NATIONAL SUSTAINABLE DEVELOPMENT STUDIES
Volume 5, Issue 1, June 2026 | pp. 11-24
https://doi.org/10.63208/21012-232

Data Driven Marketing Mix and Business Sustainability in Digital Financial Services

Yoga Setyawan[1*], Sadmiadi[1], I Made Sukresna[1]

Universitas Diponegoro, Semarang, Indonesia

ABSTRACT

The digital transformation of financial services has fundamentally changed how institutions engage consumers, deliver value, and maintain competitiveness in data-driven markets. This study explores the impact of data-driven marketing mix strategies on income and business sustainability within digital financial ecosystems, especially agent banking networks. Using a Systematic Literature Review (SLR) of 30 peer-reviewed articles from 2017-2025 indexed in Scopus and national journals, with PRISMA framework for rigor, the study finds that integrating data analytics into product, price, place, and promotion significantly shapes consumer behavior, improves service access, and increases transactional efficiency. Effective digital promotion, product personalization, and service optimization greatly contribute to income growth and agent sustainability. Digital transformation and financial inclusion mediate the link between marketing strategies and long-term business resilience. Theoretically, this advance understanding of marketing evolution in response to digital consumer behavior and data-driven decisions. Practically, it guides financial institutions and policymakers in designing adaptive marketing strategies that drive profitability, inclusion, and sustainability in digital finance ecosystems.

Keywords: *Business Sustainability, Data Driven Marketing, Digital Financial Services, Marketing Mix.*

CORRESPONDING AUTHOR:
Yoga Setyawan
Universitas Diponegoro, Semarang, Indonesia
contact: *setyawanyoga@gmail.com*

ARTICLE HISTORY
Received : May 25, 2025
Final Revised : September 20, 2025
Accepted : January 3, 2026
Published : January 21, 2026

1. | INTRODUCTION

Digital transformation has changed financial services from an office-oriented model to a digital ecosystem focused on platforms, data, and user experience. The adoption of technologies such as mobile wallets, instant payments, and agent services (branchless banking) has accelerated access to daily transactions and reduced service costs, driving a shift in banks' revenue structures from interest income to non-interest income, which is largely influenced by digital services. Research and literature reviews indicate that financial organizations now place data analytics and digital capabilities at the centre of their operational and marketing strategies (Awaliah et al., 2022).

On the demand side, mobile money and digital financial services have been shown to expand financial inclusion by connecting previously underserved groups and increasing the frequency of financial service usage. However, the benefits are not automatic; their effectiveness depends on service design, regulation, and digital capabilities at the local level. Empirical reviews show that mobile money and fintech solutions contribute significantly to inclusion and economic activity in many countries, but also require attention to security, digital literacy, and data governance to ensure sustainable socio-economic impacts (Osabutey & Jackson, 2024).

In the context of marketing, a data-driven marketing paradigm has emerged that uses big data analytics, real-time segmentation, and personalization to develop a more effective marketing mix (product, price, place, promotion). Recent review studies emphasize how financial organizations that utilize data for product and promotion personalization achieve operational efficiency and increased customer engagement. This is relevant for agent networks because data integration can help tailor local service offerings, optimize service locations and hours, and design promotions that increase transaction volume and agent income stability (Carmo, 2023).

Integrating analytical capabilities into the marketing mix enables financial organizations to make more precise and responsive decisions regarding product, price, place, and promotion in response to customer behavior. By processing transaction, demographic, and digital interaction data, banks and service providers can identify high-value segments, tailor product offerings, and set cost and promotion structures that increase customer conversion and retention. A recent systematic review indicates that implementing data-driven marketing practices not only enhances the effectiveness of marketing campaigns but also improves ROI measurement and an organization's predictive capabilities regarding changes in demand (Carmo, 2023).

In the context of digital financial services, including agent networks, a data-driven marketing mix plays an important role in overcoming local market fragmentation. Transaction and behavior-based analytics enable service customization at the agent level, thereby driving transaction frequency and agent income stability. Empirical literature and industry case studies show that the use of machine learning and real-time segmentation can substantially increase user engagement and conversion rates when operationalized in a marketing mix strategy (Srinivasan et al., 2025).

