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DIGITAL FINANCIAL LITERACY AND FINANCIAL INCLUSION IN INDONESIA'S DIGITAL ECONOMY

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Abstract : *The digital economic transformation in Indonesia has expanded public access to financial services through the development of fintech, digital banking, and electronic payment systems. However, this increased access has not been matched by a corresponding ability to understand and manage digital financial risks. This study aims to analyze the current condition of digital financial literacy (DFL) in Indonesia, the challenges that hinder digital financial inclusion, and strategies for strengthening DFL policies. Using a qualitative descriptive approach based on literature and document analysis, this research draws on data from Financial Services Authority and Central Statistics Agency (SNLIK 2024–2025), Bank Indonesia, AFTECH, as well as literature from the OECD, World Bank, and IMF. The findings reveal that although financial inclusion has reached 80.51%, the DFL rate remains relatively low (around 54–56%), creating a gap between digital access and financial capability. Social and behavioral factors, combined with weak inter-agency coordination, exacerbate online fraud risks and erode public trust. Therefore, enhancing DFL requires cross-institutional policies, integration of digital literacy into the national financial inclusion strategy, and community-based financial education programs. Improving DFL is key to building a secure, inclusive, and equitable digital financial ecosystem that supports Indonesia's sovereign digital economy.*

Keywords: *digital financial literacy, financial inclusion, digital economy, financial behavior, Indonesia*

1. Introduction

Digital transformation has fundamentally reshaped how societies interact with financial systems. In Indonesia, the rapid digitalization of financial services, driven by innovations such as fintech platforms, QRIS, BI-FAST, and Bank Indonesia's *Digital Rupiah* initiative, has broadened public access to diverse digital financial products. While this digitalization strengthens the national payment system and enhances inclusion opportunities, it also introduces new challenges related to people's ability to understand risk, security, and digital financial governance.

The *National Survey on Financial Literacy and Inclusion (SNLIK) 2025* conducted by Financial Services Authority (OJK) and Central Statistics Agency (BPS) indicates that Indonesia's national financial inclusion index reached 80.51%, while the financial literacy index stood at 66.46% (OJK & BPS, 2025). These figures improved from the 2024 SNLIK results (inclusion 75.02% and literacy 65.43%), reflecting progress in expanding financial access nationwide. However, literacy growth has not kept pace with access expansion. In other words, more Indonesians are connected to digital financial services, yet not all understand how to use them safely and responsibly. This imbalance exemplifies what the OECD (2023) terms *vulnerable inclusion*—a condition where individuals have digital financial access but lack sufficient digital-financial literacy and protection against online financial risks.

Within this context, Digital Financial Literacy (DFL) serves as a critical bridge between financial technology advancement and the behavioral readiness of users. The OECD/INFE (2023) defines DFL as *a combination of knowledge, skills, attitudes, and behaviors enabling individuals to understand and safely use digital financial services effectively and ethically to improve their financial well-being.* This concept emphasizes not only technical competence but also risk awareness and prudent financial decision-making. According to ASEAN (2021) and ADBI (2022), DFL constitutes a prerequisite for sustainable digital financial inclusion because literacy underpins public trust and active participation in the digital ecosystem.

Empirical research in Indonesia reinforces the significance of DFL in shaping financial behavior. Setiawan et al. (2020) found that higher DFL levels correlate positively with saving habits and digital consumption control, whereas low DFL triggers impulsive spending and susceptibility to phishing, fake investment schemes, and scam lending (Safer Internet Lab, 2024; Kipngetich, 2025). The *Global Findex Database* (World Bank, 2021) also highlights that in many developing countries, the surge in digital transactions has not been accompanied by adequate digital literacy, thereby creating a new divide between those capable of managing fintech tools and those vulnerable to digital exclusion.

From the perspective of Indonesia's national development, digital financial literacy has been acknowledged as a strategic policy pillar by multiple institutions. The OJK, through its *National Strategy for Indonesian Financial Literacy (SNLKI) 2021–2025* and SNLIK 2025, positions DFL enhancement as a foundational element of digital financial inclusion, especially for youth, students, and MSME actors (OJK, 2025). Bank Indonesia, in its *Indonesian Payment System Blueprint 2025*, underscores the importance of integrating DFL with the development of secure and inclusive payment innovations (Bank Indonesia, 2023). Meanwhile, the *Financial Action Task Force* (FATF, 2025) emphasizes balancing digital financial expansion with the mitigation of financial crime risks through a risk-based approach to inclusion policies.

Building upon this background, the present study aims to analyze the relationship between digital financial literacy and financial inclusion within Indonesia's evolving digital economy, with particular attention to structural and behavioral challenges that hinder optimal utilization of digital financial services. The study employs a qualitative descriptive approach grounded in an extensive literature review to examine theoretical frameworks, policy documents, and empirical data relevant to DFL and financial inclusion. The analysis seeks to enrich academic discourse on digital financial literacy while offering strategic policy recommendations to strengthen Indonesia's digital financial system toward inclusivity, safety, and sustainability.

2. Literature Review And Theoretical Background

This chapter discusses the theoretical foundation and literature review that form the analytical basis for examining the relationship between digital financial literacy (DFL) and financial inclusion within the context of Indonesia's digital economy. It deepens the conceptual understanding of DFL as a multidimensional competence encompassing four key elements: knowledge, skills, attitudes, and digital-financial behaviors.

The review explores how DFL functions as both an enabler and a safeguard for digital financial inclusion by bridging the gap between technological innovation and user capability. The discussion is structured around three major theoretical perspectives widely used in financial literacy and behavioral research: the Technology Acceptance Model (TAM), Behavioral Finance Theory, and Amartya Sen's Capability Approach. These perspectives collectively explain the mechanisms of financial technology adoption, the behavioral patterns of users, and the socio-economic dimensions of human capability that determine meaningful financial participation in digital ecosystems.

By integrating these theoretical frameworks with empirical findings from both global and Indonesian studies, this chapter constructs a conceptual framework that positions DFL as a prerequisite for achieving safe, equitable, and sustainable digital financial inclusion. Strengthening DFL is therefore not merely an educational initiative but a strategic foundation for building public trust, promoting ethical financial behavior, and ensuring that digital transformation contributes to inclusive economic development.

