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Bridging the Financial Literacy Gap: A User-Centric Model for Digital Financial Services

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Abstract

In an era of rapid technological advancement and convenience, still only 33% of adults worldwide are financially literate, underscoring the need for innovative solutions to achieve financial independence. This research aims to bridge the gap by developing the first step of a conceptual model for digital financial services, focusing on digital financial readiness. Integrating the Diffusion of Innovation Theory, the Financial Readiness Framework, and the Technology Readiness Levels (TRL) Framework, the research proposes an approach that aligns technological development with users' financial readiness. This research employs an inductive qualitative method, analysing data from semi-structured interviews with Namibian millennials as a target group. Key findings underscore the importance of enhancing digital and financial literacy, improving infrastructure, and employing user-centric designs to meet diverse needs. Participants highlighted the necessity for continuous education, robust infrastructure, and trustworthy, secure systems. The research concludes that digital financial services must be tailored to user needs in order to achieve financial independence. This research thus offers a structured, user-centred model that aligns technological advancements with practical user requirements, contributing to a more inclusive financial ecosystem. By focusing on these areas, actionable insights and a pathway for developing effective digital financial tools can further promote financial independence.

1. Introduction

In an era characterised by rapid technological advancements, the landscape of personal finance is undergoing a transformative shift. Despite these advancements, a concerning statistic from the World Economic Forum (Lusardi & Sticha 2024) reveals that worldwide, only 33 per cent of adults possess financial literacy. This points to a pressing need for innovative solutions to bridge the gap. Picture a world where, with just a few taps on a smartphone, anyone can achieve financial independence. This vision, driven by a conceptual model designed to create such applications, is no longer a distant dream but an increasingly attainable reality. However, the journey towards widespread financial autonomy is laden with challenges. The promise of digital financial services is immense, offering unprecedented accessibility and convenience. Yet, if not implemented thoughtfully and inclusively, these advancements risk exacerbating the digital financial divide and leaving many behind. To ensure that digital financial services contribute meaningfully to financial independence, they must be meticulously tailored to enhance literacy and overcome technical barriers (Manyika et al. 2016; OECD 2023; Ndahiro 2022).

Consider the case of a parent in a rural area of a developing country. Through a mobile application, this parent can access a microloan or open a savings account, thereby empowering them to manage household finances more effectively. This is the transformative potential of digital financial services – empowering individuals to be financially independent. However,

turning this potential into reality requires a number of obstacles to be overcome. How can these services be tailored to meet individual needs? How can we improve financial and digital literacy while addressing technological barriers? This research aims to develop a conceptual model that enhances digital financial services by addressing these very challenges, ultimately promoting financial independence.

At the core of the research is the notion that technology alone cannot create financial independence. This paper addresses an underexplored precondition for successful digital financial services (DFS). The design often prioritises rollouts or generic education while underintegrating user literacy, adoption readiness, and Namibia's risk/infrastructure realities, which are all drivers of failed transformations and premature digitisation (Singh 2023; Bican & Brem 2020; Biermann 2024; Lusardi & Sticha 2024). The contribution is a Namibiagrounded method that aligns Technology Readiness Levels with a Financial Readiness framework and Diffusion of Innovation to operationalise these usercentred 'prepreconditions' (Daley 2023; Seldon 2024; Jack 2022). Technology is merely a tool, an enabler that must be aligned with the practical needs and circumstances of its users. Drawing from Christensen's theory of the job-to-be-done (Gerdeman 2016), it becomes evident that understanding individuals' specific financial challenges and aspirations are important factors to consider. For example, a user struggling with debt management requires different technological solutions than a user focused on savings. Because the 'job' differs, the technological layer must differ. For a debtmanagement job, the tool should deliver cashflow tracking, budgeting coaches, behavioural nudges, and rapid human escalation/fraud controls (Lusardi et al. 2017). For a savings job, the tool should prioritise goalbased automation, a consolidated multiinstitution view, and lowfriction execution. In both cases, the technology is the scalable channel to embed literacy (Putri et al. 2023), trust and security (Jafri et al. 2024) and to fit Namibia's connectivity reality (MTC 2024; Kemp 2024) – but only after the jobtobedone is defined (Gerdeman 2016) and aligned with the adoption stage (Rogers via CFI 2016) Additionally, Rogers' Diffusion of Innovation Theory (Jack 2022) reinforces the necessity of customising solutions for users across varying levels of adoption, ensuring that for instance both early adopters and laggards find the tools accessible and useful. These theoretical frameworks guide the investigation into overall financial literacy and digital capabilities, focusing on practical needs and everyday realities. This approach offers a path to financial independence, addressing some aspects in theory and in practice.

To turn this vision into actionable steps, the research proposes developing a wide-ranging and user-centric digital financial application integrated with an innovative conceptual model. This model intertwines three key components: The Technology Readiness Levels (TRL), the Financial Readiness Framework, and the Innovation of Diffusion Theory. By aligning technological development stages with users' financial preparedness, the proposed model aims to meet unique financial needs effectively. By understanding the users' perceived and actual financial literacy, digital competency, and the specific technological barriers they face, this model can guide and monitor progress, ultimately forming an approach that can enhance practical user engagement and push the boundaries of technological integration in financial services.

The research integrates the Technology Readiness Levels (TRL) Framework with the Financial Readiness Framework with the intention that technological developments are in harmony with users' financial preparedness. This overlay offers a structured method of matching technological maturity with practical financial solutions, thereby bridging the gap between digital services and user needs. By plotting the users' progress on an S-Curve model, it can track growth and identify innovation inflection points, helping to promote continuous improvement and adoption of services in line with user feedback and their evolving needs.

By integrating these theoretical frameworks and employing a structured, phased approach, this research contributes to the broader discourse on financial literacy and digital literacy. It emphasizes that digital transformation in finance should not be seen as a one-size-fits-all solution but as a nuanced process that considers individual user differences and adapts accordingly. The research further provides a pathway to bridge some of these gaps. By focusing on user-centric design, continuous education, and improved infrastructure, the research aspires to empower users and contribute to a more inclusive financial world.

In essence, financial independence is not merely a by-product of access to digital tools but a result of effectively using these tools throughout one's financial journey. This research proposes a strategic, user-centric model within a broader innovation framework, aimed at balancing technological capabilities with individual user requirements. This research advances the assertion that unless digital financial services are tailored to user needs by enhancing literacy and overcoming technological barriers, the goal of widespread financial independence will remain elusive (Manyika et al. 2016; Khera et al. 2022).

The focus is on Namibian millennials because they represent a large workingage cohort and are 'digital natives' with strong mobilefirst engagement – making them pivotal to digital financial adoption (Roman 2017; Reiff 2024). At the same time, evidence shows persistent gaps and overconfidence in financial literacy among millennials, implying substantial room for tailored, in-app education (Yakoboski et al. 2018; Lusardi & Sticha 2024; Lusardi et al. 2017). Millennials also report clear preferences for digital banking and consolidated tools (EVERFI 2022). This combination of scale, digital engagement, and literacy gaps makes them a highimpact population for studying how tailored digital financial services can enhance financial independence.

