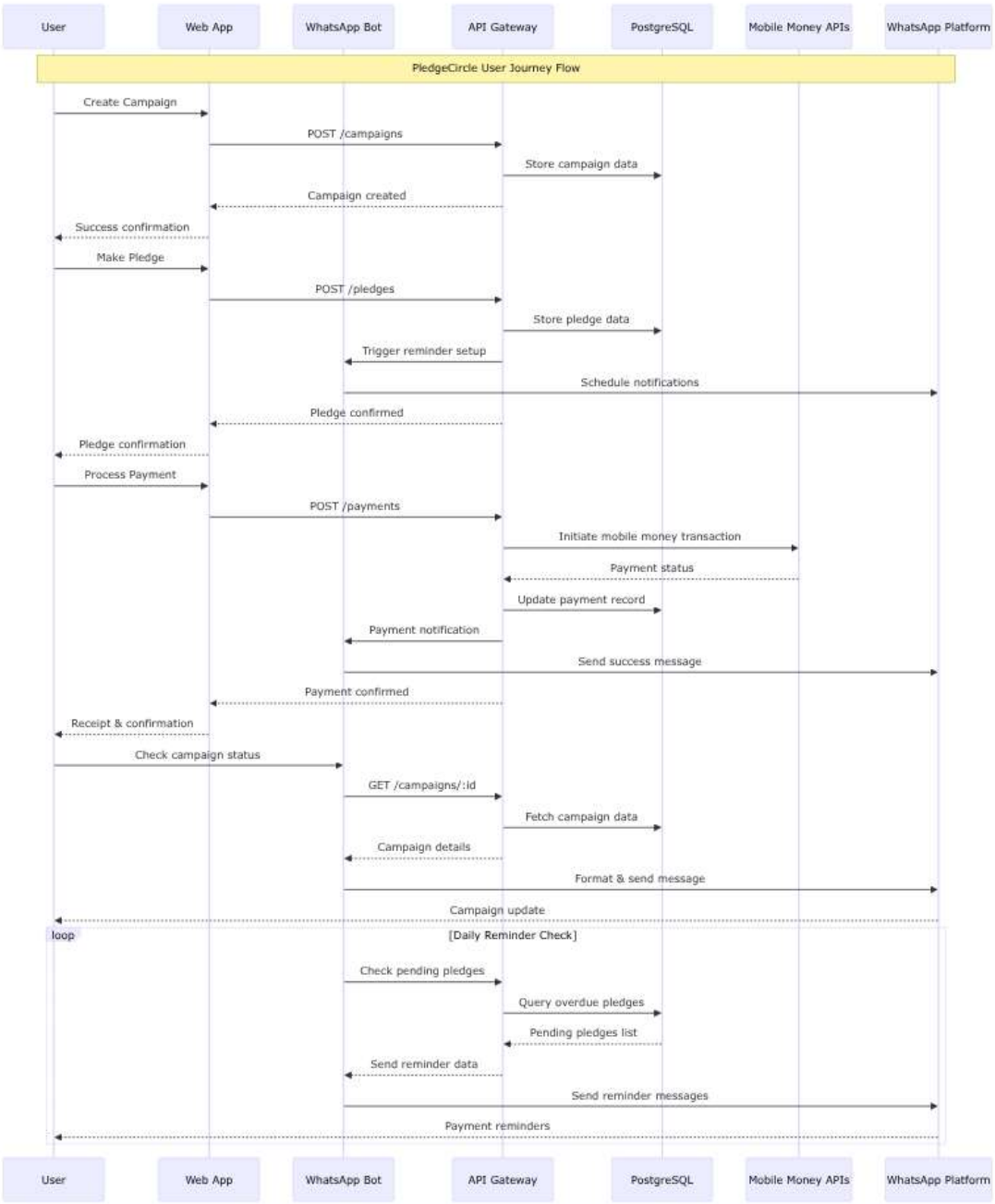


Figure 9 Pledge Circle System Flow and User Journey

Business Process Map