2.1 Digital Financial Literacy: Definition, Dimensions, and Indicators of Digital Behavior

Digital Financial Literacy (DFL) is one of the key competencies determining the success of public participation in the modern digital financial ecosystem. According to the OECD/INFE Toolkit for Measuring Financial Literacy and Financial Inclusion (2022), DFL is defined as *a combination of knowledge, skills, attitudes, and behaviors that enable individuals to make sound financial decisions and use digital financial services safely, efficiently, and responsibly.* This definition emphasizes that DFL extends beyond mere technical abilities in operating digital devices; it also integrates traditional financial literacy with broader digital competencies, including an understanding of data privacy risks, cybersecurity awareness, and the credibility of online financial service providers.

Through adequate DFL, individuals are expected to navigate a highly complex algorithm-based digital financial landscape where information, transactions, and financial decisions occur instantaneously and across borders. The OECD/INFE International Survey of Adult Financial Literacy (2023) and the OECD/INFE Toolkit (2022) outline four core components that together form the DFL framework: knowledge, attitudes, skills, and behavior.

The knowledge dimension encompasses an understanding of digital financial concepts and products such as e-money, internet banking, peer-to-peer (P2P) lending, and digital payment gateways, along with knowledge of users' rights and obligations in digital environments. The attitude dimension reflects openness to digital financial innovation and the perception of risks associated with digital transactions. Skills refer to the technical ability to operate digital financial services securely and effectively, while behavior indicates the actual financial conduct of individuals in managing digital transactions consciously and responsibly.

Collectively, these four dimensions form an adaptive competency that determines the quality of people's participation in the digital financial system. Countries with higher DFL scores tend to show positive correlations with financial stability, public trust, and the quality of digital financial inclusion (OECD, 2023). In Indonesia, recent studies and industry reports indicate that the overall level of digital financial literacy remains moderate, lower than general financial literacy and slightly below the global average (OECD/INFE, 2023; AFTECH, 2024). This suggests that while the adoption of digital financial services is growing rapidly, significant comprehension and behavioral gaps remain, particularly regarding cybersecurity awareness and data-driven decision-making.

Therefore, DFL functions not only as an educational instrument but also as a socioeconomic capability that enables individuals to participate safely, intelligently, and responsibly in the digital economy. From a behavioral perspective, DFL indicators can be classified into three behavioral layers:

1. Preventive behavior, which reflects individuals' vigilance toward digital threats such as phishing, data theft, and online scams;
2. Productive behavior, which represents the effective use of digital tools for economic activities such as saving, investing, or managing personal budgets; and

3. Reflective behavior, which indicates the ability to evaluate and correct one's digital financial decisions over time.

This tripartite behavioral framework aligns with the OECD's Recommendation on Financial Literacy (2020), which emphasizes resilience and self-evaluation as critical components of financial capability in digital environments.

Within the context of Indonesia's long-term development, strengthening DFL is a crucial precondition for achieving the Digital Economy 2045 Vision, which envisions a sovereign, inclusive, and trusted digital ecosystem. The convergence of financial literacy and digital literacy, supported by national initiatives such as the *Indonesian Payment System Blueprint 2025* and the *National Strategy for Financial Literacy 2021–2025,* positions DFL as a foundational pillar for building a fair and sustainable digital financial inclusion framework.

Ultimately, digital financial literacy represents more than individual competence, it embodies a collective capability necessary for Indonesia's digital transformation. By fostering knowledge, positive attitudes, technical proficiency, and responsible behavior, DFL not only enhances personal financial well-being but also strengthens the resilience, transparency, and inclusiveness of the national financial system.

2.2 Financial Inclusion in the Digital Era: Measuring Access, Usage, and Quality of Digital Financial Services

In the context of the digital economy, *financial inclusion* no longer refers merely to an individual's access to formal financial services; it also encompasses the extent of usage and the quality of financial services that directly influence financial well-being. According to the World Bank (2019) and International Monetary Fund (Barajas, 2020), financial inclusion is defined as a condition in which individuals and businesses have access to financial products and services that meet their needs, are provided responsibly, and contribute to improving economic welfare. The digitalization of financial systems has thus shifted the paradigm of inclusion from *account ownership* to *account usability*, where digital access must be complemented by users' ability to use services safely, productively, and meaningfully (World Bank, 2021).

In the framework developed by the IMF and World Bank, the success of digital financial inclusion is measured across three interrelated dimensions: access, usage, and quality.

- The access dimension emphasizes the availability of digital infrastructure, formal financial networks, and enabling regulatory environments that ensure affordability and accessibility for all social groups.
- The usage dimension focuses on the frequency and depth of engagement with digital financial services, how often individuals use digital platforms for productive financial activities such as savings, payments, or investments.
- Finally, the quality dimension captures the degree of security, relevance, consumer protection, and transparency embedded in financial services, determining whether digital inclusion genuinely enhances public trust and welfare.

In Indonesia, these three dimensions face both structural and behavioral challenges. Data from the National Survey on Financial Literacy and Inclusion (SNLIK) 2024–2025 conducted by OJK and BPS show that although 80.51% of the population has access to formal financial services, only around 53% regularly use digital financial platforms, and fewer than 40% use them for productive purposes such as saving or investing (OJK & BPS, 2025). This discrepancy illustrates a *usage gap,* a widening divide between digital connectivity and meaningful inclusion.

Moreover, the quality of digital financial participation remains constrained by low levels of digital trust. The Safer Internet Lab (2024) reports that incidents of online fraud, identity theft, and financial scams have eroded public confidence, particularly among new adopters of fintech

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and mobile payment systems. Compounding this issue, UNCTAD (2021) highlights that the expansion of digital access without parallel progress in literacy and governance may increase financial vulnerability and generate new forms of digital exclusion, especially among rural and low-income populations.

