Global Trends in Digital Business: The Role of Artificial Intelligence, Big Data and The Platform Economy in Technology Startups in Indonesia

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Abstract.

This study aims to analyze global trends in digital business through the role of artificial intelligence, big data, and the platform economy in technology startups in Indonesia. The research approach uses a descriptive qualitative method with the help of NVivo software to analyze data from interviews, observations, and documentation. The study was conducted from November 2025 to January 2026, involving startups from the e-commerce, fintech, edutech, and other digital service sectors. The results show that artificial intelligence contributes to improving operational efficiency, customer service automation, and transaction security. Big data plays a crucial role in strategic decision-making, consumer behavior analysis, and determining more accurate marketing strategies. Meanwhile, the platform economy has proven effective in expanding markets, increasing user connectivity, and creating scalable business models. However, Indonesian startups still face challenges such as limited digital talent, high technology implementation costs, intense market competition, and data protection issues. This study concludes that the integration of artificial intelligence, big data, and the platform economy is a strategic factor in strengthening the competitiveness of Indonesian startups in the global digital economy era. Support from an innovation ecosystem, adaptive regulations, and multi-stakeholder collaboration are needed for sustainable startup growth.

Keywords: *Digital business; artificial intelligence; big data; platform economy; tech startups and Indonesia.*

I. INTRODUCTION

Management is the process of planning, organizing, directing, and controlling all organizational resources to achieve goals effectively and efficiently. In the modern era, the concept of management has undergone rapid development along with advances in digital technology. Organizations no longer rely solely on physical resources but also utilize information, innovation, and technology as strategic assets. According to Robbins and Coulter (2023), modern management requires organizations to be able to adapt to changes in the external environment, including the development of global digitalization. Therefore, the implementation of technology-based management is a crucial factor in increasing the competitiveness of organizations and companies in the digital economy era.This research topic focuses on global trends in digital business, particularly the role of artificial intelligence (*Artificial Intelligence*), big data, and the platform economy in technology startups in Indonesia. Globally, the development of digital business has shifted business competition patterns from conventional models to data-driven models and digital networks. AI is used for process automation, consumer behavior analysis, and service quality improvement. Big data is utilized for more accurate decision-making, while the platform economy brings together producers and consumers in a single digital ecosystem. According to Kotler, Kartajaya, and Setiawan (2024), companies that are able to integrate AI and data analytics will excel in creating customer value and market innovation.Indonesia is a relevant research location because it is one of the countries with the largest digital economy growth in Southeast Asia.

The ever-increasing number of internet users, widespread smartphone penetration, and a thriving startup ecosystem make Indonesia a potential market for digital businesses. Various national startups, including those in e-commerce, fintech, edutech, and health-tech, have shown significant growth in recent years. According to Google, Temasek, and Bain & Company (2024), Indonesia's digital economy ranks highest in Southeast Asia and continues to grow through the expansion of technology-based startups. This situation demonstrates Indonesia's significant potential in utilizing AI, big data, and the platform economy.The success of technology startups in Indonesia is influenced by several important factors. First, the quality of digital human resources with competencies in information technology, data science, and

machine learning. Second, the availability of digital infrastructure such as fast internet, cloud computing, and data centers. Third, funding support from investors and access to venture capital. Fourth, government regulations that support innovation and data security. According to the OECD (2023), digital talent development and data governance are key factors in the success of digital business transformation in developing countries.

Therefore, startups' managerial capabilities in managing human resources and technology are key to business sustainability.A survey found that many startups in Indonesia have begun adopting AI for customer service chatbots, product recommendation systems, fraud detection, and market demand prediction. Furthermore, big data is being used to understand consumer preferences, thus making marketing strategies more effective. The platform economy model is also growing through marketplaces, ride-hailing, and other digital services. However, obstacles remain, including limited digital talent, high technology investment costs, and increasingly fierce market competition. According to McKinsey & Company (2025), the main challenges for startups in Southeast Asia are human resource readiness, innovation capabilities, and the scalability of digital business models. Therefore, this research is crucial to analyze the extent to which global digital business trends through AI, big data, and the platform economy contribute to the growth of technology startups in Indonesia.Research shows that technology startups in Indonesia are experiencing a dynamic growth phase with the increasing adoption of artificial intelligence, big data, and the platform economy. Many startups are leveraging AI to automate customer service, analyze consumer behavior, and increase operational efficiency. Meanwhile, big data is becoming a crucial tool for analyzing market trends and developing data-driven business strategies. The platform economy model is also growing through marketplaces, digital transportation services, and network-based service applications.