2. Literature Review

In the quest for widespread financial independence the integration of digital financial services is a potential game-changer. Nonetheless, fully capitalising on this potential requires bridging key gaps in financial and digital literacy, overcoming technological challenges, and advancing financial inclusion. It also delves into how the Technology Readiness Level (TRL) framework (Stewart 2021) can overlay financial readiness to align technological development with users' financial

capabilities. These elements are important to understand in the multifaceted landscape that influences user adoption of digital financial services.

Accordingly, this literature review establishes the theoretical foundation by examining the following interconnect areas needed for the development of user-centric digital financial services. First, it explores the strategic imperatives of innovation strategy and digital transformation (Section 2.1), establishing how organisational approaches must align with user needs. The review then examines digital literacy (Section 2.2) and financial literacy (Section 2.3) as foundational competencies that enable effective engagement with digital financial services. Section 2.4 addresses technological barriers that constrain access and adoption, particularly in emerging market contexts. Section 2.5 introduces the Technology Readiness Level (TRL) framework as a structured approach for aligning technological development with user financial preparedness. Section 2.6 explores financial inclusion as both an outcome and enabler of well-designed digital financial services. Section 2.7 then integrates these elements through the Diffusion of Innovation theory, jobs-to-be-done theory, and the TRL framework to provide a comprehensive lens for understanding how digital financial services can be tailored to enhance financial independence across varying levels of literacy. This establishes the theoretical basis for the conceptual method in Section 3.

2.1 Innovation Strategy and Digital Transformation

An effective innovation strategy is a necessary precursor to deploying digital financial services in ways that create user and business value. Pisano (2015) argues that innovation efforts must be explicitly linked to an organisation's overall strategy, clarifying how value will be created and captured. In practice, this means treating digital finance not as a collection of features but as a portfolio of deliberate choices across product, process, and business-model innovation. Bican and Brem (2020) similarly caution that not all processes should be digitised and that premature transformation can dismantle viable models if capabilities, data governance, or culture are not ready. This risk is reiterated by evidence of failed digital transformations that prioritised technology rollouts over organisational and user readiness (Singh, 2023). For Namibia, where users and operating contexts are heterogeneous and infrastructure is uneven (MTC 2024, Kemp 2024, Ndahiro 2022, Biermann 2024), strategic sequencing – what to digitise, why, and for whom – is more important than blanket digitisation.

Translating strategy into execution benefits from staged gates that align technology maturity with user needs and adoption patterns. Integrating Technology Readiness Levels (TRL) provides objective maturity checkpoints to avoid premature scaling (Daley 2023, Seldon 2024), while Diffusion of Innovation offers a lens for tailoring engagement to segments (innovators, early adopters, early/late majority, laggards) to reduce dropoff and resistance (CFI 2016, Jack 2022). Early TRL stages should prioritise user research and basic prototypes that embed literacy and trust; middle stages validate value propositions under Namibia's connectivity realities; later stages scale only after usability, reliability, security, and inclusive access are demonstrated. This strategytoexecution thread motivates the remainder of the literature review: digital and financial literacy (Sections 2.2–2.3) define essential user capabilities and support needs, while technological barriers (Section 2.4) set nonnegotiable design constraints and sequencing choices.

2.2 Digital Literacy

Digital literacy encompasses more than operating devices; it entails the capability to use digital tools critically, safely, and productively in everyday life, including money management (CareerWise 2021, Kumar & Balasubramaniam 2023). In lowerincome and rural contexts literacy varies by income, education, and geography, shaping the extent to which users benefit from digital financial services (Razumovskaya & Razumovskiy 2020, OECD 2023, Liu et al. 2021). Cyberhygiene is integral to digital literacy: phishing, SIMswap, and socialengineering risks directly undermine trust and usage unless users can recognise threats and platforms make protection visible and easy (Technology.org 2024). In Namibia's mobilefirst, unevenconnectivity environment (Kemp 2024, MTC 2024) practical digital literacy also includes task switching across devices, coping with intermittent network access, and interpreting security cues across apps, SMS, and WhatsApp.

These dynamics have direct design and implementation implications. First, literacy should be embedded inapp as justintime guidance, short visual explainers and safe 'sandbox' practice modes rather than relying solely on standalone training – an approach that aligns with the need to meet users at the point of decision. Second, cybersafety should be surfaced via contextual prompts and visible controls (e.g., multifactor authentication, onetap freeze, fraudreporting flows) rather than hidden in settings, reinforcing trust (Jafri et al. 2024, Jhonson et al. 2023). Third, content and UI (user interface) must be concise, visual, multilingual, and usable on lowend devices with limited data. Framing digital literacy this way positions it as an enabling capability codeveloped with the product across TRL stages, not a prerequisite external to the solution. This sets up Section 2.3, where financial literacy is discussed as the complementary capability for sound financial decisions inside these digital environments (Islam & Khan 2024, Yang et al. 2020).

2.3 Financial Literacy

Financial literacy – the ability to understand and use budgeting, saving, debt management, and investing consistently predicts better financial behaviour (Fernando 2024, Lusardi et al. 2017). Yet there is often a gap between subjective confidence and objective capability; individuals may overestimate what they know, which can impair decisions in digital contexts that appear simple but conceal complexity (Xin et al. 2024). In Namibia the Financial Literacy Initiative (FLI 2024) signals national commitment, but much activity remains parallel to privatesector delivery and is not systematically embedded inside digital service

experiences, missing opportunities for pointofneed learning. International evidence further shows that engagement and outcomes improve when education is contextual, visual, and tasklinked (Lusardi et al. 2017), and when digital and financial literacies are addressed together (Islam & Khan 2024, Yang et al. 2020).

This synthesis suggests two design principles for DFS (digital financial services). First, tie microlearning to real tasks and choices, for instance budget setup, goalbased saving, comparing credit options, recognising scams, using narratives and visuals to build selfefficacy (Lusardi et al. 2017). Second, personalise depth and scaffolding to demonstrated capability rather than selfassessment, progressively unlocking advanced content (e.g., insurance, retirement, basic investing) as mastery grows, aligned with digital financial literacy dimensions such as risk control, awareness, and application use (Putri et al. 2023). Localising content to FLI and OECD/INFE domains and delivering it via mobilefirst channels can convert diffuse, informal learning into guided capability building. This strengthens the 'financial readiness' side of the model and connects to Section 2.4, where infrastructure constraints determine how such guidance can be delivered reliably and affordably.