The access dimension also reveals significant regional disparities. Approximately 22% of residents in Eastern Indonesia still face limited connectivity and digital device ownership, leaving them dependent on cash-based transactions and informal financial systems (Kemenko Perekonomian, 2025). These infrastructural inequalities reflect a persistent *digital divide*, in which inadequate broadband coverage, affordability constraints, and low digital skills restrict equitable participation in digital finance. The absence of robust *electronic Know Your Customer (e-KYC)* frameworks for unregistered populations further exacerbates the exclusion of millions from formal financial networks. As the World Bank (2021) observes, the effectiveness of digital inclusion strategies depends on the synergistic interaction between financial literacy, internet connectivity, and institutional trust.

From a behavioral standpoint, the challenges are equally pressing. Many users of e-wallets, digital credit services, and mobile banking still demonstrate weak awareness of data security, privacy management, and ethical digital conduct. The AFTECH Fintech Report (2024) finds that more than half of fintech users in Indonesia are unaware of the terms and conditions governing their transactions, and a substantial proportion admit to sharing personal credentials or PINs with others. This behavioral vulnerability undermines not only personal financial safety but also the stability of the broader digital ecosystem.

In comparison with other emerging economies, Indonesia's progress in digital financial inclusion can be categorized as partial inclusion, a stage in which individuals are digitally connected but not yet fully empowered. The OECD/INFE (2023) describes this as *vulnerable inclusion*, where people have access to digital financial services but lack the literacy and risk awareness necessary to protect themselves from digital financial threats. In such cases, inclusion becomes superficial, as participation is confined to basic transactions rather than informed and responsible financial engagement.

To move beyond this stage, Indonesia must adopt a multidimensional approach that integrates literacy, infrastructure, and consumer protection. First, *access* must be broadened through investment in digital connectivity, particularly in rural and underserved areas. Second, *usage* must be deepened by embedding financial education into community empowerment programs, ensuring that individuals use digital platforms for savings, business growth, and long-term financial planning rather than purely for consumption. Third, *quality* must be enhanced through stringent regulatory oversight and continuous improvements in data protection, privacy, and cybersecurity frameworks.

The OECD (2023) emphasizes that genuine digital financial inclusion is achieved only when users are not merely consumers but also informed agents capable of managing their own financial risks. Similarly, UNCTAD (2021) argues that the inclusion agenda must evolve from numerical access indicators toward qualitative measures of empowerment and protection.

In the Indonesian context, such a transition requires cross-sector collaboration among regulators, technology providers, educational institutions, and local governments to ensure that every layer of society, urban and rural, male and female, young and old, can benefit equally from the digital finance revolution. Financial inclusion, in its truest sense, must empower individuals not only to connect but to thrive safely within the digital economy.

Ultimately, digital financial literacy (DFL) is the linchpin that transforms access into effective usage and sustainable quality. Without DFL, digital expansion risks reinforcing inequality rather than reducing it. By contrast, when literacy is integrated into inclusion strategies, digital finance becomes a tool for empowerment, transparency, and economic justice, core values for building Indonesia's inclusive and sovereign digital economy.

2.3 Link between Digital Financial Literacy and Financial Inclusion: A Theoretical Perspective

The relationship between digital financial literacy (DFL) and digital financial inclusion is multidimensional rather than linear, involving technological, behavioral, and social capability aspects. These dimensions explain how DFL enhances access, usage, and quality of digital financial services, and how low literacy levels can generate new barriers in the digital economy. To conceptualize this relationship, three theoretical frameworks are commonly applied: the Technology Acceptance Model (TAM), Behavioral Finance Theory, and the Capability Approach introduced by Amartya Sen.

The Technology Acceptance Model (TAM), developed by Davis (1989), explains how individuals accept and use technology. In the context of digital finance, TAM assumes that a person's intention to use digital financial services is influenced by two main factors: perceived usefulness (PU) and perceived ease of use (PEOU). In the digital era, both factors are highly influenced by one's level of DFL. Individuals with higher digital-financial literacy are more likely to recognize the usefulness of financial technologies, such as transaction efficiency, accessibility, and potential financial benefits, while those with limited literacy often perceive digital finance as complex, risky, or difficult to use (OECD, 2022).

Empirical studies support this link. Gumilar (2024) found that DFL strengthens perceived behavioral control and trust in digital financial systems, which subsequently increases technology adoption among Indonesian users. Similarly, the OECD/INFE (2023) report shows that countries with higher DFL levels, such as South Korea and Finland, record greater adoption of mobile banking and digital investment platforms compared to those with lower literacy levels. Therefore, DFL acts as a mediator between technology and financial behavior—bridging the gap between technological availability and user readiness. Within the TAM framework, DFL reinforces the perception of ease of use through better digital competence and enhances perceived usefulness through understanding the economic and financial value of digital finance.

While TAM emphasizes technological factors, Behavioral Finance Theory highlights the psychological and behavioral dimensions of financial decision-making. Pioneered by Kahneman and Tversky (1979) and later expanded by Thaler (1993), this theory argues that individuals are not always rational when making financial decisions because they are influenced by cognitive biases, emotional impulses, and subjective risk perceptions. In digital environments, these biases are amplified by the immediacy and persuasive nature of online interactions. Users with low DFL are more prone to impulsive or uninformed financial behavior, such as investing in fraudulent schemes, taking online loans without understanding interest rates, or sharing personal data with unverified parties (Safer Internet Lab, 2024).

Digital financial literacy functions as a corrective mechanism to such behavioral biases. The OECD (2023) notes that higher DFL improves one's ability to process financial information critically, distinguish between real and perceived risks, and exercise self-discipline in digital financial behavior. In Indonesia, Astuti (2025) found that higher DFL not only improves saving and investment behavior but also reduces impulsive consumption through stronger self-regulation and risk awareness. In this sense, DFL serves as a behavioral regulator that helps individuals navigate challenges such as information overload, social proof bias (trusting unverified online trends), and gamification traps found in financial applications. Without literacy, users are easily driven by emotion rather than informed reasoning when making financial decisions. Consequently, Behavioral Finance Theory positions DFL as an instrument that enhances adaptive rationality in the digital financial environment, the capacity to make informed, risk-aware, and self-controlled decisions.