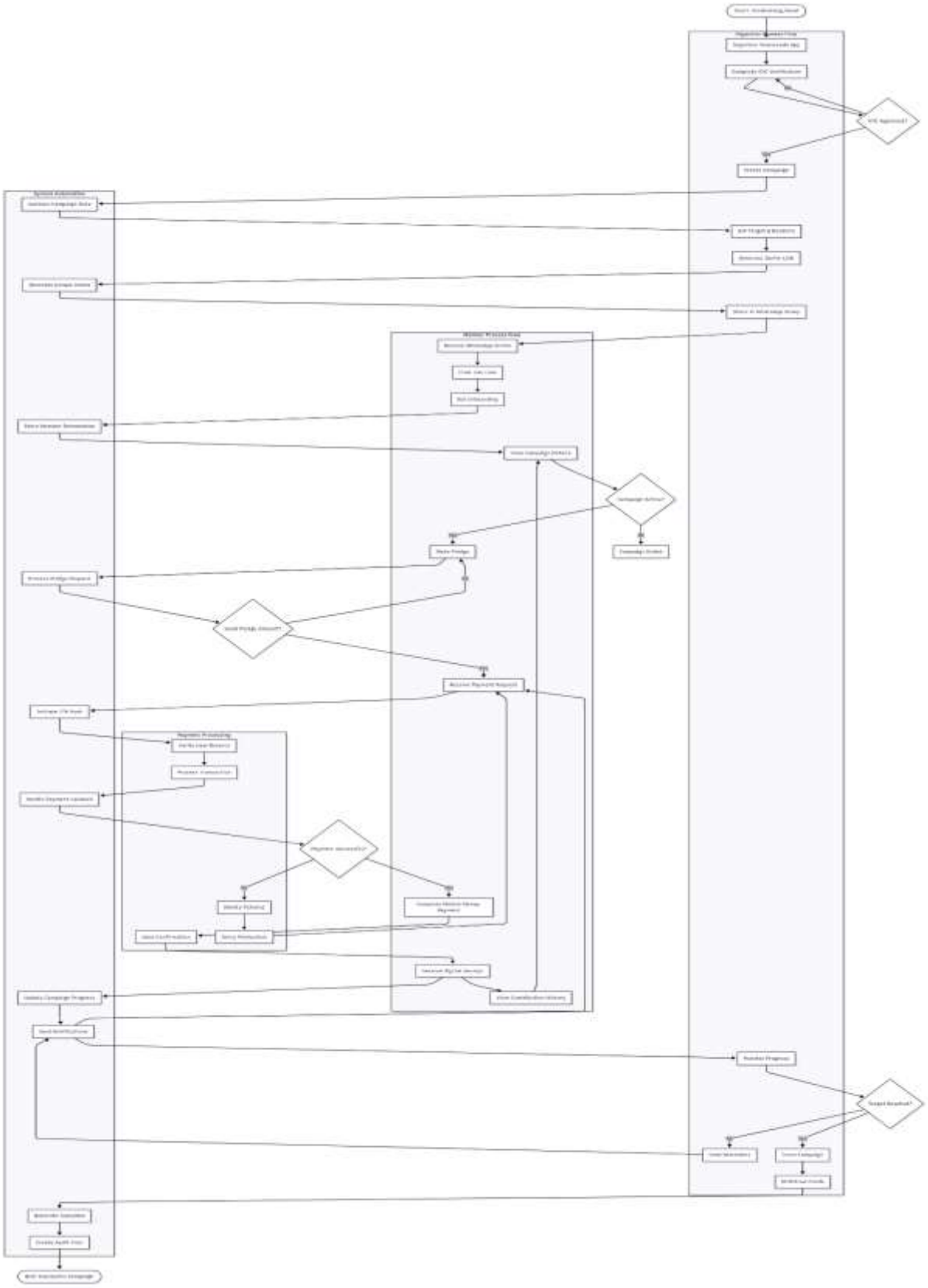


Figure 10 Business Process Map – PledgeCircle

Data Flow Diagram (Level 0 & Level 1)