2.4 Technological Barriers

Even when digital and financial literacy are strengthened, adoption stalls if infrastructure is unreliable or unaffordable. Namibia faces patchy 3G/4G coverage and no nationwide 5G, with frequent rural power interruptions, and the Namibian users' sensitivity to data costs (MTC 2024, Kemp 2024, Ndahiro 2022, Biermann 2024). These realities affect basic reliability (logins, balance refreshes), transaction completion, and trust, especially when failures are perceived as security or provider issues. Broader evidence from emerging markets underscores that infrastructure, affordability, and cybersecurity are binding constraints; overcoming them requires coordinated public–private investment alongside design choices that minimise bandwidth and provide graceful offline behaviour (Manyika et al. 2016, Khera et al. 2022, Siddik & Kabiraj 2020).

Accordingly, technology choices are part of inclusion strategy. For Namibia DFS should adopt mobilefirst, lightweight, and offlinecapable architectures (local caching, background sync, compressed assets), provide SMS/USSD fallbacks for critical actions (e.g., balance checks, fraud reporting, account freeze), and design resilient flows that tolerate dropped connections. Affordability considerations argue for progressive disclosure to limit data use, zerorating critical help content, and supporting older Android versions prevalent in rural areas. Security must be visible and lowfriction (biometrics/PIN, MFA prompts, onetap freeze, contextual fraud tips) to rebuild confidence after outages or glitches (Jafri et al. 2024, Jhonson et al. 2023). These constraints also inform TRL gating: features should not scale beyond pilot until reliability, performance, and security KPIs are met in both urban and rural conditions. This technical context completes the literature foundation that motivates the integrated TRL, Financial Readiness, and Diffusion approach operationalised in Section 3.

2.5 The Role of Technology Readiness Level (TRL) Framework

Integrating the TRL framework into the Financial Readiness Framework can guide organisations through their digital transformation journeys. The TRL framework, widely adopted in technological innovation studies, assesses the maturity of technologies (Seldon, 2024). It offers a structured approach to matching technological progress with user readiness, which then aligns with user financial preparedness, thereby ensuring technological solutions are both viable and applicable for users. The TRL stages are:

- TRL Stages 1–3: Involve exploring core concepts and aligning them with user needs, akin to basic finance and consumer protection steps.
- TRL Stages 4–6: Involve prototype development and validation, major purchases, and planning for the future steps.
- TRL Stages 7–9: Focus on real-world testing and market integration, aligning with compensation, benefits, and entitlements steps, and saving and investing steps.

This structured approach can guide those technological advances that are compatible with users' financial readiness, thereby enhancing adoption rates. By mapping the TRL stages to financial readiness, organisations can ensure that their digital financial services are both technologically robust and practically viable.

2.6 Financial Inclusion

Enhancing financial inclusion through digital services can impact personal financial independence; specifically, the understanding of financial advice among individuals to an extent influences their engagement with digital financial platforms (Khan & Akhtar 2021). The adoption of technology, such as fintech, has been a key driver of financial inclusion in regions like Africa and Asia-Pacific (Khera, Ng, Ogawa, & Sahay 2022). Yet data security and privacy concerns remain as some of the hurdles (Siddik & Kabiraj 2020).

Von Hippel's concept of 'users as innovators' highlights the role of user-centric design in fostering financial inclusion (Thomke & Hippel 2002). Equipping customers with the tools to innovate allows them to tailor services, in this case financial services, to their unique needs. This approach facilitates active user participation in the creation and refinement of financial services, enhancing trust and satisfaction in digital financial ecosystems.

2.7 Integration of Theories

The integration of the Diffusion of Innovation theory, jobs-to-be-done theory, and the Technology Readiness Level (TRL) framework provides a lens through which to interpret the adoption and utilisation of digital financial services. Rogers' Diffusion of Innovation framework helps identify the varying rates of adoption among different segments, while Christensen's jobs-to-be-done theory emphasises the importance of understanding the specific financial challenges that individuals aim

to address, thereby informing user-centric solution design.

The TRL framework further augments this integrated approach by providing a structured method to assess the maturity of technological solutions in alignment with users' financial readiness. By aligning TRL stages with financial readiness, organisations can ensure that their technological advancements are well-matched with the practical needs and capabilities of their users.

Enhancing financial and digital literacy is the foundation of this integrated approach. Improved literacy levels enable users to fully engage digital financial services (Islam & Khan 2024, Yang et al. 2020). Tailored education initiatives that cohesively address both financial and digital literacies can create environments where users feel empowered to apply their own skills effectively (Lusardi et al. 2017, Putri et al. 2023, Khan & Akhtar 2021). Continued education efforts must target varying literacy levels to accommodate both novice and advanced users, ensuring broader adoption and effective utilisation of digital financial services (OECD 2023, Liu et al. 2021).

Addressing technological barriers remains important. Without reliable infrastructure and access to appropriate devices, even the most literate users will struggle to utilise digital financial services (Manyika et al. 2016, Khera et al. 2022). Consequently, initiatives to expand and upgrade digital infrastructure and accessibility are important components of any strategy aimed at fostering widespread financial independence (Ndahiro 2022). Improving network connectivity, reducing costs of digital devices, and advancing cybersecurity measures are all necessary steps in this process (Technology.org 2024, Jafri et al. 2024, Jhonson et al. 2023).

This literature review establishes a theoretical foundation for exploring how digital financial services can be tailored to enhance financial independence. By integrating insights from the Diffusion of Innovation theory, jobs-to-be-done theory, and the Technology Readiness Level framework, alongside research on financial and digital literacy, this study aims to provide a holistic understanding of the factors influencing the adoption and effective use of digital financial services (Jack 2022, Gerdeman 2016, Daley 2023, Seldon 2024, Lusardi & Sticha 2024, Lusardi et al. 2017, Khan & Akhtar 2021). Addressing identified gaps and barriers, such as enhancing literacy and overcoming technical limitations, are relevant factors to achieving widespread financial independence (Manyika et al. 2016, Khera et al. 2022, OECD 2023, Liu et al. 2021, Ndahiro 2022, Biermann 2024, Technology.org 2024, Jhonson et al. 2023). Ecosystem assessments for Namibia highlight broadband, affordability, and cybersecurity constraints as binding barriers to DFS adoption, reinforcing the need to pair technological solutions with targeted literacy and infrastructure upgrades (Ndahiro 2022, Biermann 2024).

3. Conceptual Method

In the rapidly evolving landscape of digital finance, the key to achieving widespread financial independence lies in developing services that are meticulously tailored to user needs. Therefore, developing a robust method that aligns with users' financial needs and with technological advancements is a good base to foster financial independence through digital financial services. This section proposes an integrated conceptual method that overlays the Technology Readiness Levels (TRL) with the Financial Readiness Framework, underpinned by Rogers' Diffusion of Innovation model. This integration process seeks to provide a pathway from basic financial literacy to advanced financial independence.