According to Google, Temasek, and Bain & Company (2024), the acceleration of digital transformation in Indonesia is driven by high digital consumer activity and increased investment in the technology sector. This phenomenon indicates that national startups are beginning to adapt to global trends to increase competitiveness in both domestic and international markets.However, various challenges remain in the development of technology startups in Indonesia. The limited pool of digital talent skilled in AI and data analytics is a major obstacle to innovation. Furthermore, the high cost of implementing technology makes it difficult for many early-stage startups to expand. Increasingly fierce business competition also demands that companies develop adaptive and sustainable business models. Furthermore, issues of data security, consumer privacy protection, and evolving digital regulations pose challenges for businesses. According to the OECD (2023), developing countries often face gaps in digital infrastructure and human resource preparedness to optimally utilize the digital economy. Therefore, appropriate managerial strategies are needed to enable technology startups in Indonesia to overcome these obstacles and maximize digital business opportunities. Studies show that the use of artificial intelligence, big data, and the platform economy significantly impacts digital business growth and startup competitiveness. Research by Wamba et al. (2023) explains that big data analytics can improve the quality of strategic decision-making and accelerate innovation in technology-based companies.

Furthermore, Dwivedi et al. (2024) found that the implementation of artificial intelligence drives operational efficiency, service personalization, and improved customer experience in digital businesses. Research by Nambisan and Baron (2023) confirms that the platform economy creates added value through network effects that strengthen the sustainable growth of digital startups. Meanwhile, Susanto et al. (2025) in the Indonesian context stated that the readiness of digital human resources and support for the innovation ecosystem positively influence the success of national technology startups. Furthermore, Lee and Trimi (2024) concluded that the integration of AI, data analytics, and platform strategy is a key factor in building a competitive advantage for startups in the digital economy era. Based on these findings, it is understandable that global digital business trends are a crucial foundation for startups in Indonesia to expand their markets, increase efficiency, and maintain business sustainability.Although various studies have discussed the influence of artificial intelligence, big data, and the platform economy on digital business performance, there are still several*research gap*that require further study. First, most previous studies have examined these variables partially, for example, focusing only on AI or big data. Consequently, few studies have integrated

all three into a comprehensive research model. Second, the majority of studies were conducted in large companies or developed countries, while research specifically examining technology startups in Indonesia is still relatively limited.

Third, previous research has focused more on the technical aspects of technology implementation, while managerial dimensions such as organizational readiness, business adaptation strategies, and startup competitiveness have not been analyzed in depth. Fourth, the unique conditions of Indonesia's digital ecosystem, characterized by market diversity, digital literacy levels, and evolving regulations, have not been widely used as an empirical context in international studies. Therefore, research that can address these gaps is needed to gain a more relevant understanding of national startup development. The novelty of this research lies in the development of an integrated analytical model regarding global digital business trends through the simultaneous role of artificial intelligence, big data, and the platform economy on the growth of technology startups in Indonesia. This research not only assesses the contribution of each technological variable but also analyzes the synergy between variables in improving operational efficiency, business innovation, market expansion, and startup competitive advantage. Furthermore, this research presents the empirical context of Indonesia as the country with the largest digital economy in Southeast Asia, thus providing a new perspective that differs from previous studies that predominantly focus on developed countries. Another novelty is the inclusion of digital human resource readiness and organizational adaptability as supporting variables in explaining startup success in facing the dynamics of the global digital economy. Thus, the results of this research are expected to provide theoretical and practical contributions to the development of technology startups in Indonesia.

II. LITERATURE REVIEW

Teori Resource-Based View (RBV)

The Resource-Based View explains that a company's competitive advantage stems from its ability to manage valuable, rare, difficult-to-imitate, and non-substitutable resources. In the context of digital startups, artificial intelligence, big data, digital talent, and technology platforms are strategic assets for creating innovation and sustainable growth. Startups that are able to optimally utilize internal resources tend to be more competitive in the global digital market (Barney, 2023; Wernerfelt, 2024).