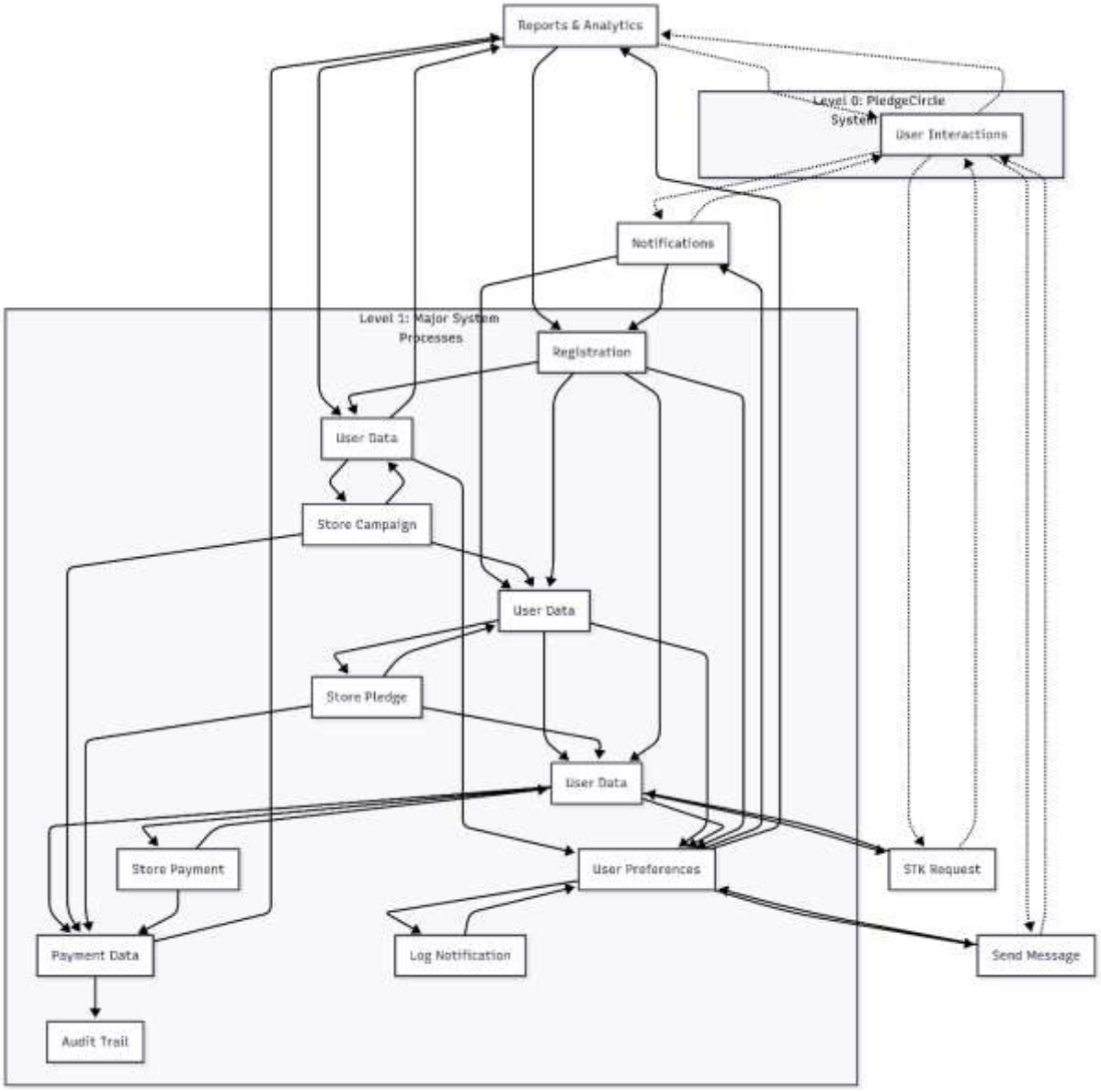


Figure 11 Data Flow Diagram (Level 0 & Level 1)

3.2 The Technology Stack:

- **USSD/SMS Backbone:** For users without smartphones or consistent data, all core functions (check balance, contribute, receive alerts) are available via USSD codes or SMS. This ensures universal accessibility.
- **WhatsApp Business API Front-End:** For users with smartphones, WhatsApp serves as the primary interface. They can:
  - Receive automated payment reminders and receipts.
  - View their circle's financial status.
  - Communicate with the group admin or support via chat.
  - Initiate payments directly through secure payment links within WhatsApp.

- **Web Dashboard (Optional):** For circle administrators and NGOs managing multiple circles, a secure web dashboard provides advanced analytics and management tools.

This hybrid model ensures no one is left behind, leveraging the right technology for the right user context.

📊 Technical Specifications Summary

Component	Technology	Justification
Frontend	React Native/Web	Cross-platform development efficiency
Backend	Supabase Functions	Serverless scaling, built-in features
Database	PostgreSQL	ACID compliance, complex queries
Authentication	Supabase Auth	JWT-based, row-level security
Messaging	WhatsApp Business API	High market penetration
Payments	MTN MoMo, Airtel Money	Local payment method dominance
Hosting	Supabase Cloud	Managed infrastructure, global CDN
Monitoring	Sentry + Supabase	Comprehensive error tracking

🔒 Security & Compliance Framework

🛡️ Security Measures

- **Data Encryption**: AES-256 at rest, TLS 1.3 in transit
- **Authentication**: Multi-factor authentication for sensitive operations
- **Authorization**: Role-based access control with fine-grained permissions
- **Monitoring**: Real-time threat detection and automated response
- **Compliance**: GDPR-ready, local data protection law adherence

📋 Compliance Requirements

- **KYC Implementation**: Tiered verification based on transaction volumes

- **AML Monitoring**: Automated suspicious activity detection
- **Data Protection**: User consent management and right to erasure
- **Financial Regulations**: Bank of Uganda compliance for payment services
- **Audit Trail**: Complete transaction history for regulatory reporting

Chapter Four

4. Potential Impact and Benefits

4.1 Enhanced Efficiency and Convenience:

Automating reminders, collections, and distributions saves immense time and effort, freeing organizers to focus on community engagement rather than administrative logistics. This streamlining of operations significantly reduces transaction costs and minimizes the potential for human error, enhancing the overall reliability and trustworthiness of communal financial systems.