The Capability Approach developed by Amartya Sen (1999, 2009) provides a normative complement to these two frameworks. Sen argues that true well-being is not defined by the possession of resources but by *capabilities,* the real opportunities individuals have to lead the lives they value. In the digital finance context, DFL represents a form of capability that enables individuals to participate safely, independently, and productively in the modern financial system. From this perspective, financial inclusion is not only about access but about *meaningful participation,* the ability to use financial services to enhance one's welfare. According to UNCTAD (2021) and the World Bank (2025), DFL expands people's functional capabilities, including their ability to manage money, save for the future, and utilize credit for business development. Without adequate digital-financial literacy, access alone may exacerbate social vulnerability, creating digital debt traps and new forms of exploitation.

In Indonesia, this conceptual lens is highly relevant. The Coordinating Ministry for Economic Affairs (Kemenko Perekonomian, 2025) highlights that low DFL among low-income groups limits their ability to fully benefit from national financial inclusion programs, due to insufficient understanding of digital product features, data security, and financial planning. Thus, DFL serves not only as an economic tool but also as a social capability determining how far individuals can transform digital access into tangible financial well-being.

Conceptually, the Capability Approach positions DFL as a bridge between *formal inclusion* and *substantive inclusion,* from merely "owning an account" to "having control" over financial decisions that affect one's life. As DFL improves, individuals move from being passive consumers of technology to active agents shaping financial behavior and contributing to a more equitable digital economy.

Taken together, the three theories complement one another in explaining the DFL–financial inclusion nexus. The Technology Acceptance Model shows how DFL facilitates financial technology adoption; Behavioral Finance Theory explains how DFL enhances rationality and mitigates bias in financial decision-making; and the Capability Approach illustrates how DFL empowers individuals socially and economically to achieve meaningful participation in the digital economy.

Figure 1 conceptually illustrates that digital financial literacy, comprising knowledge, skills, attitudes, and behaviors, forms the foundation for inclusive and high-quality digital financial participation. Through these three theoretical pathways, DFL simultaneously strengthens technological adoption, behavioral rationality, and social empowerment, ultimately improving financial access, usage, and quality, while reinforcing financial well-being and economic sovereignty in Indonesia's path toward *Digital Economy 2045*.

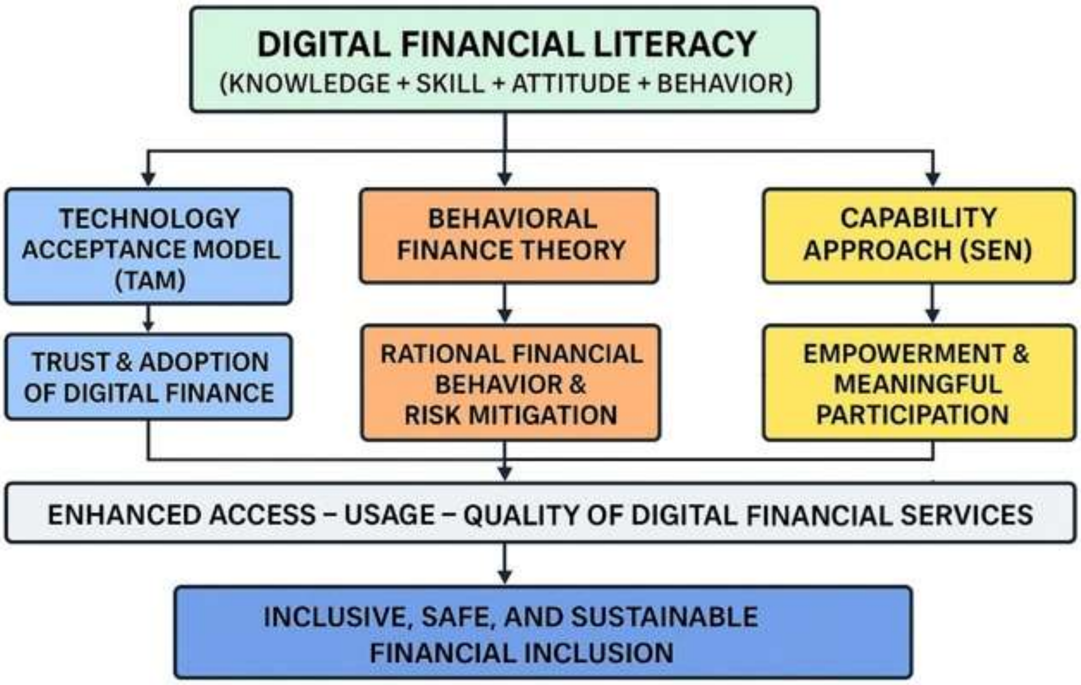

Figure 1. Theoretical Framework of Digital Financial Literacy
and Financial Inclusion in Indonesia's Digital Economy Era.

3. Methodology

Given that the issues of digital financial literacy (DFL) and financial inclusion are multidimensional, encompassing behavioral, social, economic, and policy aspects, this study adopts a qualitative descriptive approach based on library research. This method was chosen to develop a comprehensive, contextual, and integrative understanding of DFL and its relationship with financial inclusion. A qualitative library-based approach allows for an in-depth analysis of DFL not only from a numerical or statistical perspective but also through the social and policy dimensions that shape digital financial behavior in Indonesia.

According to Zed (2014), library research aims to collect, interpret, and synthesize secondary data systematically to produce a comprehensive conceptual understanding. Therefore, this study focuses on exploring the conceptual interrelationship between digital financial literacy, financial behavior, and digital financial inclusion policies in Indonesia. The analysis integrates data and theoretical perspectives from both national and international sources, including those published by the Financial Services Authority of Indonesia (*Otoritas Jasa Keuangan*, OJK), Bank Indonesia (BI), the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF), and the World Bank.