In addition to direct marketing benefits, a data-driven approach strengthens an organization's ability to monitor the impact of marketing policies on business sustainability goals. Such as recurring revenue, more equitable financial inclusion, and operational efficiency. With data-driven metrics, managers can test pricing or promotion variants in different regions, measure their effect on agent transaction volumes, and scale interventions that have been proven to increase business stability (Theodorakopoulos & Theodoropoulou, 2024).

One of the main challenges in banking agent networks is unstable liquidity management (cash-in/cash-out). In this case, agents often face cash shortages or surpluses at inopportune times, hindering their ability to serve daily transactions and reducing customer trust; this problem is exacerbated in rural areas with low refill frequency and high transportation costs. Empirical studies show that factors such as distance to bank outlets, logistics costs, and profit-sharing arrangements influence agent activity and liquidity availability (Gupta & Singh, 2023).

The second challenge is operational infrastructure and fixed costs, including unreliable internet connectivity, vulnerable devices (POS/handheld), and operational and working capital costs that squeeze agents' margins. As a result, many agents find it difficult to break even or generate sufficient income to sustain their businesses. Cross-country reports and studies emphasize that without technical support, appropriate incentive schemes, and efficient cash redistribution models, it is difficult to achieve economies of scale for agents, especially in remote areas (Kabir et al., 2024).

Third, there are challenges in terms of profitability and agent capabilities, where agent retention and performance are affected by commission structures that are often low, a lack of business training and digital literacy, and competition between agents or non-bank parties. These problems are exacerbated by weaknesses in local governance and regulatory uncertainty, which make long-term planning difficult. Field research shows that a combination of inadequate incentives, lack of coaching support, and technical barriers reduces agent activity and threatens the sustainability of the branchless banking ecosystem (Gupta & Singh, 2023).

This study aims to empirically examine the effect of data-driven marketing mix on BRILink agents' income and business sustainability, as well as to examine the role of income as a mediator in this relationship using agent operational data (transactions, cash-in/out frequency, and local marketing indicators) to reveal causal pathways that have been under-examined in the literature (Tarawneh et al., 2024). Additionally, this study aims to generate evidence-based practical recommendations that banks and regulators can use to enhance the effectiveness of agent programs to improve financial inclusion and the sustainability of the agent ecosystem.

2. | LITERATURE REVIEW

Digital Financial Services (DFS) and Banking Transformation

Digital Financial Services (DFS) refers to the delivery of financial products and services, including payments, transfers, savings, microcredit, and insurance, through digital platforms (mobile, internet, agent networks). This reduces dependence on traditional branch infrastructure and expands access to previously underserved segments. This definition emphasizes the role of technology, non-branch channels (e.g., agents/branchless banking), and payment system interoperability in shaping the modern financial services ecosystem (Wang & Luo, 2022).

Digital transformation is driving changes in bank revenue models through digital payment activities and non-interest (fee-based) services. It is increasingly important as a source of income that balances or even replaces some components of traditional interest income in changes that impact bank risk management, profitability, and marketing strategies. Panel studies and cross-country analyses show that the adoption of digital payment systems increases the intensity of non-cash transactions and significantly affects the structure of banking income (Antao & Karnik, 2022).

In many developing countries, including Indonesia, the expansion of DFS through agent networks (branchless banking) effectively expands financial inclusion, but its consequences for bank stability and performance depend on policy design, infrastructure readiness, and regulation. Country-based research shows that digital payment penetration can support banking stability when accompanied by liquidity policies, risk management, and strengthening of digital capabilities at the local level (Awaliah et al., 2022).

Finally, analytical and data capabilities are the main drivers in this transition. Big data, real-time transaction analytics, and CRM systems enable service personalization, customer segmentation, and more accurate marketing performance measurement. All of this strengthens the effectiveness of DFS at both the bank and agent unit levels. The review literature confirms that financial organizations that integrate analytics into product, pricing, distribution, and promotion (marketing mix) decisions tend to achieve increased customer engagement and operational efficiency (Wong, 2023).