4.2 Deepened Financial Inclusion:

PledgeCircle acts as an on-ramp to formal digital finance. It familiarizes users with digital transactions in a trusted, communal context, making them more comfortable with other financial products. Facilitating familiarization with digital financial tools can encourage a gradual transition from informal savings mechanisms to more formalized financial services, fostering broader economic participation.

4.3 Strengthened Trust and Transparency:

The immutable, transparent ledger builds greater trust within the group. The "social collateral" of traditional systems is augmented by "digital collateral," reducing fraud and misunderstandings. Furthermore, the application of blockchain technology, particularly smart contracts, could automate the release of funds based on predefined conditions, thereby enhancing the security and trustworthiness of conditional donations within these community-based financial systems (Trotter et al., 2020). This increased transparency also aligns with broader efforts to optimize financial management through technology, ensuring efficient and impactful resource allocation (Luntajo & Hasan, 2023).

4.4 Scalability of Community Projects:

The platform allows for the creation of "Project Circles" that transcend geographical boundaries. A Ugandan in the diaspora can easily and transparently contribute to a development project in their home village, dramatically expanding the potential pool of contributors. This global reach not only facilitates financial flows for community development but also fosters a sense of collective ownership and shared responsibility among dispersed populations.

4.5 Data for Development:

Anonymized and aggregated data from the platform could provide invaluable insights into local saving habits, financial resilience, and community needs, useful for policymakers, NGOs, and financial institutions. This data can inform evidence-based policy-making and product development, ultimately leading to more effective and inclusive financial ecosystems (Visconti, 2019). This systematic data collection can further aid in the identification of underserved populations and the design of targeted interventions to promote financial literacy and access to financial services in emerging markets (Hajj & Farran, 2024; Magazzino et al., 2025). Moreover, impact tokens, a blockchain-based innovation, can further enhance this data collection by accelerating monitoring, reporting, and verification processes while simultaneously incentivizing sustainable behaviors (Uzsoki & Guerdat, 2019). Biodiversity tokens, for instance, can mobilize a broader population for conservation efforts and provide tangible measures of community commitment, fostering pride and engagement in sustainable practices (Manfrino, 2024). The

integration of blockchain technology and artificial intelligence solutions within such platforms offers enhanced reliability and auditability of financial statements, strengthening investor trust and potentially benefiting a wide array of stakeholders (Roszkowska, 2020).

Chapter Five

5. Challenges and Mitigation Strategies

5.1 Digital Literacy:

The varying levels of tech proficiency pose a significant barrier.

- *Mitigation:* An intuitive, icon-based UI, voice-based instructions (via WhatsApp), and a network of community-based agents for onboarding and support.
- Partnerships with local community leaders and organizations can further facilitate digital literacy training and ongoing technical assistance, ensuring that even the most digitally marginalized individuals can effectively utilize the platform and access financial services (Okunade et al., 2024) (Magwedere & Marozva, 2025). Furthermore, targeted financial literacy programs are crucial to empower individuals, particularly women, with the knowledge and skills necessary for effective personal financial management, thereby promoting financial inclusion and sustained economic development (Kyeyune & Ntayi, 2025).

5.2 Trust in the Platform:

Convincing users to entrust their communal funds to a digital intermediary is non-trivial.

- *Mitigation:* Partnerships with established, trusted brands (e.g., mobile money operators, reputable NGOs). Implementing robust security protocols and clear, transparent terms of service.
- Open-sourcing key components of the platform can further foster trust by allowing independent audits of the codebase and algorithms, ensuring transparency and mitigating concerns about proprietary control (Michael, 2021). Additionally, the integration of secure blockchain technology and smart contracts can further reinforce confidence by providing an immutable ledger of transactions and automating compliance with agreed-upon terms, thereby enhancing the overall integrity of the system (Uzsoki & Guerdat, 2019). However, challenges such as ensuring Shariah compliance for such technologies, especially with AI algorithms, and managing implementation costs still need to be addressed effectively (Yusof, 2024).

5.3 Regulatory Hurdles:

Handling pooled funds could attract the attention of financial regulators.

- *Mitigation:* Designing the platform as a Software-as-a-Service (SaaS) tool that facilitates transactions between members rather than as a financial institution that holds deposits. Engaging with regulators early in the development process.
- Establishing clear legal frameworks for digital solidarity economies, particularly concerning data ownership and governance, is paramount to navigating these regulatory landscapes effectively (Seo & Ammari, 2025). Furthermore, creating simplified interoperability frameworks and legal standards can help address the fragmented technical and legal systems that currently hinder collaboration and data sharing in social entrepreneurship initiatives (Vañó, 2025).

