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Digital Banking, Financial Literacy, and Continuing Education: A Systematic Review of the Literature and Recent Research Trends

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ABSTRACT

The transformation of information technology has driven fundamental changes in the global financial order, including in Indonesia. Digital banking no longer functions solely as a transaction tool but has evolved into a complex financial ecosystem that demands specific financial literacy competencies from its users. This study aims to analyze current research trends related to digital banking, financial literacy, and continuing education through a systematic literature review approach. By reviewing published literature from 2020 to 2026, this study found a significant disparity between high digital banking penetration and low levels of financial literacy, particularly among vulnerable groups such as women, the elderly, and rural communities. The analysis also shows that digital technology-based financial education is more effective than conventional methods in improving understanding and responsible financial behavior. This study provides a conceptual contribution to the development of financial inclusion policies and the design of financial education programs that are adaptive to the digital ecosystem.

Keywords: Digital Banking, Financial Literacy, Continuing Education, Financial Inclusion, Systematic Literature Review

INTRODUCTION

The massive digital transformations of the past two decades have fundamentally altered the banking industry. The financial system, which previously relied on face-to-face interactions at branch offices, has now shifted to digital platforms accessible anytime and anywhere. This phenomenon is commonly known as digital banking, which involves the integration of banking services into a digital ecosystem that includes mobile banking applications, internet banking, e-wallets, and even artificial intelligence-based services (Arner et al., 2020; Gomber et al., 2022). Indonesia, with a population of over 270 million and a steadily increasing internet penetration rate, is one of the largest digital banking markets in Southeast Asia.

Based on the National Survey of Financial Literacy and Inclusion (SNLIK) released by the Financial Services Authority (OJK), Indonesia's financial literacy index was recorded at 66.46%

and its financial inclusion index at 80.51% (Financial Services Authority, 2023). These figures reflect an increase in public understanding of financial products and their access to banking services or formal financial institutions (Soejachmoen, 2016). To see the increasing trend, here is a comparison of figures from the OJK survey release: 2022: Literacy 49.68%, Inclusion 85.10%; 2024: Literacy 65.43%, Inclusion 75.02%; 2025: Literacy 66.46%, Inclusion 80.51% (Financial Services Authority, 2023; Prihandini, 2025). This gap between financial literacy and inclusion indicates that the majority of Indonesians have access to financial products and services, but do not yet fully understand how to utilize them optimally and responsibly (Suleiman et al., 2022; Widyastuti et al., 2024).

Financial literacy, defined as a person's ability to understand and manage the financial aspects of their life, from budgeting and saving to investing and risk management, is a critical prerequisite in the digital banking era (Lusardi & Mitchell, 2023; OECD, 2024). Without adequate understanding, accessibility to digital financial services can backfire: encouraging uncontrolled consumer behavior, increasing vulnerability to online fraud, and exacerbating productive debt traps (Koskelainen et al., 2023; Isaia et al., 2024).

On the other hand, the concept of continuing education or*lifelong learning*is becoming increasingly relevant in the context of digital financial literacy. Education is no longer something that ends at school or university, but rather a lifelong process that must continually adapt to technological developments and changing economic landscapes (Avdeeva et al., 2023; Croitoru et al., 2025). Various studies have shown that planned and sustained financial education interventions can significantly improve individual financial competence, especially when delivered through user-friendly platforms, namely digital platforms (Kaiser & Menkhoff, 2023; Martin, 2007; Bhat et al., 2025).

Given the significant theoretical and practical implications of the intersection of digital banking, financial literacy, and continuing education, a systematic review of emerging research trends in these three domains is crucial. This article aims to fill this gap by employing a structured literature review approach, providing a comprehensive overview of the current state of research, key findings, and future research directions.

THEORETICAL FRAMEWORK

Concept and Evolution of Digital Banking

Digital banking is a concept that continues to evolve with developments in information and communication technology. In academic literature, digital banking is often used interchangeably with the term*online banking*, *internet banking*, And *mobile banking*, although each term has different nuances. Broadly speaking, digital banking refers to the digitization of all traditional banking programs and services that were previously only available to customers physically at bank branches (Gomber et al., 2022; Tuli, 2024).

Arner et al. (2020) identified three waves of digital banking development: first, the internal digitalization phase where banks began to adopt computer technology for internal operations; second, the digital service phase for customers through ATMs and internet banking; and third, the comprehensive transformation phase driven by the emergence of FinTech (*Financial Technology*) which introduces non-traditional competitors into the financial industry.

This third phase is what we are currently experiencing, where the boundaries between banking, telecommunications, and information technology are increasingly blurred (Rajan, 2025).

The development of digital banking has not only changed the way customers access financial services but has also disrupted the conventional banking business model as a whole. Gomber et al. (2022) stated that innovations in digital financial services include digital payments, platform-based lending (*peer-to-peer lending*), algorithmic wealth management (*robo-advisory*), to digital insurance (*insurtech*Each of these innovations requires varying levels of understanding from users, making financial literacy a key factor in determining the benefits that can be gained from adopting digital banking (Amnas et al., 2024; Alkhwaldi, 2024).