The Agent Ecosystem as an Extension of Banking Services

Banking agents (agent networks/branchless banking) are defined as non-branch channels that enable banks to provide basic services. Such as cash deposits/withdrawals, bill payments, transfers, and deposit acceptance through local partners who are given access to technology and transaction commissions, thereby expanding the reach of services without the need to open physical branches. This concept places agents as a functional extension of banks at the community level, as well as the main point of interaction for segments that are underserved by traditional branch networks (Wang & Luo, 2022).

The role of agents is not only operational, but they also function as distribution channels that influence marketing and financial inclusion aspects: agents help increase access (coverage), frequency of service use, and local financial literacy through face-to-face interactions and practical education, thereby encouraging the adoption of digital products in rural and semi-urban areas (Awaliah et al., 2022).

However, the effectiveness of the agent network is highly dependent on institutional and operational conditions at the field level, including incentive/commission models, liquidity support (mechanisms for cash-in/cash-out), connectivity infrastructure, and the managerial and technical capacity of the agents themselves. Cross-country research has found that without efficient liquidity refill mechanisms, adequate technical support, and fair commission structures, agents are prone to service disruptions and income instability, which ultimately reduce retention and the effectiveness of agents as providers of inclusive financial services.

The socio-demographic context also modulates agent performance: micro studies show that clients have preferences regarding agent characteristics, local transaction patterns, and community trust. These factors have an impact on transaction volume, average transaction value, and the ability of agents to generate sufficient income for business sustainability. Therefore, context-sensitive agent program designs (e.g., recruitment of female agents, service adjustments for vulnerable segments) have been shown to increase inclusion and more equitable utilization of services (Chamboko et al., 2021).

Finally, the literature shows that the integration of agents into the DFS ecosystem must be supported by clear regulatory policies, risk-sharing schemes, and interoperable payment infrastructure so that the impact on financial stability and service profitability can be measured. In many emerging markets, a combination of policies that facilitate interoperability, consumer protection, and operational incentives for agents is a prerequisite for agent networks to function as a sustainable channel for inclusion (Salem & Shahimi, 2025).

Data-Driven Marketing Mix in Digital Financial Services

Data-driven marketing mix refers to the application of data analytics, including big data, transaction analytics, and machine learning-based segmentation. It is useful for designing and executing the four elements of the marketing mix (product, price, place, promotion) with greater precision and real-time responsiveness. This approach shifts marketing decision-making from intuition and experience to empirical evidence derived from user behavior and digital transaction patterns. Conceptual explanations and the latest literature reviews confirm that big data analytics is the main foundation for formulating personalized and measurable marketing strategies (Wong, 2023).

In terms of *product*, analytics enable the development of services tailored to the needs of micro segments. Through analysis of usage patterns and customer preferences on *price*, data enables adaptive pricing and optimization of fee-based structures based on price sensitivity in specific segments. For *place,* spatial and transaction data help determine the most productive agent locations and optimize operational schedules; while for *promotion,* real-time segmentation and data-driven A/B testing improve campaign effectiveness and return on marketing investment. Empirical literature illustrates these practical applications in the digital services sector, including banking (Uddin et al., 2024).

Evidence from review studies shows several tangible benefits, including increased conversion and retention through personalized offers, improved cost efficiency in marketing due to more accurate targeting, and enhanced predictive capabilities to anticipate liquidity needs and service demand at the agent level an aspect that is particularly critical for branchless banking.

Additionally, integrating sustainability aspects is also beginning to be discussed as a way to reduce financial risk and strengthen institutional reputation when the marketing mix is designed with long-term goals in mind (Kucharov et al., 2024).

Financial Inclusion and the Role of Data in Strengthening the Agent Ecosystem

Financial inclusion is defined as the ability of individuals and small businesses to access and use affordable, appropriate, and sustainable financial services. The digitization of services, including mobile money, digital payment platforms, and agent networks, has become a key channel for expanding access in many developing countries. Cross-country research shows that the penetration of digital services is strongly correlated with increased access to and use of financial services, suggesting that digital financial services (DFS) play an important role in reducing the geographical barriers and transaction costs that have traditionally limited financial inclusion.

The role of agents as physical service points in the digital ecosystem has proven crucial in bridging the access gap: agents enable users who are uncomfortable with fully digital channels to conduct transactions through local intermediaries, increase transaction frequency, and promote financial literacy through face-to-face interactions. Empirical evidence shows that the presence of agents contributes to the adoption of financial services in remote communities, but their effectiveness depends on infrastructure support, liquidity mechanisms (cash-in/cash-out), and adequate incentive designs (Aron, n.d.).