All data in this study are secondary data, drawn from official documents, institutional reports, and recent academic literature. Data collection followed a systematic selection process to ensure the credibility, relevance, and authenticity of the sources. The primary data sources include:

1. National-level surveys: The *2024–2025 National Survey on Financial Literacy and Inclusion (SNLIK)* conducted jointly by OJK and the Central Statistics Agency (*Badan Pusat Statistik*, BPS), which captures Indonesia's current state of financial and digital-financial literacy.

2. Institutional and industry reports: The *Indonesian Payment System Blueprint 2025* (Bank Indonesia, 2023) and the *2024 AFTECH Fintech Report*, both of which describe the development of digital financial technology (fintech), user behavior, and digital consumer protection issues.
3. International frameworks: Key global references such as the *OECD/INFE Toolkit for Measuring Financial Literacy and Financial Inclusion* (2022), the *OECD International Survey of Adult Financial Literacy* (2023), and the *World Bank Global Findex Database* (2021, 2025), which contextualize Indonesia's performance in global comparisons.
4. National development policies: Strategic documents such as the *2025–2029 National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional, RPJMN)*, the *2025–2045 National Long-Term Development Plan (Rencana Pembangunan Jangka Panjang Nasional, RPJPN)*, and the *National Strategy for Indonesian Financial Literacy (SNLKI) 2021–2025*, which outline the national policy direction toward inclusive and sustainable digital transformation.

The data analysis combines content analysis and thematic synthesis. Content analysis was applied to identify key concepts, ideas, and argument patterns within the selected literature and policy documents addressing DFL, digital financial behavior, and financial inclusion. Following Krippendorff's (2013) stages of content analysis: text collection, thematic coding, interpretation, and categorization; the study systematically derived the dominant narratives and conceptual relationships surrounding DFL.

Subsequently, thematic synthesis was conducted to organize and interpret the findings across three major analytical themes:
1. The current condition of DFL in Indonesia;
2. The gaps and challenges of digital financial inclusion; and
3. The policy implications and strategic approaches for strengthening DFL.

This dual-method design allows for both descriptive and interpretive insights: while content analysis focuses on conceptual patterns, thematic synthesis provides a cross-source integration that supports policy-oriented interpretation.

The validity of the findings was maintained through source triangulation and thematic verification. Triangulation was performed by comparing national survey data (OJK & BPS, 2025) with global datasets (OECD, 2023; World Bank, 2021) and academic literature. Thematic verification ensured the consistency of interpretations with theoretical frameworks and Indonesia's socio-economic context.

This approach follows the principle of contextual validity proposed by Creswell and Poth (2018), which emphasizes alignment between theory, empirical evidence, and local realities. By validating themes across multiple data sources and theoretical lenses, the study ensures analytical rigor and contextual reliability.

Overall, this methodology is designed not only to describe existing phenomena but also to interpret their deeper implications and provide policy-oriented insights. By combining qualitative analysis with thematic synthesis, the research aims to produce a comprehensive understanding of how DFL contributes to strengthening digital financial inclusion in Indonesia.

The methodological design also ensures that the study goes beyond descriptive narration toward practical implications, highlighting how enhanced digital financial literacy can foster public trust, reduce digital vulnerability, and support the development of a secure, inclusive, and sustainable digital financial ecosystem. Ultimately, this research contributes conceptually to the formulation of Indonesia's national digital literacy policies and provides a framework for promoting financial inclusion as a cornerstone of the country's transition toward a sovereign and inclusive digital economy by 2045.

4. Results And Discussion

This chapter presents the findings and discussion derived from a comprehensive literature-based analysis of various national and international sources concerning the state of digital financial literacy (DFL) and financial inclusion in Indonesia. Using a qualitative descriptive approach, the analysis identifies key patterns, trends, and thematic relationships among digital-financial literacy, digital financial behavior, and financial inclusion strategies within the broader framework of Indonesia's digital economic development.

The discussion is organized into three main sections. The first examines the current condition and characteristics of DFL in Indonesia. The second explores the persistent challenges and gaps that continue to hinder equitable access to and utilization of digital financial services. The third addresses the policy implications and strategic directions for strengthening DFL as the foundation for a safe, productive, and sustainable form of financial inclusion.

Overall, this chapter aims to demonstrate that the success of Indonesia's financial digitalization depends not only on technological innovation or infrastructure expansion but also on the population's level of digital financial literacy and the effectiveness of national policies that integrate literacy, security, and inclusion into the country's digital financial ecosystem.

4.1 The Condition of Digital Financial Literacy in Indonesia

The rapid transformation of Indonesia's digital economy has fundamentally reshaped the way people interact with financial services. The expansion of fintech platforms, the integration of payment systems such as QRIS and BI-FAST, and the widespread use of mobile banking and e-wallet applications have accelerated the pace of financial inclusion. However, this increasing access has not been matched by sufficient progress in digital financial literacy (DFL). The 2024–2025 National Survey on Financial Literacy and Inclusion (SNLIK) conducted by OJK and BPS indicates that the national financial literacy index reached 66.46 percent, while the financial inclusion index stood at 80.51 percent (OJK & BPS, 2025). The gap between these figures suggests that although a large share of the population now has access to digital financial services, many still lack the capability to use them safely, efficiently, and responsibly.

To provide a more measurable understanding of Indonesia's DFL standing, this study proposes a conceptual estimate of national DFL levels between 54 and 56 percent. This estimate is not based on a single survey but derived from an analytical synthesis of several relevant secondary data sources:

1. The 2024 SNLIK survey, which reports general financial literacy at 65.2 percent and notes that 37 percent of respondents still share their PINs or passwords, reflecting limited digital security awareness.
2. The 2023 OECD/INFE International Survey of Adult Financial Literacy, which places Indonesia slightly below the global average DFL score, around 53 points on a 100-point scale.
3. The 2024 AFTECH Fintech Report, which finds that approximately 52 percent of fintech users have limited understanding of personal data protection and digital consumer rights.
4. The 2023 National Digital Literacy Index published by the Ministry of Communication and Informatics (Kominfo), which rates general digital competence at 3.54 out of 5 (around 71 percent of the ideal level), though only part of the assessed dimensions directly relate to financial literacy.