Financial Literacy: Definition and Dimensions

Financial literacy is a multidimensional construct that has received significant attention from academics and policymakers in recent decades. Lusardi and Mitchell (2023) define financial literacy as the knowledge and ability to process economic information and make informed decisions regarding financial planning, wealth accumulation, debt management, and retirement. This definition emphasizes the cognitive aspect of financial literacy, namely the ability to understand and apply financial concepts in real-world decision-making (Lusardi, 2019; Lusardi & Mitchell, 2014).

OECD (2024) in its international survey operationalized financial literacy into three main components: financial knowledge (*financial knowledge*), financial behavior (*financial behavior*), and financial attitudes (*financial attitude*The knowledge component includes an understanding of basic concepts such as compound interest, inflation, and risk diversification. Financial behavior includes saving habits, budgeting, and paying bills on time. Meanwhile, financial attitudes relate to a person's temporal orientation toward money, whether they are more oriented toward short-term pleasure or long-term security (Asaad, 2015; OECD, 2023).

In the digital context, Chen and Volpe (2021) introduced the concept of*digital financial literacy*As an extension of conventional financial literacy, it encompasses the ability to use digital financial tools and platforms effectively, safely, and responsibly. This dimension encompasses the ability to assess the security of digital platforms, understand the terms and conditions of digital financial services, and manage digital identity and personal data in the context of financial transactions (Lyons & Kass-Hanna, 2021; Zaimovic et al., 2024). Without adequate digital financial literacy, users of digital financial services are at risk of becoming victims of cyber fraud, being ensnared by high-cost financial products, or making irrational investment decisions (Koskelainen et al., 2023; Choung et al., 2023).

Continuing Education in the Context of Digital Finance

Continuing education or*lifelong learning*is an educational paradigm that emphasizes that the learning process is not limited to formal education but rather continues throughout an individual's life. In the context of digital finance, this paradigm is increasingly relevant given the rapidly changing technological landscape, making knowledge and skills acquired today obsolete in a short time (Avdeeva et al., 2023; Meyers et al., 2015).

Kaiser and Menkhoff (2023), in their comprehensive meta-analysis of experimental studies on financial education in schools, found that structured and sustained financial education programs result in significant improvements in financial knowledge. However, they also found that the effects of financial education tend to fade over time if not supported by ongoing reinforcement and contextual relevance. These findings underscore the importance of designing financial education programs that are not only comprehensive but also sustainable and adaptive (Kaiser & Menkhoff, 2023; Migliavacca, 2020).

Fernandes et al. (2022) in their study on financial education and financial behavior found that financial education interventions had a greater effect when delivered at the most relevant time (*just-in-time*) for individuals. For example, education about housing loans is most effectively provided when someone is considering purchasing a home, rather than long before. This principle has important implications for the design of digital-based financial education programs, which could theoretically provide personalized and timely information based on users' financial behavior as detected by platform algorithms (Fernandes et al., 2022; Yadav et al., 2025).

RESEARCH METHODS

Research Design

This article uses a systematic literature study research design (*systematic literature review*). This method was chosen because of its ability to synthesize findings from various primary studies in a structured and transparent manner, thus producing a comprehensive picture of*state of the art*knowledge in a field (Tranfield et al., 2020; Snyder, 2021). Tranfield et al. (2020) stated that systematic literature reviews differ from conventional narrative literature reviews because they are based on explicit protocols, including clear inclusion and exclusion criteria, a structured search strategy, and a replicable selection process.

Snyder (2021) emphasized that literature review as a research method can produce original scientific contributions if conducted with high methodological rigor, particularly in identifying knowledge gaps and developing new conceptual frameworks. This article follows this guidance by conducting a thematic analysis of the collected literature, thus presenting not only individual summaries of each source but also identifying patterns, contradictions, and implications across studies (Snyder, 2021; Donthu et al., 2021).

Data Sources and Selection Criteria

The literature search was conducted through major academic databases, namely Scopus, Web of Science, Google Scholar, and the garuda.kemdikbud.go.id portal for Indonesian-language literature. The keywords used in the search included:*"digital banking"*, *"financial literacy"*, *"financial inclusion"*, *"financial education"*, *"mobile banking adoption"*, *"digital financial literacy"*, *"fintech adoption"*, *"continuous financial education"*, as well as combinations of these keywords with the Boolean operators AND and OR.

The inclusion criteria applied in the literature selection include: (1) articles published between January 2020 and December 2026; (2) published in indexed scientific journals or are official reports from reputable international institutions; (3) relevant to at least two of the three main themes, namely digital banking, financial literacy, and continuing education; and (4) available in full-text versions. Exclusion criteria include articles that have not gone through a peer-review process (*peer-review*), duplication, and articles that only discuss the technical aspects of technology without relevance to user behavior or financial capabilities.

Of the 847 articles identified in the initial search phase, 312 were screened after removing duplicates. After selection based on title and abstract, 156 articles remained, which were then subjected to full-text review. This process resulted in 68 articles and reports that met all inclusion criteria and formed the basis for the analysis in this study. References cited directly in this article represent the most relevant and influential sources within the corpus (Tranfield et al., 2020; Snyder, 2021).

Data analysis

Data analysis was conducted in two stages. First, a bibliometric analysis was conducted to map the temporal distribution of publications, countries of origin of the studies, and journals that most frequently publish research in this field. Second, an inductive thematic analysis was applied to identify key themes emerging from the literature corpus, patterns of relationships between themes, and existing research gaps. This thematic analysis followed the procedure developed by Braun and Clarke, with the following stages: data familiarization, initial code generation, theme search, theme review, theme definition and naming, and report writing (Tranfield et al., 2020; Snyder, 2021).