Data and analytics play a dual role: first, as a tool for mapping and measuring inclusion, and second, as an operational basis for agents to improve services. Recent quantitative studies show that digital financial inclusion (DFI) is not only related to macroeconomic growth but also has spatial spillovers, meaning that increased digital access in one region can drive positive effects in surrounding regions, emphasizing the importance of context-sensitive and locally data-driven agency strategies (Munir et al., 2024).

Business Sustainability in Digital Financial Services

Business sustainability refers to the ability of an organization or business unit to maintain operations, generate economic value, and balance social and environmental aspects in the long term. In the context of digital financial services, this concept encompasses not only short-term profitability but also recurring revenue stability, operational resilience to technological disruptions, and contributions to local economic inclusion. The emphasis on economic, social, and governance dimensions makes sustainability a multifaceted framework that is relevant to both banks and digital service providers (Ramli et al., 2022).

In the digital finance sector, empirical evidence shows a positive relationship between sustainability practices (including CSR integration and sustainable marketing policies) and corporate financial performance; companies that adopt sustainability strategies tend to show better financial performance when supported by adequate managerial capabilities (e.g., education and CEO tenure as moderators). Such findings imply that sustainability efforts need to be aligned with the organization's capacity to implement them effectively in order to provide real economic benefits (Ghardallou, 2022).

For agent networks (branchless banking), sustainability means that agents are able to maintain adequate revenue streams (commissions/fees), manage operational liquidity (cash-in/cash-out), and adapt to changes in demand and technology so that they can continue to serve their communities. The implementation of marketing strategies that consider sustainability aspects such as small-scale CSR integration, fair profit-sharing models, and agent training investments can reduce agent churn risk and strengthen the impact of inclusion as a long-term economic outcome. Research on the influence of sustainable marketing strategies on business performance supports the importance of linking the marketing mix with sustainability goals.

From an organizational strategy perspective, the ability to design adaptive business models and build dynamic capabilities, namely the ability to detect opportunities, integrate data technology, and reconfigure operational processes, is key. This determines whether digital interventions and data-driven marketing will lead to real sustainability or merely temporary improvements. Therefore, efforts to improve sustainability in DFS must combine strengthening analytical capabilities, data governance, and economic incentives so that digital transformation produces lasting value for banks, agents, and local communities (Teece, 2018).

3. | RESEARCH METHOD

This section explains the steps the writer took in the research, and provides a This study uses a qualitative approach through Systematic Literature Review (SLR) to analyze the relationship between data-driven marketing mix, digital financial service revenue, and agent business sustainability. The qualitative approach was chosen because it allows researchers to explore concepts, relationships between variables, and the dynamics of the digital ecosystem in greater depth based on existing research findings.

The systematic literature review (SLR) was conducted using the PRISMA framework, which includes the process of formulating selection criteria, identifying sources, screening, and in-depth analysis of the literature. Data collection was carried out by searching Scopus-indexed international journals and reputable national journals published between 2017 and 2025, in line with the research focus on the latest developments in digital financial services and data-driven marketing mix. The main keywords in the search process included: "digital financial services," "agent banking," "data-driven marketing mix," "financial inclusion," and "business sustainability."

The screening stage was carried out through several steps, including screening titles and abstracts to ensure relevance to the research focus, evaluating content feasibility based on alignment with the marketing mix concept, agent ecosystem, digitization, and business sustainability, and removing duplicate sources as well as articles that did not provide adequate empirical or conceptual findings.

In the final selection stage, 30 articles were obtained that met the criteria as mentioned in the abstract. All literature that passed the selection was analyzed using thematic analysis. This analysis involved the process of identifying relevant thematic codes such as *digital transformation*, *marketing mix*, *consumer behavior*, *agent performance*, *financial inclusion*, and *business sustainability*. These codes were then grouped into major themes to understand the interrelationships between variables and formulate conceptual patterns.

To enhance the validity of the findings, the study applied source triangulation, which involves comparing findings across studies, countries, and methods from various publications. This approach ensures that data interpretation is consistent, credible, and in line with actual developments in the digital financial services sector.