3.1 Conceptual Method Overview

The proposed model intertwines three key components:

- Technology Readiness Levels (TRL)
- Financial Readiness Framework
- Rogers' Diffusion of Innovation Theory (Jack 2022)

The ability to track user growth and identify innovation inflection points on an S-Curve enhances this integrated model.

The visual representation of the conceptual model (Figure 1) encapsulates the synergy between these components. The TRL provides a step-by-step guide for technological development, while the Financial Readiness Framework ensures that users' financial capabilities align with the technology level. Rogers' Diffusion of Innovation acts as an underpinning theory to manage user adoption rates, while the S-Curve provides the tracking on where users are, thus ensuring a synchronised approach where technological development is matched with users' financial capabilities, monitored for growth, and innovatively updated based on user feedback.

The TRL 1–3 (basic research to proof of concept) aligns with the foundational financial literacy needs such as personal financial management and consumer protection. It also engages innovators and early adopters through user participation feedback.

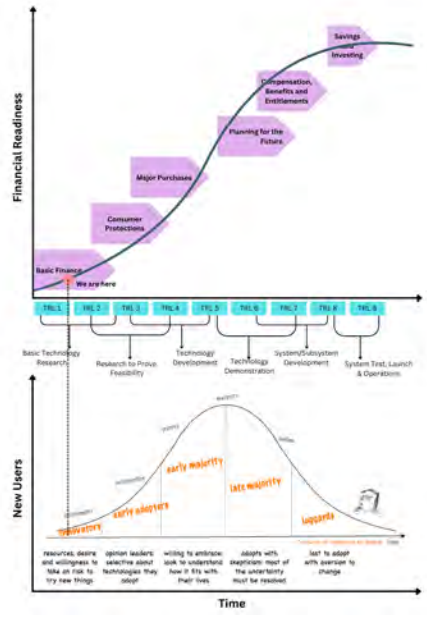

Figure 1: Integrated Model for Financial Readiness and User-Centric Innovation

TRL 4–6 (prototype development and demonstration) indicates the development of prototypes, such as a financial application, which can focus on major financial decisions and future planning. It then validates the model with early majority and early adopters using this user feedback to facilitate continuous improvement.

Finally, TRL 7–9 (system prototyping to full deployment) is where the implementation of advanced systems for savings, investing, and thorough financial management is deployed to the market. To further assure robustness and reliability it is important to target the late majority and laggards for full adoption, as well as use their insights for further innovation.

The financial readiness framework involves key competency areas, each aligned with specific TRL stages, which can be described as follows:

- Basic Finance (TRL 1–3: Basic technology research)
- Personal financial management fundamentals, banking services, spending plans, and debt management.
- Consumer Protection (TRL 2–4: Research to prove feasibility)
  - Consumer protection laws, recognising deceptive practices, and identifying theft (cybersecurity awareness).
- Major Purchases (TRL 3–5: Technology development)
  - Financing strategies for major purchases and education financing.
- Planning for the future (TRL 5–7: Technology demonstration)
  - Retirement planning, insurance options, and estate planning.
- Compensation, Benefits and Entitlements (TRL 6–8: System/subsystem development)
  - Pay and allowances as well as company benefits.
- Savings and Investing (TRL 8–9: Test, launch, and operationalise)

Understanding interest, savings, emergency funds, and investment principles and thus full financial readiness/growth

Using the Diffusion of Innovation framework allows for the identification of segments of user adoption by using the five categories (innovators, early adopters, early majority, late majority and laggards). This segmentation can then be used to tailor financial education and the technology solution to different user groups more effectively.

The S-Curve model can be applied to monitor the growth and development of individuals as they progress towards financial independence through financial literacy and technology adoption. By plotting the users' growth on the S-Curve, it is possible to observe progressive phases:

- Introduction: Engaging innovators with basic financial tools and educational content.
- Growth: Supporting early adopters and early majority with advanced features and robust financial plans.
- Maturity: Assisting late majority with solid management systems, ensuring stability and reliability.
- Decline: Identifying end-of-life stages of current solutions via user feedback, engaging laggards, and preparing for next generation tools.

As users progress through the S-Curve, their feedback and innovation ideas become crucial in the following ways (as per Von Hippel's theory):

- Monitoring product life cycles
  - Identifying when the service of product (technology) becomes outdated or reaches end-of-life.
- Introducing new solutions
  - Continuously innovating to meet evolving user needs and technological advancements.
- Fostering a feedback loop
  - Ensuring that user experiences and suggestions drive future developments and improvements.

3.2 Proposed Implementation of the Integrated Model

Step 1: Initial development and alignment (TRL 1–3, Basic finance and consumer protection).

- Conduct foundational research on financial needs and digital literacy.
- Develop and test early-stage financial tools such as an application, focusing on essential literacy and consumer protection.
- Engage innovators and early adopters through participatory design and initial feedback.

Step 2: Prototype development and demonstration (TRL 4–6, Major purchases and planning for the future)

- Create prototypes for significant financial decisions and future planning.
- Validate and refine prototypes using real-world feedback from early adopters and early majority.
- Strengthen user-centric features based on actual usage data and improvements.

Step 3: Full deployment and market integration (TRL 7–9, Compensation, benefits and investing)

- Implement comprehensive solutions for savings, investments, and entitlements.
- Train users across all segments to ensure optimal adoption rates, focusing on the late majority and laggards.
- Perform ongoing monitoring and iterative enhancements based on user feedback and technological advancements.

Step 4: Continuous Monitoring and Innovation

- Track user growth and engagement using the S-Curve model.
- Utilise user feedback to identify end-of-life solutions and introduce next generation tools.
- Foster user-driven innovation, ensuring solutions evolve with user needs and technological trends.

The proposed integrated model as shown in Figure 1 combines several theories and frameworks to ensure digital financial services meet users' evolving needs. Step 1 concentrates on preliminary research and basic

financial tool creation; Step 2 develops and tests early-stage financial tools; Step 3 deploys comprehensive solutions in the market, and Step 4 utilises user feedback for ongoing refinement. Together, this sequencing addresses financial literacy, aligns technological advancement with user readiness, and embeds continuous user-driven innovation, thus enabling effective, inclusive digital financial tools that foster widespread financial independence.

4. Research Design and Methodology

This research employs an inductive qualitative approach to explore how digital financial services can be tailored to enhance financial independence among Namibian millennials. An inductive qualitative methodology was selected for its capacity to handle complex social phenomena effectively, allowing for rich, detailed insights into individual experiences and perceptions. This approach is particularly suitable for exploring the nuanced dimensions of financial literacy and technological barriers in real-world contexts, providing depth of understanding essential for developing user-centric solutions.