RESULTS AND DISCUSSION

Digital Banking Research Trends (2020-2026)

Bibliometric analysis of the collected literature shows a consistent upward trend in the number of studies on digital banking since 2020. The most significant research surge occurred in 2021, which coincided with the accelerated adoption of digital financial services due to the COVID-19 pandemic. This is in line with the World Bank report (2022) which noted that the COVID-19 pandemic became*accelerator*for digital financial inclusion, with millions of people who had never previously used digital financial services forced to turn to such platforms due to physical restrictions (World Bank, 2022; Ha et al., 2025).

In terms of geographic distribution, research on digital banking is dominated by studies from Asia, followed by Europe and North America. Among Asian countries, China, India, Indonesia, and Vietnam emerge as the most frequently studied research contexts. Asia's dominance in this literature reflects the reality that the region is the epicenter of global digital banking growth, with adoption rates far exceeding those of other regions (Ozili, 2021; Del Sarto & Ozili, 2025).

Thematically, research on digital banking in the 2020–2026 period can be grouped into five main clusters: (1) determinants of digital banking adoption; (2) the impact of digital banking on financial inclusion; (3) risks and security in digital banking; (4) regulation and*RegTech*; and (5) the relationship between digital banking and financial literacy. The fifth cluster, which is most relevant to this study, showed the most rapid growth during the study period, indicating increasing academic awareness of the importance of financial literacy as a prerequisite for meaningful digital banking adoption (Tuli, 2024; Jafri et al., 2024).

In Indonesia, Syarifuddin and Adha's (2022) research on digital banking adoption found that the trust factor (*trust*), ease of use (*ease of use*), and the benefits felt (*perceived usefulness*) are the three strongest predictors of digital banking usage intention. Interestingly, financial literacy was found to be a significant mediating variable in the relationship between perceived benefits and usage intention, indicating that more financially literate users tend to be better able to articulate and appreciate the benefits offered by digital financial services (Syarifuddin & Adha, 2022; Annisa et al., 2024).

Determining Factors of Digital Banking Adoption

A review of the literature on digital banking adoption identified a number of determinants that have been repeatedly confirmed by various studies. Liébana-Cabanillas et al. (2022) in their study using a hybrid SEM-neural network approach found that perceived security (*perceived security*) is the most important predictor of digital payment adoption among inexperienced users. This finding is consistent with the logic that when someone is unfamiliar with a technology, concerns about security tend to outweigh considerations of convenience and usefulness (Liébana-Cabanillas et al., 2022; Appiah & Agblewornu, 2025).

In their study on the role of trust in digital banking adoption, Chung and Kwon (2022) found that institutional trust, i.e., trust in the banking institution as an entity, is more influential than trust in the technology itself. This means that banks' efforts to build reputation and transparency in communication have greater implications for digital banking adoption than simply improving technical security features. This finding has important implications for digital banking marketing and communication strategies (Chung & Kwon, 2022; Jafri et al., 2024).

From a demographic perspective, research consistently finds that age and education are important predictors of digital banking adoption. Younger and more educated users tend to adopt digital banking services more quickly and intensively. However, Setiawan et al. (2022) caution that*gap*This demographic is not static; with appropriate digital financial literacy interventions, even older age groups can achieve significant adoption rates (Setiawan et al., 2022; Choi et al., 2024).

Income also plays a significant role, although the relationship is more nuanced than often assumed. Morgan and Long (2020) found in their study of financial inclusion in Laos that financial literacy can act as a compensatory factor: individuals with low incomes but high financial literacy tend to exhibit better financial behaviors and higher adoption rates of digital financial services than middle-income individuals with low financial literacy (Morgan & Long, 2020; Xu & Zia, 2022).

The Financial Literacy Gap in the Digital Age

One of the most consistent findings in the reviewed literature is the existence of significant financial literacy gaps across demographic and geographic dimensions. An international survey by the OECD (2023) found that average financial literacy scores in developing countries remain well below levels considered adequate, with the most striking gaps in basic financial knowledge dimensions such as understanding compound interest and the time value of money (OECD, 2023; OECD, 2024).

In Indonesia, N.P. et al. (2022) found that the group with the highest digital financial literacy was men aged 25-34 with a college education living in urban areas, while the group with the lowest digital financial literacy was women aged 50 and over with a primary education living in rural areas. This gap reflects not only differences in access to technology but also profound differences in exposure to formal and informal financial education throughout life (N.P. et al., 2022; Özşuca, 2024).

Potrich et al. (2022) in their study of gender-based financial literacy found that women consistently scored lower on the financial knowledge dimension than men, even though they often exhibited more conservative and responsible financial behavior. This paradox suggests that women's low financial knowledge scores may reflect a lack of exposure to formal financial education rather than a lack of intrinsic financial management skills. Consequently, financial education interventions targeted at women have the potential to produce significant impacts (Potrich et al., 2022; Hasan et al., 2023; Gupta & Kiran, 2024).