Based on these data, a rational-comparative approach was applied to estimate Indonesia's overall DFL rate. The logic is as follows: if general financial literacy stands at about 65 percent and basic digital literacy at around 70 percent of the ideal level, the intersection between the two, representing digital-financial competence, can proportionally be assumed to fall below the average of both. Accounting for an adjustment factor of 15–20 percent to reflect the high level of risky digital behavior (as shown by the 37 percent of respondents who share private financial credentials), the estimated DFL level decreases to around 54–56 percent.

This range is consistent with the OECD/INFE (2023) findings showing that Indonesia's digital-financial literacy score is slightly below the global average but higher than that of several ASEAN countries, including the Philippines and Cambodia. Thus, the 54–56 percent estimate is not a quantitative measurement but rather a conceptual triangulation combining financial literacy data, general digital competence, risk behavior indicators, and Indonesia's relative position in international surveys. This estimate provides a macro-level picture of the gap between widespread financial access and uneven digital-financial capability, an imbalance that contributes to what the OECD (2023) and UNCTAD (2021) describe as "vulnerable inclusion."

The implications of this indicative figure are significant. More than half of Indonesians possess basic ability to use digital financial services, but only a fraction fully understand data security, privacy, and informed financial decision-making. The 37 percent of SNLIK respondents who still share their personal financial credentials underscores weak digital risk awareness. Meanwhile, the Safer Internet Lab (2024) reports that online financial fraud losses exceeded IDR 6 trillion during 2024–2025. These findings highlight that rising access to fintech and digital banking services has not been accompanied by a proportional rise in digital risk awareness or consumer protection knowledge.

When examined through social, behavioral, and policy lenses, Indonesia's DFL can be classified as being in a transitional phase, from traditional financial literacy to more adaptive digital literacy. This transitional nature means that while users are becoming familiar with digital interfaces, many still lack a deeper understanding of digital ethics, security standards, and critical evaluation of financial information. Consequently, strengthening DFL requires focusing on three strategic priorities.

First, expanding public education programs that integrate financial and digital behavioral components is essential. Such programs should go beyond technical instruction by promoting responsible decision-making and online financial ethics. Second, enhancing public trust in the digital financial ecosystem must become a regulatory priority through stronger consumer protection, data privacy enforcement, and cybersecurity coordination among OJK, BI, Kominfo, and BSSN. Third, DFL initiatives should be systematically incorporated into national development agendas, including the 2025–2029 Medium-Term National Development Plan (RPJMN) and the 2025–2045 National Long-Term Development Plan (RPJPN), ensuring policy continuity and measurable outcomes.

A robust level of digital financial literacy will serve as the foundation for an inclusive, secure, and sustainable digital financial ecosystem. More importantly, it will contribute to Indonesia's vision of achieving a sovereign digital economy by 2045, an economy built upon literacy, trust, and technological empowerment.

4.2 Challenges and Gaps in Digital Financial Inclusion

The rapid development of financial technology in Indonesia has significantly expanded public access to digital financial services. However, this expansion also brings a series of structural and behavioral challenges that continue to hinder the achievement of equitable and meaningful digital financial inclusion. The 2025 National Survey on Financial Literacy and Inclusion (SNLIK) notes that although 80.51 percent of the population has access to formal financial services, disparities in digital-financial capability remain wide across regions and social groups (OJK & BPS, 2025). Many individuals are connected to digital financial systems but are not yet functionally included, a phenomenon described as *digital connectivity without literacy readiness*, in which financial participation occurs without adequate understanding of the risks, ethics, and governance of technology-based finance (UNCTAD, 2021; OECD, 2023).

The most fundamental challenge stems from infrastructure and digital access. Around 22 percent of residents in eastern Indonesia still experience limited internet connectivity and digital device ownership (Kemenko Perekonomian, 2025). These constraints make rural populations more dependent on cash-based transactions and informal financial institutions. Barriers also arise in implementing *electronic Know Your Customer* (e-KYC) processes for individuals without formal identification, potentially excluding millions from the formal financial system. The World Bank (2021) emphasizes that the success of digital inclusion strategies depends on the synergy between financial literacy, internet connectivity, and public trust in digital systems.

In addition to structural barriers, behavioral gaps represent another critical issue. Many users of mobile banking and e-wallets remain unaware of data security risks, digital transaction ethics, and the dangers of online fraud. Gumilar (2024) found that a large proportion of users seldom read service agreements and are easily attracted to high-return investment offers or instant online loans without understanding their risks. According to the Safer Internet Lab (2024), Indonesia recorded more than 85,000 phishing incidents and total online financial losses of approximately IDR 6.1 trillion in 2025. The lack of digital risk awareness creates what the Police Foundation (2024) calls *ambient crime exposure,* a condition where people become accustomed to operating in high-risk digital environments without sufficient vigilance.

Social and demographic disparities also widen the gap in digital inclusion. SNLIK (2025) reports a gender gap of about 8–10 points in digital-financial literacy, particularly among women working in informal sectors and low-income households. Micro and small enterprises (MSMEs) face additional barriers in adopting digital financial platforms due to limited technical and financial knowledge (Nainggolan, 2024). Younger generations have broader access to technology but are often prone to impulsive consumption behaviors, such as *buy now, pay later* schemes and speculative investments made without risk assessment (Rahmadhani, 2025). In contrast, older generations tend to have stronger conventional financial literacy but lack confidence in using digital services (Putri, 2022). These patterns suggest that digital financial inclusion in Indonesia is influenced not only by access to technology but also by varying levels of cognitive readiness and behavioral maturity across different demographic segments.

Institutional and regulatory fragmentation further aggravates these challenges. The 2022 *Analysis and Evaluation of Digital Financial Law* by BPHN highlights that regulatory frameworks among OJK, Bank Indonesia, the Ministry of Communication and Informatics (Kominfo), and the National Cyber and Encryption Agency (BSSN) are not yet harmonized within an integrated model of inclusive digital finance governance. Weak coordination in data sharing and reporting among agencies undermines the effectiveness of digital crime prevention and risk management. Meanwhile, the Financial Action Task Force (FATF, 2025) warns that the expansion of digital financial inclusion must be balanced with system integrity safeguards and stronger anti–money laundering and counter–terrorism financing (AML/CTF) measures. Without coherent governance, the broadening of financial access could inadvertently increase exposure to cross-border financial crimes and systemic risks.