5.4 Connectivity and Infrastructure:

Unreliable internet and power outages in rural areas can disrupt service.

- *Mitigation:* The USSD/SMS backbone ensures core functionality remains operational even with poor or no internet connectivity.

- Additionally, developing off-grid solutions, such as solar-powered charging stations and localized mesh networks, can further enhance accessibility and resilience in areas with limited infrastructure (Agwu, 2020). Moreover, the implementation of decentralized physical infrastructure networks can provide robust and resilient connectivity solutions for these underserved regions, thereby enhancing the platform's reach and operational stability.

Chapter Six

6. Conclusion and Future Research

The digital transformation of communal giving in Uganda is not a question of *if* but *how*. The PledgeCircle model presents a viable, context-aware blueprint for this transformation. By building upon existing behaviors (mobile money, WhatsApp use) and social structures (*Ekibina*), it offers a path to enhance a deeply valued practice with digital efficiency, transparency, and scale.

This paper has laid the theoretical groundwork. Future research must involve field studies to:

- Validate user needs and willingness to pay for such a service.
- Conduct pilot studies to test the usability of the proposed hybrid interface.
- Develop and refine a sustainable business model, potentially involving tiered subscriptions for circle admins or micro-transaction fees.
- Explore the legal and regulatory framework in depth.

The success of PledgeCircle, or platforms like it, could mark a significant step forward in harnessing technology to strengthen social capital and drive inclusive economic growth in Uganda and beyond.

References

1. Aboagye, J., & Anong, S. T. (2020). Provider and Consumer Perceptions on Mobile Money and Microfinance Integrations in Ghana: A Financial Inclusion Approach. *International Journal of Business and Economics Research*, *9*(4), 276. https://doi.org/10.11648/j.ijber.20200904.24
2. Adelaja, A. O., Umeorah, S. C., Abikoye, B. E., & Nezianya, M. C. (2024). Advancing financial inclusion through fintech: Solutions for unbanked and underbanked populations. *World Journal of Advanced Research and Reviews*, *23*(2), 427. https://doi.org/10.30574/wjarr.2024.23.2.2379
3. Agabalinda, C., & Alain, V. N. I. (2020). Moderating effects of social learning on the usage of formal financial services in Kampala, Uganda. *Journal of Economics and International Finance*, *12*(3), 120. https://doi.org/10.5897/jeif2020.1043
4. Agarwal, A., & Assenova, V. (2023). Mobile Money as a Stepping Stone to Financial Inclusion: How Digital Multisided Platforms Fill Institutional Voids. *Organization Science*, *35*(3), 769. https://doi.org/10.1287/orsc.2022.16562
5. Agwu, E. (2020). Can technology bridge the gap between rural development and financial inclusion? *Technology Analysis and Strategic Management*, *33*(2), 123. https://doi.org/10.1080/09537325.2020.1795111
6. Amana, S., & Tamunomiegbam, D. A. (2024). Bridging the Financial Knowledge Gap: Innovative Approaches to Financial Literacy in Africa. *American Journal of Finance*, *10*(3), 24. https://doi.org/10.47672/ajf.2280
7. Aron, J. (2017). 'Leapfrogging': a Survey of the Nature and Economic Implications of Mobile Money. *RePEc: Research Papers in Economics*. https://econpapers.repec.org/RePEc:csa:wpaper:2017-02