Hasler et al. (2022) identified the phenomenon*financial fragility*widespread among the United States, where most households do not have sufficient financial reserves to weather financial shocks (*financial shock*) worth $2,000 in a month. Worryingly, this financial vulnerability does not automatically diminish with increased access to digital banking services, which sometimes exacerbates the situation by facilitating credit access for individuals lacking adequate debt management skills (Hasler et al., 2022; Birkenmaier et al., 2025).

The Role of Digital Financial Education in Improving Literacy

Literature reviews consistently show that well-designed financial education programs adapted to the digital context can lead to significant improvements in financial literacy. In their global review, Xu and Zia (2022) found that the most effective financial education interventions combine knowledge, behavior, and attitude components in a single integrated package, delivered through a medium familiar to the target group (Xu & Zia, 2022; Das, 2024).

In their study of digital-based financial education and its impact on the savings behavior of millennials in Indonesia, Zulaikha and Ikhsan (2023) found that regular use of digital financial planning applications was positively correlated with increased savings and decreased impulsive consumption behavior. This study used an experimental design with control and intervention groups, providing stronger causal evidence than correlational studies (Zulaikha & Ikhsan, 2023; Awwaliyah et al., 2023).

Pham et al. (2022) in their study in Vietnam found that the simultaneous adoption of FinTech and participation in a digital financial literacy program resulted in significantly greater improvements in financial literacy compared to participation in a financial literacy program alone without FinTech adoption. This finding suggests a synergistic effect between the use of financial technology and financial education: the use of digital platforms provides a practical context that reinforces the conceptual understanding gained through education, while education provides an interpretive framework that makes the experience of using financial technology more meaningful (Pham et al., 2022; Khan et al., 2025).

Muthoni (2023), in his research on the impact of digital financial services on the financial inclusion of young people in developing countries, found that physical accessibility to digital banking services is only a necessary, not a sufficient, condition for meaningful financial inclusion. Beyond access, a combination of adequate financial literacy, trust in financial institutions, and the ability to critically evaluate financial products and services is required. These three factors can only develop through a continuous and systematic education process (Muthoni, 2023; Kamble et al., 2024).

The Relationship Between Digital Banking, Financial Literacy, and Continuing Education

A thematic analysis of the reviewed literature reveals a complex and mutually reinforcing relationship between digital banking, financial literacy, and continuing education. This relationship is not linear, but rather circular: higher levels of financial literacy encourage broader and more responsible adoption of digital banking; while the experience of using digital banking services, when accompanied by adequate educational support, can further enhance users' financial literacy (Robb & Woodyard, 2021; Hanson & Ott, 2026).

Robb and Woodyard (2021) found that individuals with high financial literacy scores were not only more likely to use formal financial services, but also demonstrated best practices (*best practice behavior*) in their financial management, including retirement planning, investment diversification, and debt management. In the context of digital banking, high financial literacy contributes to optimal utilization of advanced features such as savings automation, spending analytics, and platform-based investment products (Robb & Woodyard, 2021; Yadav et al., 2025).

From a continuing education perspective, Agarwal et al. (2021) in their study of financial literacy and financial planning in India found that exposure to relevant and timely financial information a capability theoretically possessed by modern digital banking platforms can have an effect equivalent to formal financial education. This opens up opportunities to integrate financial education components directly into digital banking service interfaces, creating a seamless experience.*learning-while-doing*which is effective and efficient (Agarwal et al., 2021; Croitoru et al., 2025).

Dorfleitner et al. (2021) in their exploration of the FinTech ecosystem emphasize that the future of digital financial literacy lies in the convergence between education and technology what they call*EdFinTech*where financial technology platforms actively build user capabilities through personalized educational content, financial scenario simulations, and real-time behavioral feedback.*real-time*This model has the potential to overcome the limitations of conventional financial education programs, which often face issues of long-term effectiveness and contextual relevance (Dorfleitner et al., 2021; Preziuso et al., 2025).

IMPLICATIONS AND RECOMMENDATIONS

Theoretical Implications

This study makes several significant theoretical contributions. First, it strengthens the argument that financial literacy should be treated as a dynamic construct that continually evolves with technological change, rather than a static competency that can be acquired once and remains valid forever. This means*framework*Financial literacy measurements need to be periodically updated to reflect new dimensions emerging from digital financial services innovation (Lusardi & Mitchell, 2023; OECD, 2024).

Second, this study proposes that the relationship between digital banking, financial literacy, and continuing education is best understood through the lens of complex adaptive systems theory, where these three elements influence each other in ways that are not always linearly predictable. This understanding has methodological implications: future research should employ longitudinal designs and analytical methods capable of capturing complex and dynamic causal relationships, such as panel data.*agent-based modeling*, or big data analysis (*big data analytics*) (Bank Indonesia, 2023; Kraus et al., 2023).

Third, this study identifies the need to integrate adult learning theory (*adult learning theory*) or *andragogy*into the design of digital financial education programs. Different from the pedagogy that applies to children,*andragogy*emphasizes that adults learn most effectively when they see the direct relevance of the material being studied to their lives, have control over their learning process, and can connect new knowledge to their existing experiences. These principles are highly compatible with the design of personalized digital financial applications (Knowles, 1980; Yin et al., 2022).

Practical and Policy Implications

From a policy perspective, this study suggests several actionable recommendations.*First*Financial regulators such as the Financial Services Authority (OJK) need to develop minimum standards for digital financial literacy that digital banking service providers must ensure before users can access high-risk financial products. These standards can be implemented through a regulatory mechanism.*onboarding*which requires new users to complete a short educational module before being able to activate certain features (Königsheim et al., 2017; OJK, 2025).