Addressing these multidimensional challenges requires a cross-sector and collaborative approach. Astuti (2025) proposes a model of *collaborative governance* that brings together regulators, educational institutions, fintech industries, and civil society in developing contextual and sustainable digital-financial education. Effective inclusion depends not only on digital infrastructure but also on the integration of literacy, consumer protection, and cybersecurity policies into a unified national framework. The alignment of regulatory goals, industry ethics, and community participation can reduce structural inequalities while enhancing users' capacity to make responsible financial decisions.

In essence, Indonesia's digital financial inclusion faces three intertwined challenges. Structurally, connectivity and access remain uneven across regions. Behaviorally, low levels of DFL and weak awareness of online risks continue to expose users to financial vulnerabilities. Institutionally, fragmented governance limits policy coordination and data integration. Overcoming these challenges requires joint efforts among regulators, educators, and industry actors to design inclusive and risk-sensitive systems. Strengthening digital financial literacy, enhancing inter-agency coordination, and closing infrastructure gaps are crucial steps toward building a digital financial ecosystem that is not merely connected but genuinely inclusive and resilient, where every participant can engage in the digital economy with confidence, security, and empowerment.

4.3 Policy Implications and Strategies for Strengthening Digital Financial Literacy (DFL)

The increasing digitalization of Indonesia's financial system presents major opportunities for expanding access to finance and improving national economic efficiency. Yet, this progress has also introduced new challenges in the form of widening gaps in digital financial literacy (DFL). Addressing these challenges requires not only technological innovation but also a sustained focus on human capacity building. DFL is the foundation for creating digital financial participation that is safe, empowered, and inclusive, contributing to both financial stability and the sovereignty of Indonesia's digital economy.

From a policy perspective, Indonesia already possesses a solid regulatory foundation for strengthening DFL. Presidential Regulation No. 114 of 2020 on the *National Strategy for Financial Inclusion (SNKI)* emphasizes the importance of enhancing financial literacy to support access to formal financial services. However, in the digital era, SNKI's implementation must evolve to encompass a more adaptive, technology-based form of literacy. Similarly, the *Indonesian Payment System Blueprint 2025* (Bank Indonesia, 2023) articulates a vision for a national payment ecosystem that is fast, secure, efficient, and inclusive, highlighting public trust and literacy as strategic pillars of non-cash transformation. The *2025–2045 National Long-Term Development Plan (RPJPN)* also identifies digital literacy as a key driver for achieving a "sovereign and inclusive digital economy." Collectively, these documents form the macro policy framework demonstrating that DFL is not merely an educational concern but a critical instrument of national development.

At the implementation level, various institutions have launched programs to strengthen DFL. The Financial Services Authority (OJK) has expanded its digital financial education initiatives through programs such as *Digital Financial Literacy Goes to Campus* and *Student Financial Education* (OJK, 2024). These initiatives aim to increase young people's understanding of both the opportunities and risks within the digital economy. OJK has also collaborated with the Indonesian Fintech Association (AFTECH) to enhance consumer protection mechanisms and promote digital security awareness. This approach represents a shift from general social campaigns to more behavior-based learning models that emphasize context-specific and experiential education.

Academic research further supports the direction of these policies. Putri (2025) found that while digital payment adoption among university students improves convenience and transaction efficiency, DFL has not yet fully moderated their consumption and long-term financial decision-making behavior. In other words, knowledge alone does not automatically translate into prudent financial conduct without systematic educational interventions. Ramizah (2025) also demonstrated that DFL significantly affects both financial behavior and self-efficacy; individuals with higher DFL are better able to control impulsive spending and use technology to improve their financial well-being. Likewise, studies by Muat (2024) and Mutya (2024) show that DFL positively influences saving behavior and rational financial planning. These findings indicate that strengthening DFL should aim to build a long-term, risk-conscious financial mindset rather than merely improving basic knowledge.

More broadly, DFL policy development requires a *collaborative governance* approach among key stakeholders. Astuti (2025) argues that digital financial literacy can only thrive through strong cooperation between regulators (OJK, BI, Kominfo, Bappenas), educational institutions, the fintech industry, and civil society. Regulators serve as policymakers and supervisors; educational institutions build competencies and awareness; fintech companies act as responsible innovators ensuring user protection; and civil society and the media function as agents of cultural and behavioral change. Such multi-stakeholder collaboration has proven effective in other contexts, for instance, Kampamba (2025) found that in Zambia, coordinated DFL programs significantly increased financial inclusion among informal populations by building trust in mobile banking and microfinance platforms.

DFL also holds strategic significance for national security and financial system integrity. Pratama (2025) demonstrates that improving the population's digital-financial capability can enhance the detection of suspicious transaction patterns and assist in preventing money laundering and other financial crimes in digital environments. This aligns with the *FATF Guidance on Financial Inclusion and Anti-Money Laundering* (FATF, 2025), which highlights the importance of literacy-based, community-driven vigilance in combating financial crime. Conversely, low DFL levels correlate strongly with the rise of online scams and cybercrime, leading to growing economic losses and erosion of public trust. Therefore, DFL education must be integrated with cybersecurity and data protection policies as part of Indonesia's broader digital consumer protection strategy.

Looking ahead, Indonesia's DFL policy framework requires conceptual reform in both measurement and management. The current national financial literacy index (SNLIK) primarily assesses general financial understanding and does not yet capture digital-financial competencies in a specific and systematic way. Consequently, OJK and BPS should develop a *Digital Financial Literacy Index for Indonesia* based on the OECD-INFE (2022) methodology to enable more accurate monitoring of progress and disparities across regions and demographic groups. This measurement would be crucial for evaluating policy effectiveness, identifying at-risk populations, and aligning education efforts with national targets. Furthermore, DFL programs should prioritize groups most vulnerable to digital exclusion, such as women, micro and small entrepreneurs, informal workers, and rural communities facing limited internet access and device affordability.