Qualitative methods align with innovation theory that positions customers as co-creators, where understanding real jobs-to-be-done and lived experiences informs effective solution design (Thomke & Hippe 2002, Gerdeman 2016). By focusing on user narratives and experiences, this methodology enables the identification of specific challenges, needs, and aspirations that must inform the development of digital financial services. This user-centred evidence base is consistent with Von Hippel's concept of users as innovators, where incorporating user feedback loops into product design has been shown to improve product alignment and adoption (Thomke & Hippel 2002, Pisano 2015). Furthermore, qualitative insights can inform in-app education and guidance aimed at enhancing financial or digital literacy, elements that research indicates are associated with increased FinTech usage and improved financial behaviours (Lusardi et al. 2017, Khan & Akhtar 2021, Islam & Khan 2024).

The research design integrates two complementary data collection methods: a systematic literature review and semi-structured interviews. This dual approach enables triangulation, strengthening the validity and reliability of findings by allowing cross-verification between theoretical frameworks identified in literature and empirical evidence from participants lived experiences (Machi & McEvoy, 2009). The systematic literature review establishes theoretical grounding and identifies existing knowledge gaps, while semi-structured interviews capture contextual, experiential data that reveals how theoretical concepts manifest in practice within the Namibian millennial context.

The choice of semi-structured interviews offers important methodological advantages. Semi-structured interviews provide sufficient flexibility to explore emergent themes while maintaining focus on key research questions related to digital literacy, financial literacy, technological barriers, and financial inclusion (Kriukow 2024). This format allows participants to articulate their experiences in their own words while enabling the researcher to probe deeper into areas of particular relevance, thereby uncovering insights that predetermined survey instruments might miss. The conversational nature of semi-structured interviews also helps establish rapport, encouraging participants to share candid reflections about their financial management practices, challenges, and aspirations – topics that can be sensitive and require trust to discuss openly.

Thematic analysis was selected as the analytical approach for its flexibility and systematic rigour in identifying, analysing, and reporting patterns across qualitative data (Kriukow 2021, 2024). This method facilitates a comprehensive understanding of the experiences and barriers faced by Namibian millennials, enabling the extraction and organisation of themes that directly address the research questions. The systematic coding process provides an audit trail from raw data through codes to themes, enhancing the transparency and credibility of the analysis.

The focus on Namibian millennials as the target population is strategically justified on multiple grounds. Millennials represent a substantial portion of the working-age cohort and are characterised as 'digital natives' with strong mobile-first engagement, making them pivotal to digital financial adoption trajectories (Roman 2017, Reiff 2024). This generation's comfort with technology positions them as early adopters who can drive broader acceptance of digital financial services through social influence, consistent with Rogers' Diffusion of Innovation framework (Jack 2022). Simultaneously, evidence shows persistent gaps and overconfidence in financial literacy among millennials globally, implying substantial room for tailored, in-app education interventions (Yakoboski et al. 2018, Lusardi & Sticha 2024, Xin et al. 2024). Millennials also report clear preferences for digital banking and consolidated financial management tools (EVERFI 2022), indicating receptiveness to the type of integrated digital financial services this research aims to inform. This combination of scale, digital engagement, demonstrated need, and receptiveness makes Namibian millennials a high-impact population for studying how tailored digital financial services can enhance financial independence.

Ethical approval for this research was obtained from the Stellenbosch University Social, Behavioural and Education Research Ethics Committee (REC: SBE) under project number 30332. The research adhered to principles of informed consent, confidentiality, voluntary participation, and minimisation of harm throughout the data collection and analysis process. Prior to each interview, participants received detailed information about the research purpose, procedures, and their rights as research participants. Written informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the research process, with all identifying information removed from transcripts and replaced with generic participant codes (e.g., Participant 1, Participant 2) in analysis and reporting. The research posed minimal risk to participants, primarily involving the time commitment for interviews and potential discomfort when discussing financial challenges.

4.1 Research Process

The research process followed a structured seven-step approach adapted from the University of Oregon's guide for conducting literature studies (Machi & McEvoy 2009), as presented by Stellenbosch University (see Figure 2). This systematic framework ensures rigour and comprehensiveness in reviewing existing literature while maintaining clear alignment with the research objectives.

Step 1: Identify the research question. The central research question guiding this study is: 'How can digital financial services be tailored to enhance financial independence among different levels of financial literacy by addressing individualised needs and improving adoption?' This question frames the entire research endeavour, directing both literature search strategies and interview protocol development. The question's emphasis on tailoring services to individual needs and varying literacy levels reflects the user-centric orientation of the study and acknowledges the heterogeneity within the target population.

Step 2: Review discipline styles. Methodological grounding was established by examining existing studies on financial independence, digital literacy, financial literacy and readiness, technology readiness, and adoption models, particularly Rogers' Diffusion of Innovation theory and Christensen's jobs-to-be-done framework (Jack 2022, Gerdeman 2016). This review of methodological approaches employed in similar studies ensured that the chosen qualitative approach aligns with established practices in the field while remaining appropriate for the exploratory aims of this research.

Step 3: Search the literature. A comprehensive literature search was conducted across multiple academic databases including JSTOR, Google Scholar, ResearchGate, ProQuest, and Scopus to gather peer-reviewed articles, case studies, and relevant grey literature. Search strategies employed combinations of keywords and phrases related to digital literacy, financial literacy and readiness, technological barriers, technology readiness levels, financial inclusion, and user-centric design (see Table 1 for detailed search strategies).

Step 4: Manage the literature. Systematic organisation and management of reviewed literature was essential for maintaining focus and ensuring quality. Literature was categorised based on themes (digital literacy, financial literacy, technological barriers, financial inclusion), theoretical frameworks (Diffusion of Innovation, Technology Readiness Levels, jobs-to-be-done, users as innovators), and empirical findings from similar contexts. Inclusion criteria specified peer-reviewed and credible grey literature published primarily between 2002 and 2024, in English, with relevant content addressing the research domains (see Table 2). Exclusion criteria eliminated literature lacking relevant content, published in languages other than English, or predating 2002. This systematic approach to literature management ensured that only high-quality, relevant sources informed the theoretical foundation and conceptual model development.

Figure 2: Seven Step Process

Step 5: Critically analyse and evaluate the literature. Critical analysis involved systematically reviewing gathered literature to position this study within broader academic discourse, identifying theoretical foundations, and revealing research gaps. This evaluation highlighted the need for research specifically addressing the 'pre-preconditions' for successful digital financial services, the foundational elements of user literacy, readiness, and contextual barriers that must be addressed before technology deployment (Singh 2023, Bican & Brem 2020, Biermann 2024, Lusardi & Sticha 2024).

Step 6: Synthesise. Synthesis involved integrating findings from the literature review with empirical data collected through semi-structured interviews. This integration mapped interview themes to Technology Readiness Levels (TRL) and Rogers' Diffusion of Innovation framework, creating connections between theoretical constructs and empirical observations (Daley 2023, Seldon 2024, Jack, 2022). This synthetic approach builds a nuanced understanding of how digital financial services can facilitate financial independence for individuals at different literacy levels and adoption stages, informing the development of the integrated conceptual model presented in Section 3.