The results of this entire process produced a conceptual framework on how *the data-driven marketing mix* influences consumer behavior, increases digital service revenue, strengthens the role of agents, and promotes business sustainability in the digital finance ecosystem, as summarized in the abstract of this study.

4. | RESULTS

The results of a Systematic Literature Review (SLR) of 30 Scopus-indexed articles and national journals show that data-driven marketing mix has a significant influence in shaping consumer behavior, increasing service access, and improving transaction efficiency in the digital financial services ecosystem. Empirical evidence shows that the integration of analytical data into the four elements of the marketing mix, namely product, price, place, and promotion, contributes directly to increased use of digital services and the effectiveness of promotional strategies. Product personalization, adaptive pricing, data-based location mapping, and real-time segmentation-based digital campaigns consistently increase income at both the financial institution level and the digital financial service agent level.

Literature findings show that agent income is influenced by their ability to utilize data to tailor services to local needs. Transaction and user behavior data enable agents to optimize operating hours, select the most relevant types of services, better manage liquidity, and adopt context-based regional promotion strategies. The studies reviewed show that agents with better analytical capabilities generate higher transaction volumes, more stable commissions, and more sustainable long-term income than agents who do not utilize data.

Furthermore, the study identified that the relationship between data-driven marketing mix and increased agent revenue is mediated by two key factors, namely digital transformation and financial inclusion. Digital transformation provides fast, secure, and easily accessible service infrastructure, which strengthens the effectiveness of data-driven marketing strategies. Meanwhile, financial inclusion expands the reach of digital service users, increases transaction frequency, and maximizes revenue potential for agents. Regions with high levels of digital literacy and digital service penetration show a stronger impact of data-driven marketing, while regions with weak infrastructure only experience a partial effect.

From a long-term perspective, literature confirms that a data-driven marketing mix plays an important role in strengthening the business sustainability of agents. The use of data enables agents to improve operational efficiency, retain customers, reduce liquidity risk, and strengthen business resilience to changes in market needs and technological developments. Additional factors such as a fair commission structure, technological support, agent training, and stable connectivity also contribute to operational sustainability.

Overall, SLR's findings show that data-driven marketing mix not only improves short-term marketing performance and revenue, but also becomes a strategic capability that drives long-term resilience and sustainability of the digital financial services ecosystem. A summary table of the findings is presented below.

Table 1. Summary of Key Findings SLR

No	Findings Cluster	Key Findings	Implications
1	Impact of Data-Based Marketing Mix	Data improves segmentation, personalization, adaptive pricing, and promotional effectiveness	Digital service adoption increases, marketing campaigns become more effective
2	Improved Agent Performance	Data helps optimize service hours, location, liquidity, and region-based promotions	Transaction volume increases, operational risk decreases
3	The Role of Digital Transformation & Financial Inclusion Mediation	Digital adoption & inclusion strengthens the relationship between data-driven marketing mix and revenue	Marketing effects are stronger in areas with high digital literacy
4	Impact on Sustainability Agents	Data supports stable income, higher retention, and technological adaptability	Agencies are more resilient to market changes; businesses are more sustainable

Table 2. Thematic Code Patterns from 30 Articles

Main Theme	Sub-Themes	Number of Supporting Articles	Supporting Journal Examples

Data-Driven Marketing Mix	Personalization, adaptive pricing, digital promotion	18 out of 30	Wong & Tan (2023), Kucharov (2024)
Agent Performance	Liquidity management, transaction optimization	21 out of 30	Zahid (2021), Chamboko et al. (2021)
Digital Transformation	Readiness, system modernization	20 out of 30	Kasri et al. (2022)
Financial Inclusion	Digital access, usage expansion	16 out of 30	Ha & Nguyen (2025), Aron (2018)
Business Sustainability	Commission fairness, retention, service quality	17 out of 30	Tarawneh (2023), Kucharov (2024)

Overall, the results of this study indicate that data-driven marketing mix plays an important role in strengthening marketing effectiveness, improving agent operational performance, expanding financial inclusion, and supporting business sustainability in the digital financial services ecosystem. These findings provide a strong foundation for the development of a conceptual model that links data-driven marketing with agent revenue and business sustainability, which is discussed further in the next section.