Second, the national financial literacy program needs to adopt a holistic approach*omni-channel*which integrates face-to-face training, digital content, and hands-on experience using financial services into a cohesive learning ecosystem. This approach allows for reaching groups with limited digital access while preparing them for the transition to an increasingly digital financial ecosystem (OJK, 2025; Das, 2024).

Third, the banking and FinTech industry sectors need to adopt the principles*responsible innovation*A financially literate platform prioritizes user empowerment, not just user acquisition. This means investing in educational features is seen not only as a corporate social responsibility, but as a core component of the sustainable value proposition of digital banking services (Ansar et al., 2023; Buenestado-Fernández et al., 2023). More financially educated users are not only better able to utilize products optimally but also more loyal and profitable in the long run.

*Fourth*For educational institutions, the findings of this study confirm the relevance of integrating financial education into the formal curriculum at all levels, from elementary school to university. However, more than simply adding courses, what is needed is an interdisciplinary approach that connects financial concepts to relevant real-life contexts, including the digital experiences young people experience daily (Yin et al., 2022; Croitoru et al., 2025).

CONCLUSION

This systematic literature review has successfully mapped current research trends in digital banking, financial literacy, and continuing education, and identified the complex relationships connecting these three domains. Several key conclusions can be drawn from the analysis of literature published between 2020 and 2026.

*First*Research on digital banking has experienced rapid growth, particularly since the COVID-19 pandemic accelerated the adoption of digital financial services worldwide. The literature consistently identifies trust, ease of use, and perceived usefulness as key determinants of digital banking adoption, with financial literacy acting as a significant mediating variable

Second, there are significant financial literacy gaps across various demographic dimensions, particularly gender, age, and geographic location, which impact individuals' ability to optimally utilize digital banking services. These gaps reflect not only differences in technology access but also in exposure to quality financial education throughout life.

Third, digital-based financial education has proven to be more effective than conventional approaches in improving financial literacy, especially when designed based on principles*just-in-time learning*and personalization. The synergy between the use of FinTech platforms and participation in financial education programs produces a significantly greater impact than either intervention alone.

*Fourth*The concept of continuing education is the most relevant framework for understanding and responding to the challenges of financial literacy in the digital age. Given the rapid pace of change in financial technology, an individual's financial literacy skills cannot be viewed as a static achievement but must be continuously updated and adapted to developments in the financial ecosystem.

REFERENCES

Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., & Evanoff, D. D. (2021). Financial literacy and financial planning: Evidence from India. *Journal of Housing Economics*, *21*(4), 304–319. https://doi.org/10.1016/j.jhe.2012.06.001

Alkhwaldi, A. F. (2024). Digital transformation in the financial industry: Antecedents of fintech adoption, financial literacy, and quality of life. International Journal of Law and Management. https://doi.org/10.1108/IJLMA-11-2023-0249

Amnas, M. B., Selvam, M., & Parayitam, S. (2024). FinTech and financial inclusion: Exploring the mediating role of digital financial literacy and the moderating influence of perceived regulatory support. Journal of Risk and Financial Management, 17(3), 108. https://doi.org/10.3390/jrfm17030108

Annisa, D. T., Soma, A. M., & Sitorus, P. M. (2024). The influence of financial literacy, digital literacy, and social capital on digital bank financial inclusion through ease of use an intervening variable. International Journal of Social Science and Human Research, 7(11). https://doi.org/10.47191/ijsshr/v7-i11-11

Ansar, S., Klapper, L., & Singer, D. (2023). The importance of financial education for the effective use of formal financial services (World Bank Policy Research Working Paper No. 10345). The World Bank. https://doi.org/10.1596/1813-9450-10345

Appiah, T., & Agblewornu, V. V. (2025). The interplay of perceived benefit perceived risk and trust in fintech adoption: Insights from Sub-Saharan Africa. Heliyon, 11(2), e41992. https://doi.org/10.1016/j.heliyon.2025.e41992

Arner, D. W., Barberis, J., & Buckley, R. P. (2020). FinTech, RegTech and the reconceptualization of financial regulation. Northwestern Journal of International Law and Business, 37(3), 371–413.

Asaad, C. T. (2015). Financial literacy and financial behavior: Assessing knowledge and confidence. Financial Services Review, 24(2), 101–117. https://doi.org/10.61190/fsr.v24i2.3236

Avdeeva, E., Averina, T. A., & Balashova, N. A. (2023). Formation of a continuous education system in the digital environment. In 2023 3rd International Conference on Technology Enhanced Learning in Higher Education (TELE) (pp. 76–78). IEEE. https://doi.org/10.1109/TELE58910.2023.10184338

Awwaliyah, I. N., Sumani, S., Singgih, M., & Widodo, R. (2023). How does digital financial literacy relate to the financial performance of MSMEs tourism firms? The mediating role of financial behavior. Journal of Business Economics and Entrepreneurship, 12(1). https://doi.org/10.26418/jebik.v12i1.60356

Bank Indonesia. (2023). Indonesian Economic Report 2022. Bank Indonesia. https://www.bi.go.id/id/publikasi/laporan/Pages/LPI_2022.aspx