4.2 Data Collection

Data collection comprised two primary components: systematic literature review and semi-structured interviews with Namibian millennials.

Literature Review: The systematic literature review followed the process outlined in Section 4.1, employing the seven-step framework to ensure comprehensive coverage of relevant theoretical and empirical work (Machi & McEvoy 2009). Academic databases were searched using structured queries combining key terms related to the research domains. For example, searches in Scopus and ProQuest employed strings such as: 'personal financial' AND (planning OR management OR independence) AND ('financial inclusion' OR 'customers as innovators') AND ('digital financial literacy'). This search strategy ensured both depth and breadth of coverage, capturing established theoretical work, recent empirical studies, and emerging practitioner insights (see Table 1 for complete search strategies).

Interviews: Semi-structured interviews were conducted with 13 Namibian millennials (n=13), to capture diverse perspectives across roles and geographic locations. Participants included financial industry professionals, small business owners, teachers, and rural residents (including individuals from farming

Table 1: Search strategies

Words/Phrases/String	Place/database
All 4 research questions	Elicit (free version)
Electronic articles related to real-world examples of technology, innovation, and insurance	Flipboard
Research questions	Semantic Scholar
Digital literacy Financial literacy Technological barriers Financial inclusion	ResearchGate and Semantic Scholar
"personal financial" AND (planning OR management OR independence) AND ("financial inclusion" OR "customers as innovators") AND ("digital financial literacy")	Scopus and ProQuest One Business and Google Scholar

Table 2: Inclusion and exclusion criteria

Criterion	Included	Excluded
Language of publication	English	All other languages
Type of publication	Peer-reviewed literature/ articles as well as grey literature/articles.	Literature/articles that lacked relevant content.
Publication date	2024–2002	Older literature
Geographic location	No limitation	-

communities). This sampling strategy deliberately sought heterogeneity within the millennial cohort to ensure findings reflect varied circumstances, literacy levels, and technological access conditions. Teachers were specifically included as a salaried millennial group that routinely uses digital financial services for payroll, benefits, and payments across both urban and rural contexts. Additionally, teachers serve as potential diffusion nodes for embedded financial and digital education within community networks, making their perspectives particularly valuable (Jack 2022, Lusardi et al. 2017). Data collection occurred in both urban/peri-urban settings (including the capital region of Namibia) and rural contexts (farming communities), ensuring representation of the infrastructure and connectivity disparities that characterise Namibia.

Interview protocols were designed to explore four key thematic areas aligned with the research questions: (1) digital literacy and engagement with digital technologies, (2) financial literacy and sources of financial knowledge, (3) technological barriers and infrastructure challenges, and (4) experiences with and preferences for digital financial services. Open-ended questions allowed participants to articulate experiences in their own terms, while targeted probes ensured coverage of specific topics relevant to the conceptual model development.

4.3 Data Analysis

Qualitative data collected through interviews were analysed using thematic analysis following the systematic approach outlined by Kriukow (2021, 2024). This method involves several iterative steps that transform raw interview transcripts into meaningful thematic insights:

Step 1: Coding the data. Interview transcripts were organised in Microsoft Word tables with two columns: one containing verbatim text segments and the other for descriptive codes. Initial coding involved applying descriptive labels that captured the essence of each text segment. For example, early codes included: 'mobile-first preference', 'application reliability frustration', 'family as financial knowledge source'.

Step 2: Clean up and refine codes. Codes were reviewed for consistency both within individual transcripts and across the entire dataset. Redundant codes were merged, vague codes were clarified, and code names were standardised to ensure uniform application. For instance, various codes referring to mobile phone usage were consolidated under 'comfort and preference for mobile devices', while multiple codes about application problems were grouped under 'challenges with digital applications'.

Step 3: Develop thematic framework. Codes were organised into higher-order themes based on patterns of meaning relevant to the research questions. Frequency analysis was conducted by counting how many participants mentioned each code or sub-theme, providing a sense of prevalence. This iterative process generated eighteen themes organised under four primary categories aligned with the research questions (see Table 3 for the complete thematic framework).

The thematic framework was then mapped to the Technology Readiness Levels (TRL) and Financial Readiness frameworks, as well as Rogers' Diffusion of Innovation theory, creating analytical connections between empirical findings and theoretical constructs (Daley 2023, Seldon 2024, Jack 2022). This mapping

revealed how participants' current literacy levels, barriers, and preferences align with different stages of technological and financial readiness, informing the phased implementation approach proposed in the conceptual model.

5. Results and Discussion

This section discusses the analysis and interpretation of findings on enhancing financial independence through digital financial services. Through a series of semi-structured interviews with Namibian millennials, key areas were identified that impact digital literacy, financial literacy, technological barriers, and financial inclusion.

Using thematic analysis eighteen themes were generated that provide an understanding of user experiences and needs (as illustrated Table 3). These themes are organised into four primary categories: Digital Literacy, Financial Literacy, Technological Barriers, and Financial Inclusion, with additional concluding views.

The discussion focuses on how these themes inform the necessity of tailored digital financial services, emphasising the importance of enhanced literacy, overcoming infrastructural challenges, and adopting user-centric designs.

5.1 Results

5.1.1 Digital Literacy

The findings reveal that the millennial demographic in Namibia is largely proficient with digital technologies, particularly mobile devices. Most participants (11 out of 13) showed a strong preference for mobile-first engagement, underscoring their comfort and daily use of these technologies. However, while comfort and proficiency in using digital tools were high, challenges such as functionality issues and application reliability were still prevalent, pinpointing areas for improvements.

Participants extensively used digital financial services for a variety of applications, including online banking, payment platforms like PayToday and eWallet, and purchasing utilities. This universal adoption highlights the integrated role of digital financial tools in managing daily financial activities, indicating a high level of engagement. Nevertheless, gaps in practical financial management, such as budgeting and investing, were evident, necessitating platforms that provide wide-ranging financial literacy and practice-oriented features.

To address these gaps, participants suggested enhancing digital skills through continuous education and user-centric tools that simplify navigation of an application. Recommendations for practical budgeting tools and guided training sessions at various life stages were common, aligning with the proposed TRL and Financial Readiness framework approach where early-stage development should focus on fundamental financial literacy and consumer protection.

5.1.2 Financial Literacy

Financial literacy plays a significant role in decision-making and overall financial management, which is the path to financial independence/well-being. Most participants reported having average to good financial knowledge but indicated a lack of depth in advanced financial skills, such as investing and debt management.