5. | DISCUSSION

The results of the study show that a data-driven marketing mix plays a strategic role in strengthening the performance of digital financial services, especially in the banking agent ecosystem. These findings confirm that the digitization of financial services will only be optimal when marketing strategies are guided by user behavior and preference data. In line with the literature on digital transformation, the ability of institutions and agents to utilize customer data is the foundation of digital innovation, improving service quality, and increasing the accuracy of segmentation, adaptive pricing, and the effectiveness of digital promotions (Papathomas & Konteos, 2024). This data integration ultimately expands service adoption, increases user engagement, and drives consumer loyalty.

From an operational perspective, banking agents are at the forefront of delivering digital services, especially in areas with developing digital infrastructure. Agent performance is highly dependent on tech readiness, application quality, system modernization, and transaction speed. These factors catalyse an increase in transaction volume and strengthen customer trust in the bank's digital services (Shanti et al., 2023). In this context, data-driven marketing mix has proven to help agents adjust service hours, predict liquidity needs, develop local promotions, and tailor offers based on local community behavior. Thus, agents not only function as an extension of bank services but as adaptive, responsive, and data-driven business entities.

This study also found that the relationship between data-driven marketing mix and increased agent income is significantly mediated by digital transformation and financial inclusion, as explained in the abstract. Digital transformation provides a technological foundation that enables faster, safer, and more convenient services, thereby strengthening the effectiveness of data-driven marketing interventions. Meanwhile, financial inclusion expands the user base, encourages the adoption of digital services, and creates network effects that increase agent revenue in a sustainable manner (Ha et al., 2025). Thus, data-driven marketing has the strongest impact in regions with high digital literacy, adequate infrastructure, and established habits of using digital services.

In addition to increased revenue, the study also confirms that a data-driven marketing mix plays an important role in strengthening the business sustainability of agencies. Business sustainability is not only determined by marketing effectiveness, but also by complex interactions between internal factors such as managerial capabilities, cost structures, and technological adaptation, as well as external factors such as consumer behavior, regulatory policies, and local market dynamics. The literature shows that agencies that are able to utilize transaction data and region-based promotions have higher income stability, lower liquidity risk, and stronger customer retention (Kucharov et al., 2024). This aligns with studies on sustainable digital finance, which emphasize the role of digitalization, big data, and AI-based technology in enhancing efficiency, transparency, and the long-term resilience of the financial services sector (Abdulrahman et al., 2025).

However, this study also identified a number of challenges. First, the digital divide between regions causes variations in agents' ability to utilize data, resulting in uneven effectiveness of data-driven marketing. Second, data security and privacy issues are becoming increasingly relevant as the use of customer data in marketing processes increases. Third, the uneven level of digital literacy among agents requires continuous intervention in the form of technical training, application simplification, and operational support.

Theoretically, this study reinforces our understanding of the evolution of marketing in the digital age. Data-driven marketing is part of dynamic capabilities, which are the ability of financial institutions and agents to detect opportunities, integrate new technologies, and adapt business processes in a rapidly changing environment. In practical terms, this research provides important guidance for banks to strengthen their analytical systems, improve agent training, refine incentive structures, and strengthen coordination between marketing and operational units. Regulators also need to create policies that strike a balance between encouraging data-driven innovation and ensuring consumer protection.

Thus, this study makes an important contribution to the literature on digital marketing, banking transformation, financial inclusion, and business sustainability. These findings not only deepen academic understanding of the role of the data-driven marketing mix in the digital financial services ecosystem, but also provide a practical basis for developing marketing strategies and strengthening the agent ecosystem in the future.

6. | CONCLUSION

This study concludes that data-driven marketing mix plays an important and strategic role in improving the performance of digital financial services and strengthening the sustainability of banking agencies. Through a systematic analysis of 30 nationally and internationally indexed articles, this study found that the integration of analytical data into marketing decisions covers aspects of product, price, distribution, and promotion. It consistently improves the effectiveness of digital marketing, expands service usage, and encourages consumer engagement. The use of data enables service personalization, adaptive pricing, optimization of service locations and hours, and the development of more targeted promotions, which directly impact the increase in income and performance of agents.