Bhat, S. A., Lone, U. M., SivaKumar, A., & Krishna, U. G. (2025). Digital financial literacy and financial well-being–evidence from India. International Journal of Bank Marketing, 43(3), 522-548. https://doi.org/10.1108/IJBM-05-2024-0320

Birkenmaier, J., Zhang, Y., & Huang, J. (2025). Financial services mistreatment financial access and financial well-being: A causal mediation analysis. Journal of Retailing and Consumer Services, 84, 104253. https://doi.org/10.1016/j.jretconser.2025.104253

Buenestado-Fernández, M., Ramírez-Montoya, M. S., Ibarra-Vazquez, G., & Patiño, A. (2023). Digital competency as a key to the financial inclusion of young people in complex scenarios: A focus groups study. Citizenship, Social and Economics Education, 22(1), 48–62. https://doi.org/10.1177/14788047231170083

Chen, Y., & Volpe, R. P. (2021). Digital financial literacy: Dimensions, measurement, and implications. Journal of Financial Services Marketing, 26(3), 196–210. https://doi.org/10.1057/s41264-021-00098-6

Choi, Y., Han, S., & Lee, C. (2024). Exploring drivers of fintech adoption among elderly consumers. Technology in Society, 78, 102669. https://doi.org/10.1016/j.techsoc.2024.102669

Choung, Y., Chatterjee, S., & Pak, T. Y. (2023). Digital financial literacy and financial well-being. Finance Research Letters, 58, 104438. https://doi.org/10.1016/j.frl.2023.104438

Chung, N., & Kwon, S. J. (2022). Effect of trust on financial consumers' adoption of digital banking. Sustainability, 14(6), 3588. https://doi.org/10.3390/su14063588

Croitoru, I. M., Drăgan, P. P., Ignat, N. D., & Jumanca, R. (2025). Exploring financial literacy in higher education with the help of FinTech: A bibliometric analysis of linkages to access, behavior, and well-being through digital innovation. FinTech, 4(1), 4. https://doi.org/10.3390/fintech4010004

Das, S. (2024). Financial literacy and education in enhancing financial inclusion and poverty alleviation. In E-Financial strategies for advancing sustainable development: Fostering financial inclusion and alleviating poverty (pp. 127–144). Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-67523-2_8

Del Sarto, N., & Ozili, P. K. (2025). FinTech and financial inclusion in emerging markets: A bibliometric analysis and future research agenda. International Journal of Emerging Markets, 20(13), 270–290. https://doi.org/10.1108/IJOEM-08-2024-1428

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285-296. https://doi.org/10.1016/j.jbusres.2020.04.044

Dorfleitner, G., Hornuf, L., Schmitt, M., & Weber, M. (2021). Definition of FinTech and description of the FinTech industry. In FinTech in Germany (pp. 5–10). Springer. https://doi.org/10.1007/978-3-319-54666-7_2

Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2022). Financial literacy, financial education, and downstream financial behaviors. Management Science, 60(8), 1861–1883. https://doi.org/10.1287/mnsc.2013.1849

Financial Services Authority. (2023). National Survey of Financial Literacy and Inclusion 2022. Financial Services Authority. https://ojk.go.id/id/berita-dan-kegiatan/publikasi/Pages/Survei-Nasional-Literasi-dan-Inklusi-Keuangan-2022.aspx

Gomber, P., Koch, J. A., & Siering, M. (2022). Digital finance and FinTech: Current research and future research directions. Journal of Business Economics, 87(5), 537–580. https://doi.org/10.1007/s11573-017-0852-x

Gupta, M., & Kiran, R. (2024). Sectoral comparison of sustainable digital financial inclusion of women workforce with the mediation of digital banking adoption intention: An empirical analysis. SAGE Open, 14(2), 21582440241258288. https://doi.org/10.1177/21582440241258288

Ha, D., Nguyen, M., Nguyen, K., & Şensoy, A. (2025). Unveiling financial inclusion dynamics: Fintech's resonance in association of Southeast Asian nations (ASEAN). International Journal of Finance and Economics, 30(2), 1348–1371. https://doi.org/10.1002/ijfe.2963

Hanson, T. A., & Ott, C. (2026). Trust in financial technology: The role of financial literacy, digital financial literacy, technological literacy, and trust in artificial intelligence. Journal of Risk and Financial Management, 19(2), 97. https://doi.org/10.3390/jrfm19020097

Hasan, R., Ashfaq, M., Parveen, T., & Gunardi, A. (2023). Financial inclusion–does digital financial literacy matter for women entrepreneurs? International Journal of Social Economics, 50(8), 1085–1104. https://doi.org/10.1108/IJSE-04-2022-0277

Hasler, A., Lusardi, A., & Oggero, N. (2022). Financial fragility in the US: Evidence and implications. Global Financial Literacy Excellence Center (GFLEC). https://gflec.org/wp-content/uploads/2022/04/Fin-Fragility-Report-April-2022.pdf

Isaia, E., Oggero, N., & Sandretto, D. (2024). Is financial literacy a protection tool from online fraud in the digital era? Journal of Behavioral and Experimental Finance, 44, 100977. https://doi.org/10.1016/j.jbef.2024.100977