8. Aron, J. (2018). Mobile Money and the Economy: A Review of the Evidence [Review of *Mobile Money and the Economy: A Review of the Evidence*]. *The World Bank Research Observer*, *33*(2), 135. Oxford University Press. https://doi.org/10.1093/wbro/lky001
9. AUTHOR_ID, N. (2024). The Role Of Fintech In Enhancing Financial Inclusion. *IOSR Journal of Economics and Finance*, *15*(6), 47. https://doi.org/10.9790/5933-1506014749
10. Azmeh, C., & Al-Raeei, M. (2024). Exploring the dual relationship between fintech and financial inclusion in developing countries and their impact on economic growth: Supplement or substitute? *PLoS ONE*, *19*(12). https://doi.org/10.1371/journal.pone.0315174
11. Benami, E., & Carter, M. R. (2021). Can digital technologies reshape rural microfinance? Implications for savings, credit, & insurance. *Applied Economic Perspectives and Policy*, *43*(4), 1196. https://doi.org/10.1002/aepp.13151
12. Benjamin, L. B., Amajuoyi, P., & Adeusi, K. B. (2024). Marketing, communication, banking, and Fintech: personalization in Fintech marketing, enhancing customer communication for financial inclusion. *International Journal of Management & Entrepreneurship Research*, *6*(5), 1687. https://doi.org/10.51594/ijmer.v6i5.1142
13. Buteau, S., Rao, P., & Valenti, F. (2021). Emerging insights from digital solutions in financial inclusion. *CSI Transactions on ICT*, *9*(2), 105. https://doi.org/10.1007/s40012-021-00330-x
14. Chidziwisano, G. H., Wyche, S., & Kisyula, R. (2020). *SmartChama*. 1. https://doi.org/10.1145/3392561.3394641
15. Dao, H., Le, P., & Nguyen, D. K. (2025). Financial inclusion and fintech: a state-of-the-art systematic literature review. *Financial Innovation*, *11*(1). https://doi.org/10.1186/s40854-024-00741-0
16. Ebong, J., & George, B. (2021). Financial Inclusion through Digital Financial Services (DFS): A Study in Uganda. *Journal of Risk and Financial Management*, *14*(9), 393. https://doi.org/10.3390/jrfm14090393
17. Girma, A. G., & Huseynov, F. (2023). The Causal Relationship between FinTech, Financial Inclusion, and Income Inequality in African Economies. *Journal of Risk and Financial Management*, *17*(1), 2. https://doi.org/10.3390/jrfm17010002
18. Hajj, M. E., & Farran, I. (2024). *The Role of Cryptocurrencies in Emerging Markets: Investigating the Growing Adoption of Cryptocurrencies in Developing Countries, Their Potential to Improve Financial Inclusion and Economic Empowerment*. https://doi.org/10.20944/preprints202407.0114.v1
19. Han, S. (2024). Digital Finance and Financial Inclusion in Africa. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4864421
20. Hinman, R., & Matovu, J. (2010). *Opportunities and challenges for mobile-based financial services in rural Uganda*. https://doi.org/10.1145/1753846.1754080
21. How, M.-L., Cheah, S.-M., Khor, A. C., & Chan, Y. J. (2020). Artificial Intelligence-Enhanced Predictive Insights for Advancing Financial Inclusion: A Human-Centric AI-Thinking Approach. *Big Data and Cognitive Computing*, *4*(2), 8. https://doi.org/10.3390/bdcc4020008
22. Ingale, A. (2025). Financial Inclusion Through Mobile Banking In Emerging Economies. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.5060697
23. Jahan, S. N., Muneeza, A., & Baharuddin, S. H. (2021). Islamic Capital Market for Social Development: Innovating Waqf Mobile Sukuk in Sub-Saharan Africa. *International Journal Of Management and Applied Research*, *8*(2), 141. https://doi.org/10.18646/2056.82.21-009

24. Johri, A., Asif, M., Tarkar, P., Khan, W., Rahisha, & Wasiq, M. (2024). Digital financial inclusion in micro enterprises: understanding the determinants and impact on ease of doing business from the World Bank survey. *Humanities and Social Sciences Communications*, *11*(1). https://doi.org/10.1057/s41599-024-02856-2
25. Kerouat, S. (2024). Financial Inclusion and the Contribution of Fintech in Middle-Income Countries: An Empirical Investigation across a Panel of Countries in Africa and Asia. *International Journal of Research and Innovation in Social Science*, 2189. https://doi.org/10.47772/ijriss.2024.802156
26. Keskinen, P., Arvila, N., Winschiers-Theophilus, H., Lungameni, A., Kambunga, A. P., Laurikainen, R., & Nieminen, M. (2021). Local tech mediators - a human access point to global crowdfunding platforms. *CoDesign*, *18*(4), 483. https://doi.org/10.1080/15710882.2021.1912776
27. Khub, A. A., Saeudy, M., & Gerged, A. M. (2024). Digital Financial Inclusion in Emerging Economies: Evidence from Jordan. *Journal of Risk and Financial Management*, *17*(2), 66. https://doi.org/10.3390/jrfm17020066
28. Kyeyune, G. N., & Ntayi, J. M. (2025). Empowering rural communities: the role of financial literacy and management in sustainable development. *Frontiers in Human Dynamics*, *6*. https://doi.org/10.3389/fhumd.2024.1424126
29. Liang, J., Mundy, R. S., & Jagwayan, S. (2024). E-Commerce in Africa: Divergent Impacts on Rural and Urban Economies. *arXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2412.03879
30. Liu, Q., Wang, M., Wang, Q., & Wei, D. (2025). Mitigating Rural Multidimensional Poverty Through Digital Inclusive Finance: Real Improvement and Psychological Empowerment. *Agriculture*, *15*(9), 954. https://doi.org/10.3390/agriculture15090954
31. Luntajo, Moh. M. R., & Hasan, F. (2023). Optimalisasi Potensi Pengelolaan Zakat di Indonesia melalui Integrasi Teknologi. *Al-Aqdu Journal of Islamic Economics Law*, *3*(1), 14. https://doi.org/10.30984/ajiel.v3i1.2577
32. Magazzino, C., Gattone, T., & Horky, F. (2025). Economic and financial development as determinants of crypto adoption. *International Review of Financial Analysis*, 104217. https://doi.org/10.1016/j.irfa.2025.104217
33. Magwedere, M. R., & Marozva, G. (2025). Financial technology and income inequality: an empirical investigation. *Discover Global Society*, *3*(1). https://doi.org/10.1007/s44282-025-00198-1
34. Manfrino, M. (2024). Beyond Carbon: Navigating the Path to Biodiversity Credits for Climate Action and Ecosystem Conservation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4687255
35. Marus, E., Benon, C. B., & Mwosi, F. (2020). Co-operative and saving societies (SACCOS) and poverty reduction in Lango and Kigezi sub-regions of Uganda: A comparative empirical study. *AFRICAN JOURNAL OF BUSINESS MANAGEMENT*, *14*(9), 278. https://doi.org/10.5897/ajbm2020.9053
36. Matanji, F. (2019). WhatsApp and Mobile Money: Ameliorating Crowdfunding for Social Change in Kenya. *Asia Pacific Media Educator*, *29*(2), 237. https://doi.org/10.1177/1326365x19894780
37. Meniago, C. (2025). Digital Financial Inclusion and Economic Growth: The Moderating Role of Institutions in SADC Countries. *International Journal of Financial Studies*, *13*(1), 4. https://doi.org/10.3390/ijfs13010004
38. Michael, B. (2021). A Critical Look at Using FinTech Policy to Promote the SDGs. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4043051