	THEME 1	THEME 2	THEME 3	THEME 4	THEME 5
DIGITAL LITERACY	Preference for mobile devices	Utilisation of digital financial services	Frustrations with digital applications	Desire for digital skills improvement	
FINANCIAL LITERACY	Financial knowledge and cryptocurrency awareness	Sources of financial knowledge	Impact of financial literacy on decision making	Financial literacy for independence	Understanding misconceptions
TECHNOLOGICAL BARRIERS	Technical challenges	Impact of connectivity issues	Solutions to technological barriers		
FINANCIAL INCLUSION	Essential features for financial tools	Building trust in digtal financial services	Personalised digital financial service	Integrated and holistic financial services	
CONCLUDING VIEWS	Moving to a cashless society	Willingness to pay for financial managemet tools			

Table 3: Thematic Analysis Framework for the Interview Responses

Additionally, while there was awareness of cryptocurrencies, actual usage was minimal due to perceived risks.

Participants primarily sourced their financial knowledge from family and friends, supplemented by online resources, and the least used source was professional environments. This multifaceted approach emphasises the need for digital platforms to incorporate robust community and educational features, aligning with the TRL stages and Financial Readiness framework focusing on essential literacy and user engagement in the innovation process.

The influence of financial literacy on decision-making was highlighted by participants, who associated increased knowledge with better financial management and informed decision-making. This underscores the importance of integrating educational modules within digital financial services to facilitate a deeper understanding of financial concepts. The desire for a consolidated view and interactive elements like real-life images in digital tools emphasises the need for user-friendly and visually intuitive and appealing platforms. This reflects the importance of effective instructional design, and user-centric features highlighted in the proposed model.

5.1.3 Technological Barriers

Technological barriers, particularly connectivity issues, emerged as significant obstacles in using digital financial services. Participants in rural areas faced inconsistent network connectivity and frequent power outages, affecting their ability to engage seamlessly with digital financial tools. Despite these challenges, many participants displayed resilience, willing to wait for connectivity to resume rather than abandoning the use of digital tools. This perseverance underscores the essential need for reliable digital infrastructure and user adaptability.

Participants proposed several solutions to mitigate these barriers, including the promotion of smartphone adoption, improving digital literacy through educational campaigns, and enhancing digital infrastructure. These recommendations align with the integrated conceptual method's emphasis on robust infrastructure development and continuous user education, ensuring that technological readiness and user financial capabilities progress in tandem.

Government intervention and investment in infrastructure were deemed important, along with regulatory flexibility to introduce alternative internet solutions like Starlink. Ensuring affordability of digital services was also highlighted, reflecting the need for inclusive policies that reduce access barriers for lower-income groups. The multifaceted approach suggested by participants aligns with the proposed TRL method and Financial Readiness framework, targeting infrastructural improvements, educational initiatives, and regulatory support.

5.1.4 Financial Inclusion

Essential features for digital financial services, identified by participants, include user-friendly interfaces, consolidated financial views, and immediate assistance mechanisms. The emphasis on visual aids and interactive guidance tools indicates the need for platforms that cater to varying literacy levels through intuitive design and educational support, aligning with the user-centric innovation approach of the proposed model.

Building trust in digital financial platforms was linked to security measures, reputable endorsements, and transparency. Participants suggested robust security features such as multi-factor authentication, and visible endorsements from industry professionals to enhance trust. Educational campaigns to demystify platform operations and reinforce security were also recommended, mirroring the importance of transparent communication and user education in fostering trust.

Personalised digital financial advice was well-received, with 62 per cent of participants expressing willingness to use such platforms. The preference for a hybrid approach, integrating digital tools with human oversight, reflects the balanced perspective millennials have towards automated financial advice. This aligns with the proposed model's focus on creating personalised and responsive digital solutions that combine technological convenience with human expertise.

Lastly, participants underscored the need for integrated and holistic financial services that provide a comprehensive view of their financial portfolios and offer actionable insights. Interactive educational content and autonomy in financial management were seen as critical features, reinforcing the model's emphasis on user empowerment and continuous innovation.

5.2 Discussion

The interview data reinforces the argument that digital financial services must be meticulously tailored to user needs, particularly by enhancing both digital and financial literacy, to realise the goal of widespread financial independence. The correlation between digital literacy and user engagement with financial services underscores the importance of fostering technological competence as a primary step.

5.2.1 Digital Literacy and Engagement

Participants' strong preference for mobile-first engagement aligns with literature identifying millennials as 'digital natives' (Roman 2017). However, technological challenges and application reliability issues frequently emerged, indicating that despite high engagement, functionality and usability gaps must be addressed. This supports the proposition in the conceptual method that early TRL stages should focus on foundational digital literacy and usability (Razumovskaya & Razumovskiy 2020).

Implementing extensive training modules within financial platforms aligns with research that advocates for ongoing education to sustain digital competencies (ManpowerGroup 2023). Employing user-driven innovation to refine these interfaces ensures the platform remains aligned with evolving user needs (Thomke & Hippel 2002).

5.2.2 Financial Literacy and Holistic Management

Gaps in knowledge about advanced financial management, including investing and debt handling, are consistent with global research on millennial financial literacy (Yakoboski, Lusardi & Hasler 2018). The reliance on family, friends, and increasingly digital resources for financial knowledge highlights the potential for financial platforms to become central educational hubs, corroborating the need for the TRL framework and the Financial Readiness framework to integrate continuous, practical learning opportunities.

The association between financial literacy and effective decision-making underscores the proposed model's focus on personalised, actionable financial education modules, emphasising practical applications (Khan et al. 2021), and enabling users with consolidated views and interactive guidance, which then validates the inclusion of user-centric design principles in the proposed model.

5.2.3 Technological Barriers and Resilience

Participants' resilience in the face of technological challenges, such as poor connectivity, highlights an important insight: users' willingness to engage with digital tools despite infrastructural challenges. This aligns with literature emphasising the need for strong infrastructure and user-focused solutions to surmount these obstacles (Biermann 2024).

Addressing these obstacles through enhanced infrastructure with the assistance of government intervention, and regulatory flexibility aligns with the need for multifaceted approaches integrating infrastructural and educational advancements to ensure equitable access to technology and services that is more affordable to Namibian users (Manyika, Lund, Singer, White & Berry, 2016).

5.2.4 Enhancing Financial Inclusion Through User-Centric Approaches

Participants underscored that trust hinges on robust security and transparency (e.g., secure logins, clear protection cues), reinforcing evidence that secure, transparent systems encourage adoption (Siddik & Kabiraj 2020, Jhonson et al. 2023). They also asked for embedded learning features such as interactive educational content and safe, realworld simulations, aligning with findings that incontext, visual education improves capability and uptake (Lusardi et al. 2017). Preferences for personalised digital advice, often in a hybrid model with human oversight, corroborate the need for comprehensive, easily navigable solutions that balance convenience with reassurance (Ferreira 2024).