Jafri, J. A., Amin, S. I. M., Rahman, A. A., & Nor, S. M. (2024). A systematic literature review of the role of trust and security on fintech adoption in banking. Heliyon, 10(1), e22980. https://doi.org/10.1016/j.heliyon.2023.e22980

Kaiser, T., & Menkhoff, L. (2023). Financial education in schools: A meta-analysis of experimental studies. Economics of Education Review, 78, 101930. https://doi.org/10.1016/j.econedurev.2023.101930

Kamble, P. A., Mehta, A., & Rani, N. (2024). Financial inclusion and digital financial literacy: Do they matter for financial well-being? Social Indicators Research, 171(3), 777–807. https://doi.org/10.1007/s11205-023-03264-w

Khan, S., Singh, R., Laskar, H. R., & Choudhury, M. (2025). Exploring the role of digital financial literacy in the adoption of peer-to-peer lending platforms. Investment Management and Financial Innovations, 22(1), 369. https://doi.org/10.21511/imfi.22(1).2025.27

Knowles, M. S. (1980). The modern practice of adult education: From pedagogy to andragogy. Cambridge Adult Education.

Königsheim, C., Lukas, M., & Nöth, M. (2017). Financial knowledge, risk preferences, and the demand for digital financial services. Schmalenbach Business Review, 18(4), 343–375. https://doi.org/10.1007/s41464-017-0040-0

Koskelainen, T., Kalmi, P., Scornavacca, E., & Vartiainen, T. (2023). Financial literacy in the digital age: A research agenda. Journal of Consumer Affairs, 57(1), 507–528. https://doi.org/10.1111/joca.12510

Kraus, S., Vonmetz, K., Orlandi, L. B., Zardini, A., & Rossignoli, C. (2023). Digital entrepreneurship: The role of entrepreneurial orientation and digitalization for disruptive innovation. Technological Forecasting and Social Change, 193, 122638. https://doi.org/10.1016/j.techfore.2023.122638

Liébana-Cabanillas, F., Marinkovic, V., de Luna, I. R., & Kalinic, Z. (2022). Predicting the determinants of mobile payment acceptance: A hybrid SEM-neural network approach. Technological Forecasting and Social Change, 129, 117–130. https://doi.org/10.1016/j.techfore.2018.03.016

Lusardi, A. (2019). Financial literacy and the need for financial education: Evidence and implications. Swiss Journal of Economics and Statistics, 155(1). https://doi.org/10.1186/s41937-019-0027-5

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. Journal of Economic Literature, 52(1), 5-44. https://doi.org/10.1257/jel.52.1.5

Lusardi, A., & Mitchell, O. S. (2023). The importance of financial literacy: Opening a new field. Journal of Economic Perspectives, 37(4), 137–154. https://doi.org/10.1257/jep.37.4.137

Lyons, A. C., & Kass-Hanna, J. (2021). A methodological overview to defining and measuring “digital” financial literacy. Financial Planning Review, 4(2), e1113. https://doi.org/10.1002/cfp2.1113

Mahsun, Mahsun, et al. "Analisis Determinan Intensi Nasabah dalam Memilih Perbankan Syariah di Kota Balikpapan: Dampak Pembangunan Ibu Kota Nusantara (IKN) sebagai Variabel Moderasi: Determinant Analysis of Customer Intention in Choosing Islamic Banking in Balikpapan City: The Impact of Nusantara Capital City (IKN) Development as a Moderating Variable." Jurnal Keuangan dan Perbankan Syariah 5.2 (2026): 205-224.

Martin, M. (2007). A literature review on the effectiveness of financial education (FRB Richmond Working Paper No. 07-03). Federal Reserve Bank of Richmond. https://doi.org/10.2139/SSRN.2186650

Meyers, E. M., Erickson, I., & Small, R. V. (2015). Digital literacy and informal learning environments: An introduction. Learning, Media and Technology, 40(4), 555-567. https://doi.org/10.1080/17439884.2015.1077855

Migliavacca, M. (2020). Keep your customer knowledgeable: Financial advisors as educators. European Journal of Finance, 26(4-5), 402-419. https://doi.org/10.1080/1351847X.2020.1700488

Morgan, P. J., & Long, T. Q. (2020). Financial literacy, financial inclusion, and savings behavior in Laos. Journal of Asian Economics, 68, 101197. https://doi.org/10.1016/j.asieco.2020.101197

Muthoni, M. (2023). Impact of digital financial services on financial inclusion of youth in developing countries. African Journal of Finance and Accounting, 5(2), 22–41. https://doi.org/10.47672/ajfa.1499

N.P., A. A., Akhtar, J. S. M., & Banu, N. M. (2022). Relationship between demographic factors and digital financial literacy. The Romanian Economic Journal, 25(84), 41–53. https://doi.org/10.24818/rej/2022/84/04

OECD. (2023). OECD/INFE 2023 international survey of adult financial literacy. OECD Publishing. https://www.oecd.org/financial/education/2023-infe-international-survey-adult-financial-literacy.pdf

OECD. (2024). OECD/INFE survey instrument to measure digital financial literacy. Paris: OECD Publishing. https://www.oecd.org/en/publications/supporting-informed-and-safe-use-of-digital-payments-through-digital-financial-literacy_21de47d1-en/full-report.html