39. Mpiira, S., Kiiza, B., Katungi, E., Staver, C., Tabuti, J. S., Kyotalimye, M., Muwumba, P., Karamura, E., & Tushemereirwe, W. (2013). Factors influencing households' participation in the Savings and Credit Cooperative (SACCO) programmes in Uganda. *African Journal of Agricultural Research*, *8*(43), 5280. https://doi.org/10.5897/ajar11.1673
40. MUGAMBA, E. (2025). Leveraging Central Bank Digital Currencies, Fin-tech, and Cryptocurrencies to Foster Financial Inclusion and Economic Stability in Uganda. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.5140309
41. Namawejje, H., Ssebyala, J., Wadada, R., Uwamungu, C., Omuuti, T., & Tusingwire, A. (2022). DIGITAL TECHNOLOGY USE, MODE OF SAVING, DISPOSABLE INCOME, AND SAVING AMONG HOUSEHOLD HEADS IN RURAL AREAS OF UGANDA. *International Journal of Social Science and Economic Research*, *7*(12), 3990. https://doi.org/10.46609/ijsser.2022.v07i12.010
42. Ngowi, H. P. (2021). Use of WhatsApp Social Media as a Platform for Crowdfunding: Selected Observations in Tanzania. *Eastern Africa Social Science Research Review*, *37*(2), 43. https://doi.org/10.1353/eas.2021.0008
43. Nisha. (2018). Technology and Financial Inclusion: An Agenda for Holistic Growth. *International Journal of Management Studies*, *5*, 35. https://doi.org/10.18843/ijms/v5i2(2)/05
44. Nnaomah, U. I., Aderemi, S., Olutimehin, D. O., Orieno, O. H., & Ogundipe, D. O. (2024). DIGITAL BANKING AND FINANCIAL INCLUSION: A REVIEW OF PRACTICES IN THE USA AND NIGERIA [Review of *DIGITAL BANKING AND FINANCIAL INCLUSION: A REVIEW OF PRACTICES IN THE USA AND NIGERIA*]. *Finance & Accounting Research Journal*, *6*(3), 463. Fair East Publishers. https://doi.org/10.51594/farj.v6i3.971
45. Okunade, B. A., Adewusi, O. E., Adediran, F. E., A. O. B., Daraojimba, R. E., & Igbokwe, J. C. (2024). Technology in community development: A comparative review of USA and African Projects [Review of *Technology in community development: A comparative review of USA and African Projects*]. *International Journal of Science and Research Archive*, *11*(1), 1195. https://doi.org/10.30574/ijsra.2024.11.1.0183
46. Prasad, V., Shallam, R., Sharma, A., Varghese, D., & Mehta, D. (2021). *A Hybrid Multi-Modal System for Conducting Virtual Workshops Using Interactive Voice Response and the WhatsApp Business API*. 1. https://doi.org/10.1145/3411763.3451820
47. Raghunath, A., Metzger, A. L., Easton, H. G., Liu, X., Wang, F. X., Wang, Y., Zhao, Y., Mpogole, H., & Anderson, R. (2024). *eKichabi v2: Designing and Scaling a Dual-Platform Agricultural Technology in Rural Tanzania*. 1. https://doi.org/10.1145/3613904.3642099
48. Rastogi, S., Pal, A., Lim, J. H., & Patra, S. (2024). Title Pending 1923. *UCL Journal of Economics*. https://doi.org/10.14324/111.444.2755-0877.1923
49. Rodima-Taylor, D. (2022). Platformizing Ubuntu? FinTech, Inclusion, and Mutual Help in Africa. *Journal of Cultural Economy*, *15*(4), 416. https://doi.org/10.1080/17530350.2022.2040569
50. Roszkowska, P. (2020). Fintech in financial reporting and audit for fraud prevention and safeguarding equity investments. *Journal of Accounting & Organizational Change*, *17*(2), 164. https://doi.org/10.1108/jaoc-09-2019-0098
51. Rowan, P., Garvey, K., Zhang, B. Z., Soriano, M., Umer, Z., Cloud, K., Cracknell, D. J., Singh, A., Kutosi, S., & Ahimbisibwe, D. (2018). FinTech in Uganda: Implications For Regulation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3621272