DFL policies should also adopt a *human development–based approach* that situates digital-financial literacy as part of broader efforts to enhance social welfare and human capability. In line with Amartya Sen's (1999) *Capability Approach*, the goal is not merely to enable people to use digital financial tools but to empower them to make meaningful financial choices that improve their quality of life. From this perspective, DFL is both an economic and social capability that allows individuals to transform digital access into real opportunities for financial independence, security, and empowerment.

In summary, strengthening DFL in Indonesia carries three major policy implications. First, at the macro level, DFL reinforces digital financial governance and system stability by enhancing public trust and consumer protection. Second, at the micro level, DFL cultivates rational, disciplined, and risk-aware financial behavior, improving household economic welfare.

Third, at the social level, DFL broadens the participation of vulnerable groups in the digital economy, thereby reducing inequality and strengthening national economic sovereignty.

Ultimately, DFL is not merely an educational agenda but a strategic pillar to ensure that Indonesia's digital transformation unfolds safely, inclusively, and sustainably. Strengthened digital financial literacy will not only enhance citizens' ability to manage digital risks but also maximize the developmental benefits of financial technology, supporting the nation's vision of a *sovereign and inclusive digital economy* as articulated in the RPJPN (National Long-Term Development Plan) 2025–2045.

5. Conclusion And Recommendations

Conclusion

Indonesia's digital economic transformation has significantly expanded public access to financial services through the development of fintech, digital banking, and cashless payment systems. However, this growth in access has not been fully accompanied by an equivalent improvement in people's ability to understand, manage, and mitigate digital financial risks. The findings of this study indicate that while the national financial inclusion index has reached 80.51 percent, the level of digital financial literacy (DFL) remains relatively low, estimated between 54 and 56 percent (OJK & BPS, 2025). This gap reveals that although most Indonesians are connected to digital financial systems, many have not yet achieved meaningful inclusion.

DFL plays a dual role in this context. First, it determines the extent of individual participation in the digital financial ecosystem. Second, it functions as a preventive mechanism against online fraud, data misuse, and unhealthy consumption behavior. Empirical evidence shows that digital-financial literacy positively correlates with user trust, saving behavior, and individual financial well-being (Astuti, 2025; Ramizah, 2025; Mutya, 2024). Conversely, low DFL levels heighten the risk of *vulnerable inclusion,* a condition where individuals become part of the digital financial system without adequate capacity to manage its risks (Gumilar, 2024).

Indonesia's policy landscape provides a strong regulatory foundation for advancing DFL. Presidential Regulation No. 114 of 2020 on the National Strategy for Financial Inclusion (SNKI) and Bank Indonesia's *Payment System Blueprint 2025* (Bank Indonesia, 2023) both recognize literacy as a fundamental pillar of digital financial inclusion. However, current implementation remains fragmented across institutions and insufficiently integrated into a unified national strategy. Strengthening DFL thus requires interagency synergy, among OJK, Bank Indonesia, Kominfo, Bappenas, and the Coordinating Ministry for Economic Affairs, so that literacy initiatives evolve from sporadic educational campaigns into a sustained national empowerment framework.

In conclusion, the success of Indonesia's digital financial transformation depends not only on technological and infrastructural readiness but also, and more importantly, on the quality of digital-financial literacy across society. DFL is an essential prerequisite for building a secure, inclusive, and sustainable digital financial ecosystem, serving as a strategic pillar for achieving Indonesia's vision of digital economic sovereignty by 2045.

Recommendations

Based on the analysis, literature synthesis, and policy findings, several strategic recommendations can be proposed to strengthen digital financial literacy (DFL) in Indonesia moving forward:

1. Development of a National Digital Financial Literacy Index. OJK and BPS should develop a dedicated *Digital Financial Literacy Index* based on the OECD-INFE (2022) methodology to measure digital-financial competencies across demographic and regional segments. This index

would serve as a key evaluation tool for policy outcomes, a national performance indicator, and a monitoring instrument for progress in digital financial education.

2. Integration of Cross-Institutional Policies. The government should establish a *National Digital Financial Literacy Framework* that links literacy policies with digital security, consumer protection, and financial inclusion strategies. Coordination among OJK, Bank Indonesia, Kominfo, Bappenas, and the fintech industry is critical to prevent fragmentation and policy overlap.
3. Contextual and Empowerment-Based Education. Public literacy programs should be adapted to Indonesia's diverse socio-economic contexts. Behavioral-based learning methods, interactive digital media, and experiential education models should be prioritized—particularly for vulnerable groups such as women, micro and small entrepreneurs, and rural communities.
4. Integration with Digital Consumer Protection and Cybersecurity. DFL initiatives must be directly connected to data privacy, cybersecurity awareness, and the ethical use of financial technology. Collaboration with fintech firms should emphasize *ethical digital finance* and *responsible innovation*, as recommended by FATF (2025) and the World Bank (2025), ensuring that literacy programs also enhance digital trust and resilience.
5. Building a Multi-Stakeholder Collaborative Ecosystem. A *collaborative governance model* should be institutionaliSayazed, involving regulators, educational institutions, fintech industries, media, and civil society. As argued by Astuti (2025), strong digital literacy emerges only from collective engagement between policymakers, technology providers, and end users. This ecosystemic approach fosters both inclusivity and accountability in digital financial transformation.
6. Evaluation of Impact and Institutional Incentives. DFL indicators should be incorporated into the *National Financial Inclusion Dashboard* to assess literacy contributions to economic welfare and system stability. Institutions that demonstrate measurable success in improving public DFL should receive policy incentives, such as CSR support or public–private partnership opportunities, to encourage sustained literacy investment.

Implementing these recommendations would not only improve the population's capacity to manage digital financial risks but also broaden the economic benefits of financial technology for inclusive development. With stronger DFL, Indonesia can establish a financial system that is more adaptive, resilient, and equitable, fully aligned with the *Vision of a Sovereign and Inclusive Digital Economy* outlined in the RPJPN 2025–2045.

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