Dynamic Capabilities

Dynamic capabilities emphasize an organization's ability to respond to changes in the business environment through resource integration, renewal, and reconfiguration. Technology startups face rapid market changes, necessitating adaptation through AI-based innovation, big data analytics, and the development of platform economic models. Companies with dynamic capabilities will more quickly identify opportunities and threats and sustain business growth in the digital era (Teece, 2023; Eisenhardt & Martin, 2024).

Network Effects

Network effects explain that the value of a platform increases as the number of users joining the network increases. In the platform economy, the more connected consumers, sellers, and partners, the greater the benefits for all parties. Marketplace-based, fintech, and ride-hailing startups in Indonesia rely heavily on network effects to expand their markets and increase user loyalty. Therefore, network effects are the foundation of the growth of modern digital startups (Parker et al., 2023; Rochet & Tirole, 2024).

III. METHODS

Research methods are a crucial part of explaining how researchers systematically obtain, analyze, and interpret data to ensure scientifically sound results. This study uses a qualitative approach with the aid of NVivo software to explore global trends in digital business, particularly the role of artificial intelligence, big data, and the platform economy in technology startups in Indonesia.

Research Approaches and Types

This research uses a qualitative approach with a descriptive-exploratory approach. A qualitative approach was chosen because it allows for a deeper understanding of digital business phenomena through interpretation of the experiences, perspectives, and strategies of technology startup players. According to Creswell and Creswell (2023), qualitative research is effective for examining complex and dynamic social phenomena through the perspectives of participants. In this study, researchers seek to illustrate how startups in Indonesia are adopting AI, big data, and the platform economy as business strategies to face global competition.

Location and Time of Research

The research was conducted on technology startups operating in Indonesia, specifically those in the e-commerce, fintech, edutech, and app-based digital services sectors. The location was selected purposively because these sectors are considered to be the most active in utilizing cutting-edge digital technology. The research period lasted two months, from November 2025 to January 2026. This time period was used for data collection, digital observation, in-depth interviews, and data analysis. According to Yin (2024), qualitative research requires sufficient time to obtain data depth and validate field findings.

Data Sources and Data Collection Techniques

The research data consists of primary and secondary data. Primary data was obtained through semi-structured interviews with startup founders, operational managers, technology developers, and digital service users. Secondary data was obtained from industry reports, scientific articles, company documents, and official government publications related to Indonesia's digital economy. Data collection techniques included interviews, digital observation of startup platforms, and documentation studies. According to Saunders et al. (2023), the combination of various data sources can increase the richness of information and strengthen the validity of qualitative research.

Informant Determination Technique

Informants were selected using purposive sampling, selecting respondents deemed to understand digital business phenomena and have direct experience in managing technology startups. Criteria for informants included a minimum of two years of work experience in a startup, involvement in strategic decision-making, and understanding of AI implementation or data analytics in business. The number of informants was adjusted until data saturation was reached (*data saturation*According to Patton (2023), purposive sampling is appropriate for qualitative research because it emphasizes the depth of information over the number of respondents.

Data Analysis Techniques Using NVivo

Data analysis was conducted using NVivo software to facilitate coding, categorization, theme visualization, and data interpretation. The analysis stages included interview transcription,*open coding*, grouping main themes, analyzing relationships between concepts, and developing a narrative of research findings. NVivo was chosen because of its ability to systematically manage large amounts of text data. According to Castleberry and Nolen (2024), NVivo helps researchers increase analytical transparency and efficiency in identifying thematic patterns from qualitative data.

Data Validity Test

Data validity is carried out through source triangulation, method triangulation, and*member checking*Source triangulation was conducted by comparing interview results between informants and supporting documents. Method triangulation was conducted through a combination of interviews, observation, and documentation. Meanwhile,*member checking*This is done by asking informants to review the summary of the interview results. According to Lincoln and Guba (2023), this step is important to ensure the credibility, dependability, and confirmability of qualitative research results.