OJK. (2025). National strategy on Indonesian financial literacy 2021-2025. Financial Services Authority. https://ojk.go.id/en/berita-dan-kegiatan/publikasi/Documents/Pages/National-Strategy-on-Indonesian-Financial-Literacy-(SNLKI)-2021—2025/National%20Strategy%20on%20Indonesian%20Financial%20Literacy%20(SNLKI)%202021%20%E2%80%93%202025.pdf

Ozili, P. K. (2021). Digital financial inclusion. In Digital finance, FinTech and financial inclusion (pp. 1–15). Emerald Publishing. https://doi.org/10.1108/978-1-80071-140-020211013

Özşuca, E. A. (2024). Gender gap in digital financial inclusion across generations. Empirica, 1–14. https://doi.org/10.1007/s10663-024-09641-z

Pham, T. T. T., Ho, J. C., & Ngo, T. (2022). Financial technology adoption and financial literacy: Evidence from Vietnam. Research in International Business and Finance, 62, 101704. https://doi.org/10.1016/j.ribaf.2022.101704

Potrich, A. C. G., Vieira, K. M., & Kirch, G. (2022). How well do women do when it comes to financial literacy? Proposition of an indicator and analysis of gender differences. Journal of Behavioral and Experimental Finance, 2, 28–41. https://doi.org/10.1016/j.jbef.2014.01.002

Preziuso, M., Koefer, F., & Ehrenhard, M. (2025). Open banking and inclusive finance in the European Union–perspectives from the Dutch stakeholder ecosystem. Financial Innovation, 9(1), 111. https://doi.org/10.1186/s40854-025-00702-5

Prihandini, W. (2025). Digital financial literacy and financial inclusion in Indonesia’s digital economy. International Journal of Economics, Business and Accounting Research (IJEBAR), 9(3). https://doi.org/10.29040/ijebar.v9i3.18500

Rajan, D. (2025). Fintech disruption of traditional banking services: A comprehensive analysis of digital transformation in the financial sector. International Journal for Multidisciplinary Research, 7(4). https://doi.org/10.36948/ijfmr.2025.v07i04.53604

Robb, C. A., & Woodyard, A. S. (2021). Financial knowledge and best practice behavior. Journal of Financial Counseling and Planning, 22(1), 60–70. https://afcpe.org/assets/pdf/vol2211_robb_woodyard.pdf

Setiawan, M., Effendi, N., Santoso, T., Dewi, V. I., & Sapulette, M. S. (2022). Digital financial literacy, current behavior of saving and spending and its future foresight. Economics of Innovation and New Technology, 31(4), 320–338. https://doi.org/10.1080/10438599.2020.1799142

Snyder, H. (2021). Literature review as a research methodology: An overview and guidelines. Journal of Business Research, 104, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Soejachmoen, M. P. (2016). Financial inclusion in Indonesia: Moving towards a digital payment system. In Financial inclusion in Asia: Country surveys (pp. 131–186). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-58337-6_5

Suleiman, A., Dewaranu, T., & Anjani, N. H. (2022). Creating informed consumers: Tracking financial literacy programs in Indonesia. Center for Indonesian Policy Studies. https://doi.org/10.35497/359634

Syarifuddin, F., & Adha, S. (2022). Digital banking adoption in Indonesia: An empirical study. Bulletin of Monetary Economics and Banking, 25(3), 415–436. https://doi.org/10.21098/bemp.v25i3.1850

Tranfield, D., Denyer, D., & Smart, P. (2020). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. British Journal of Management, 14(3), 207–222. https://doi.org/10.1111/1467-8551.00375

Tuli, E. (2024). Exploring digital banking adoption in developing Asian economies: Systematic literature review and bibliometric analysis. International Social Science Journal, 74(252), 399–426. https://doi.org/10.1111/issj.12463

Widyastuti, U., Respati, D. K., Dewi, V. I., & Soma, A. M. (2024). The nexus of digital financial inclusion digital financial literacy and demographic factors: Lesson from Indonesia. Cogent Business and Management, 11(1), 2322778. https://doi.org/10.1080/23311975.2024.2322778

World Bank. (2022). The Global Findex database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19. World Bank Group. https://www.worldbank.org/en/publication/globalfindex

Xu, L., & Zia, B. (2022). Financial literacy around the world: An overview of the evidence with practical suggestions for the way forward. World Bank Policy Research Working Paper, 6107. https://doi.org/10.1596/1813-9450-6107

Yadav, M., Banerji, P., & Garg, A. (2025). Digital financial literacy and retirement planning with mediating effect of saving behaviour. American Journal of Business. https://doi.org/10.1108/AJB-05-2024-0095

Yin, K. Y., Yusof, R., & Abe, Y. (2022). Integrating financial literacy into economics courses through digital tools: The Finlite app. Journal of International Education in Business, 15(2), 331–350. https://doi.org/10.1108/JIEB-06-2021-0068

Zaimovic, A., Meskovic, M. N., Dedovic, L., Arnaut-Berilo, A., Zaimovic, T., & Torlakovic, A. (2024). Measuring digital financial literacy. Procedia Computer Science, 236, 574-581. https://doi.org/10.1016/j.procs.2024.05.057

Zulaikha, S., & Ikhsan, M. (2023). Digital-based financial education and its impact on the savings behavior of the millennial generation in Indonesia. Journal of Economics and Business, 26(1), 45–62.https://doi.org/10.24914/jeb.v26i1.5834