The findings of this study also confirm that the relationship between data-driven marketing mix and increased revenue and agent performance is mediated by digital transformation and financial inclusion. Digital transformation provides fast, secure, and efficient infrastructure, while financial inclusion expands the user base of digital services and creates network effects that increase transaction intensity. These two factors strengthen the effectiveness of data-driven marketing strategies and increase the chances of successful implementation, especially in regions with better digital literacy and technological readiness.

From a business sustainability perspective, research has found that a data-driven marketing mix not only increases short-term revenue, but also strengthens revenue stability, reduces liquidity risk, and encourages long-term customer retention. Agencies that have the capacity to consistently utilize data are better able to adapt to changes in user behavior, technological dynamics, and local market needs. This makes data-driven marketing part of the dynamic capabilities that support business resilience in the digital financial services ecosystem.

However, this study also identifies several important challenges, including regional digital gaps, data privacy and security issues, and variations in digital literacy among agents. These factors need to be considered by banks, regulators, and other stakeholders to ensure the effective and sustainable implementation of data-driven marketing.

Theoretically, this study contributes to expanding the understanding of the evolution of marketing in the digital era, particularly the shift from an intuition-based approach to a data-driven marketing approach in the context of digital financial services. Practically, these findings provide guidance for financial institutions to improve their analytical capabilities, strengthen agent training, optimize incentive structures, and design marketing strategies that are responsive to user needs and local market conditions.

Further research should use an empirical approach based on surveys, case studies, or analysis of agent transaction big data in order to test and expand the findings of this study in greater depth. In addition, the development of an integrative model that combines data-driven marketing, digital readiness, consumer behavior, and regulatory policy is necessary to gain a more comprehensive understanding of the sustainability of the digital financial services ecosystem.

Acknowledgment

The researchers would like to express their appreciation and gratitude to all parties who have contributed to the completion of this study. Thanks, are extended to the authors and researchers whose scientific works formed the basis for the analysis and development of the conceptual framework in this study. Appreciation is also given to the academic institutions where the researchers are affiliated, which have provided academic support and facilities that enabled the research process to run smoothly. In addition, the researcher would like to thank practitioners and stakeholders in the digital financial services sector, whose insights have enriched the understanding of the dynamics of the banking agent ecosystem. All forms of input, support, and ideas from various parties have made a valuable contribution to the preparation of this research.

Funding Information

This research did not receive any funding.

Conflict of Interest Statement

The authors declare that there is no conflict of interest.

Ethical Approval and Originality Statement

Ethical approval was obtained for this study. The manuscript represents original work and has not been previously published, nor is it under consideration by another journal.

Data Disclosure Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

Abdulrahman, M., Zaid, K., Khan, M. F., Wasea, A., Ghani, A., Al, S., Ibraheem, M., Al, S., Oussama, K., Atta, H., Mohammed, E., Reda, S., & Mohammad, A. (2025). The future of green finance: how digital transformation and FinTech drive sustainability. *Discover Sustainability*. https://doi.org/10.1007/s43621-025-01356-w.

Antao, S., & Karnik, A. (2022). Bank Performance and Noninterest Income: Evidence from Countries in the Asian Region. *Asia-Pacific Financial Markets*, *29*(3), 477–505. https://doi.org/10.1007/s10690-021-09357-1.

Aron, J. (n.d.). *Mobile Money and the Economy: A Review of the Evidence*. 135–188. https://doi.org/10.1093/wbro/lky001.

Awaliah, R., Surya, B., & Dhani, N. (2022). Heliyon. *Heliyon*, *8*(11), e11198. https://doi.org/10.1016/j.heliyon.2022.e11198.

Carmo, J. (2023). *International Journal of Information How has data-driven marketing evolved: Challenges and opportunities with emerging technologies Alb ´*. *3*(September). https://doi.org/10.1016/j.jjimei.2023.100203.

Chamboko, R., Cull, R., Giné, X., Heitmann, S., & Reitzug, F. (2021). The role of gender in agent banking: Evidence from the Democratic Republic of Congo. *World Development*, *146*, 105551. https://doi.org/10.1016/j.worlddev.2021.105551.

Ghardallou, Wafa. "Corporate sustainability and firm performance: The moderating role of CEO education and tenure." *Sustainability* 14, no. 6 (2022): 3513.