52. S, K. S. (2025). Understanding the role of Digital Banking Services in Enhancing Financial Inclusion. *Journal of Information Systems Engineering & Management*, *10*, 105. https://doi.org/10.52783/jisem.v10i25s.3949
53. Seo, J., & Ammari, T. (2025). *Governance and Technological Challenge in Digital Solidarity Economies: A Case Study of a Collaborative Transportation Platform in South Korea*. https://doi.org/10.48550/ARXIV.2507.04166
54. Shirono, K. (2024). Understanding Barriers to Financial Access: Insights from Bank Pricing Data. *IMF Working Paper*, *2024*(150), 1. https://doi.org/10.5089/9798400280627.001
55. Taera, E. G., & Lakner, Z. (2025). Sustainable Finance: Bridging Circular Economy Goals and Financial Inclusion in Developing Economies. *World*, *6*(2), 44. https://doi.org/10.3390/world6020044
56. Tay, L.-Y., Tai, H.-T., & Tan, G.-S. (2022). Digital financial inclusion: A gateway to sustainable development [Review of *Digital financial inclusion: A gateway to sustainable development*]. *Heliyon*, *8*(6). Elsevier BV. https://doi.org/10.1016/j.heliyon.2022.e09766
57. Tep, S. P., Ruer, P., & Alexandra, N. (2019). Persuasion in Mobile Financial Service: A Case Study with a Bank Savings Mobile Application. In *IntechOpen eBooks*. IntechOpen. https://doi.org/10.5772/intechopen.89542
58. Tidjani, C., & Madouri, A. (2024). Fintech, financial inclusion, and sustainable development in the African region. *Frontiers in Applied Mathematics and Statistics*, *10*. https://doi.org/10.3389/fams.2024.1276218
59. Tiony, O. K. (2023). The Impact of Digital Financial Services on Financial Inclusion in Kenya. *American Journal of Industrial and Business Management*, *13*(6), 593. https://doi.org/10.4236/ajibm.2023.136035
60. Trotter, L., Harding, M., Shaw, P., Davies, N., Elsden, C., Speed, C., Vines, J., Abadi, A., & Hallwright, J. (2020). *Smart Donations: Event-Driven Conditional Donations Using Smart Contracts On The Blockchain*. 546. https://doi.org/10.1145/3441000.3441014
61. Uzsoki, D., & Guerdat, P. (2019). *Impact tokens: a blockchain-based solution for impact investing.* https://www.cabdirect.org/cabdirect/abstract/20208400105
62. Vañó, M. J. V. (2025). Social entrepreneurship: challenges, risks, and opportunities. *International Entrepreneurship and Management Journal*, *21*(1). https://doi.org/10.1007/s11365-025-01088-3
63. Visconti, R. M. (2019). Microfintech: Outreaching Financial Inclusion with Cost-Cutting Innovation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3533873
64. Warsame, M. H., & Abdalla, Y. A. (2024). Impact of mobile financial services on financial inclusion: empirical insights from Kenya. *International Review of Economics*, *71*(3), 633. https://doi.org/10.1007/s12232-024-00456-9
65. Yu, S., & Ibtasam, S. (2018). *A Qualitative Exploration of Mobile Money in Ghana*. 1. https://doi.org/10.1145/3209811.3209863
66. Yusof, M. (2024). Waqf-Driven Inclusive Prosperity: Exploring the Intersection of Islamic Finance, Fintech, and Sustainable Development Goals. In *Advances in Finance, Accounting, and Economics book series* (p. 303). IGI Global. https://doi.org/10.4018/979-8-3693-5653-1.ch012