At the same time, the data show that literacy and infrastructure are joint prerequisites for inclusion. Even individuals from digitally proficient millennial cohorts encounter issues related to functionality and reliability, underscoring the necessity for ongoing, pragmatic education in tandem with consistent access to reliable connectivity and devices (Manyika et al. 2016, Khera et al. 2022). Participants' recommendations regarding promoting smartphone adoption, targeted literacy campaigns, and public–private investment in network reliability and cybersecurity mirror ecosystem conditions identified in prior studies as necessary for inclusive DFS scale (Manyika et al. 2016, Khera et al. 2022, Technology.org 2024). These insights inform the development of an integrated conceptual model that incorporates a phased roll-out guided by Technology Readiness Levels, customised engagement strategies based on adoption segments from the Diffusion of Innovation framework, and alignment with users' financial preparedness. Without simultaneously enhancing literacy and addressing technical barriers, the pathway to widespread financial independence remains constrained.

Compared with prior DFS evidence across emerging markets, much of the existing research emphasises infrastructure, affordability, security, and usability as prerequisites for inclusion and adoption. Notable examples include McKinsey's analysis of DFS growth enablers (Manyika et al. 2016), IFC's review of rollout challenges for emergingmarket banks (IFC, 2017), studies in the role of digital finance in inclusion and related security/privacy considerations (Siddik & Kabiraj 2020), and the IMF's digital financial inclusion index (Khera et al. 2022). Additional work has also explored millennial preferences for digital versus human advice (Ferreira 2024), Compared to the foregoing, this study contributes to the following Namibiaspecific observations: (1) users prioritise trust features that include fraud reporting, onetap account freezing, a sandbox 'safemoney' learning mode and a consolidated multiinstitution view; (2) resilience in weak connectivity environments highlights the need for mobilefirst, lightweight, offlinecapable solutions and taskbased device switching; and (3) there is a notable preference for hybrid advice with lowfriction execution (e.g., AIassisted processes and minimal administration). These findings localise and concretise broader calls for secure, navigable, literacyembedded DFS (see also Khan & Akhtar 2021, Siddik & Kabiraj 2020)', and align with ecosystem prerequisites identified in prior work (Manyika et al. 2016, Khera et al. 2022). The TRLmapped and segmenttailored rollout converts these validated user requirements into a practical implementation plan suited to Namibia's context.

6. Conclusion

In an era of technological evolution, digital financial services hold the promise of transforming financial independence from an ideal into a tangible reality. However, the journey revealed by this study emphasises that achieving this requires more than just technological advancement. The insights drawn from Namibian millennials suggest a path that intertwines digital financial services with users' readiness, literacy levels, and infrastructural realities.

Achieving financial independence goes beyond personal achievement; it is also a societal milestone. This raises the question of how digital tools can go beyond their transactional nature to become truly transformative. The study highlights the need for digital financial platforms to advance beyond mere functionality,

emphasising the importance of ongoing user education, strong infrastructural support, and trust-building initiatives.

This study emphasises that bridging the gap between available technologies and user needs is an important factor. By employing a thoughtful integration of the Technology Readiness Levels framework, the Financial Readiness framework, and Rogers' Diffusion of Innovation theory, digital tools can be developed in a phased, user-centric approach.

The insights of Namibian millennials highlight their adaptability and resilience, even when confronted with technological obstacles, which suggests a potential hidden need/demand for dependable and empowering financial solutions. Therefore, a recommended course of action could be to improve infrastructure options, promoting secure trustworthy digital environments. A further course of action to consider is the integration of tailored educational modules that enhance users' financial decision-making capabilities.

Trust remains central to fostering user engagement and confidence in digital financial platforms. Prioritising security and transparency reveal a broader imperative to create systems that genuinely serve people's needs. Moreover, by adopting hybrid models that combine digital efficiency with a human touch, it can address users' varying levels of comfort and proficiency. This inclusive approach not only enhances their interaction with digital financial services but also builds a foundation for a more engaged and confident user base. By focusing on trust and accessibility, digital finance can be transformed into a catalyst for empowerment.

To truly transform the financial sector, technological innovation must be seamlessly aligned with the practical needs of users at every step. Embracing a holistic approach that prioritises financial and digital literacy, including infrastructure development and user-centric design, holds the promise of creating a more inclusive financial ecosystem. By actively engaging users through continuous feedback loops and ensuring that technological solutions remain relevant and accessible, stakeholders can turn digital financial services into powerful catalysts for economic empowerment. This not only bridges existing gaps but also paves the way for equitable financial opportunities that can enrich lives and drive societal progress.

The implications of fostering financial independence through digital means are far-reaching – it can stimulate socio-economic growth, enhance personal empowerment, and contribute significantly to societal welfare. To realise this vision, it is imperative to meticulously tailor services to the diverse needs and circumstances of all users, ensuring that digital financial transformation becomes a bridge to empowerment rather than a barrier. This research invites us to reimagine financial systems that not only integrate advanced technology but also deeply understand human contexts, ultimately enriching lives and driving societal advancement. By embracing this approach, digital finance can be transformed into a powerful catalyst for widespread economic adoption and inclusive growth.

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About the author

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Seasoned Industrial Engineer with 15+ years' experience in technology transformation, operations leadership, and continuous improvement. Expert in strategic management, technology implementation, and leading cross-functional teams to deliver innovative solutions and operational excellence.

Core Skills

- Technical: AI & Machine Learning, Cloud Computing (SAP, Thoughtonomy), Project Management (Agile, KANBAN), Strategic Technology Leadership, Robotic Process Automation (Blue Prism, Openbots)
- Soft: Effective Communication, Visionary Leadership, Stakeholder Management, Analytical & Critical Thinking, Innovation, Strategic Planning, Emotional Intelligence

Professional Experience

Senior Continuous Improvement Manager & PMO – *Momentum Metropolitan Namibia (Nov 2022 – Present)*
- Established and lead a department focused on continuous improvement and innovation.
- Implemented cloud-based RPA, reducing operational costs by one-third.
- Leveraged AI for process efficiency and digitized facilities management.
- Act as second in command to the COO, supporting strategic decisions.

Head of Intelligent Automation – *Old Mutual Namibia (Dec 2017 – Oct 2022)*
- Launched and led the Intelligent Automation department (RPA, fintech).
- Achieved over 1 million minutes in operational savings.
- Developed frameworks for business efficiency and aligned operations with organizational goals.

Supply Chain Business Anchor / Senior Industrial Engineer – *Shoprite, South Africa (2009 – 2017)*
- Led digital transformation to SAP across supply chain.
- Enhanced warehouse performance and reduced errors using advanced tech.
- Managed planning and training for 1,700+ team members.

Industrial Engineer – *DCM Consulting South Africa (2008)*
- Benchmarking and strategic touchpoint implementation to gain client satisfaction.

Education

- Master of Engineering Management (MEM), University of Stellenbosch, 2024
- Bachelor of Engineering – Industrial, University of Stellenbosch, 2007
- Strategic Management & Innovation Specialization (Copenhagen Business School, Coursera)
- Certifications: Blue Prism (RPA), KANBAN, Emotional Intelligence, Project Management, AutoCAD Fundamentals

Languages

- Afrikaans (fluent)
- English (fluent)