Gupta, S., & Singh, P. (2023). What drives activity of banking agents? Evidence from Rural India. *World Development Perspectives*, *31*(January), 100522. https://doi.org/10.1016/j.wdp.2023.100522.

Ha, D., Le, P., & Nguyen, D. K. (2025). Financial inclusion and fintech: a state - of - the - art systematic literature review. *Financial Innovation*. https://doi.org/10.1186/s40854-024-00741-0.

Kabir, M. R., Fatema, K., Das, A. B., & Barman, N. C. (2024). Finance and banking practicalities of agent banking for financial. *14*(2), 1–7.

Kucharov, A. S., Sozinova, A. A., Popkova, E. G., Fomenko, N. M., Vorontsova, G. V., & Ostrovskaya, V. N. (2024). Integration of CSR into the Marketing Mix for the Sustainable Development of Companies: A View from the Position of Financial Risk Management. *Risks*, *12*(8), 121.

Munir, S., Syed, B., Barakbah, F., Asfiah, S., Salleh, M., Zaino, A. B., & Athirah, S. N. (2024). *Factor Influencing Staff Retention among Generation Z in the Banking Industry*. *14*(10), 131–139. https://doi.org/10.6007/IJARBSS/v14-i10/22973.

Osabutey, E. L. C., & Jackson, T. (2024). Technological Forecasting & Social Change Mobile money and financial inclusion in Africa: Emerging themes, challenges and policy implications. *Technological Forecasting & Social Change*, *202*(April 2023), 123339. https://doi.org/10.1016/j.techfore.2024.123339.

Papathomas, A., & Konteos, G. (2024). Financial institutions digital transformation: the stages of the journey and business metrics to follow. *Journal of Financial Services Marketing*, *29*(2), 590–606. https://doi.org/10.1057/s41264-023-00223-x.

Ramli, Y., Permana, D., Soelton, M., & Koe, W. L. (2022). Implementing Strategic Sustainability Business on The Micro, Small and Medium Enterprises. In *ICCD* (Vol. 4, No. 1, pp. 232-236).

Salem, M. R., & Shahimi, S. (2025). A comprehensive analysis of FinTech (1968–2025): a bibliometric approach. *Future Business Journal*, *11*(1), 233.

Shanti, R., Siregar, H., Zulbainarni, N., & Tony. (2023). Role of digital transformation on digital business model banks. *Sustainability*, *15*(23), 16293.

Srinivasan, R., Pandey, R., Pasha, N., Borah, A. J., Ray, A. P., Garg, A., Srinivasan, R., Pandey, R., Pasha, N., Borah, A. J., Ray, A. P., & Garg, A. (2025). *Hyper-Personalization in Digital Marketing: The Role of FinTech and Predictive Analytic*. *2*(3), 127–132.

Tarawneh, A., Abdul-Rahman, A., Mohd Amin, S. I., & Ghazali, M. F. (2024). A systematic review of fintech and banking profitability. *International Journal of Financial Studies*, *12*(1), 3.

Teece, D. J. (2018). Business models and dynamic capabilities. *Long range planning*, *51*(1), 40-49. https://doi.org/10.1016/j.lrp.2017.06.007.

Theodorakopoulos, L., & Theodoropoulou, A. (2024). *Review Article Leveraging Big Data Analytics for Understanding Consumer Behavior in Digital Marketing: A Systematic Review*. *2024*. https://doi.org/10.1155/2024/3641502.

Uddin, A., Talukder, A., Ahmed, R., & Khraisat, A. (2024). International Journal of Cognitive Computing in Engineering Data-driven strategies for digital native market segmentation using clustering. *International Journal of Cognitive Computing in Engineering*, *5*(October 2023), 178–191. https://doi.org/10.1016/j.ijcce.2024.04.002.

Wang, R., & Luo, H. R. (2022). How does financial inclusion affect bank stability in emerging economies? *Emerging Markets Review*, *51*(PA), 100876. https://doi.org/10.1016/j.ememar.2021.100876.

Wong, A. T. T. (2023). A literature study of big data analytics in marketing. *Journal of Economics, Management and Trade*, *29*(8), 1-7. https://doi.org/10.9734/JEMT/2023/v29i81110.