IV. RESULT AND DISCUSSION

This study describes the current state of technology startup development in Indonesia, leveraging artificial intelligence, big data, and the platform economy. Data were obtained through interviews, digital observations, documentation, and analysis using NVivo. The findings indicate that digital transformation has

become a primary strategy for startups to increase business efficiency, expand markets, and strengthen competitiveness in the global era.

Table 1. Dominant Themes of NVivo Analysis Results

No	Main Theme	Intensity of Findings	Category
1	Artificial Intelligence (AI)	Very high	Top Priority
2	Big Data Analytics	High	Strategic
3	Economy Platform	High	Strategic
4	SDM Digital	Currently	Supporters
5	Regulation and Data Security	Low	Challenge

Source: NVivo Data Processing Results, 2026

Based on Table 1, artificial intelligence was the most dominant theme emerging in the informant interviews. This indicates that startups view AI as a key technology in supporting operational efficiency and service quality. Big data and the platform economy also have high intensity due to their crucial role in decision-making and market expansion. Meanwhile, digital human resources and data security remain key concerns as supporting factors for the success of national startups' digital transformation.

Table 2. Forms of Technology Implementation in Startups

No	Technology Implementation	Usage Level	Main Impact
1	Chatbot and AI Customer Service	High	Service Speed
2	Product Recommendation System	High	Consumer Personalization
3	Consumer Behavior Analytics	Currently	Strategy Accuracy
4	Marketplace Platform	Very high	Network Expansion
5	Fraud Detection System	Currently	Transaction Security

Source: Field Data, 2026

Table 2 shows that the marketplace platform model has the most dominant usage rate because it can connect multiple parties within a single digital ecosystem. AI-based chatbots and product recommendation systems are also widely used due to their direct impact on customer satisfaction. Consumer behavior analytics are used to understand market preferences, while fraud detection systems are more widely used by startups in the financial and digital payment sectors.

Table 3. Main Obstacles to Digital Startup Development

No	Obstacle	Dominance Level	Impact
1	Digital Talent Shortage	Very high	Slow Innovation
2	High Implementation Costs	High	Limited Expansion
3	Tight Market Competition	Currently	Profitability Pressure
4	Data Regulation	Currently	Operational Adjustments
5	Uneven Infrastructure	Low	Access Gap

Source: Informant Interview, 2026

Table 3 shows that the lack of digital talent is the most dominant obstacle for Indonesian startups. The limited expertise slows down the innovation process. Furthermore, the cost of implementing technology remains a serious challenge, requiring significant investment. Fierce market competition also puts pressure on startups' ability to survive. Data regulations and digital infrastructure are additional factors that require attention in developing national digital businesses.Research results show that Indonesian startups have moved into a more mature phase of digital transformation. The use of AI has been shown to improve service efficiency, big data strengthens business decisions, and the platform economy expands user networks. However, startup development still requires support from human resources, capital, and adaptive policies to compete sustainably in the global market.

Discussion

This discussion outlines the significance of the research findings by comparing field results with previous studies. The primary focus is on the contributions of artificial intelligence, big data, the platform economy, and the challenges facing Indonesian startups. The findings emphasize that digital transformation is not simply the use of technology, but rather a business strategy that determines the business sustainability and competitive advantage of modern startups in Indonesia.

1. The Role of Artificial Intelligence in Startup Efficiency

   The research results show that artificial intelligence is the technology most prioritized by Indonesian startups. AI is utilized in the form of chatbots, automated service systems, customer need prediction, and transaction risk detection. This situation indicates that startups are striving to reduce operational costs while improving service quality. These findings align with Dwivedi et al. (2024), who stated that AI contributes to business process efficiency and increased organizational productivity. In the startup context, efficiency is crucial because startups typically have limited capital and workforce.

   AI drives improved customer experiences through faster, more personalized, and more readily available services. Startups that use AI tend to maintain better customer loyalty. However, this study found that some startups still rely on external vendors due to limited internal expertise. This highlights the need for digital talent development for optimal and sustainable AI utilization in Indonesia.

2. Big Data as a Basis for Decision Making

   Research findings indicate that big data has become a crucial foundation for decision-making at technology startups in Indonesia. Companies leverage customer data, transaction history, user behavior patterns, and market responses to determine business strategies. Big data helps startups understand consumer needs more accurately, resulting in more targeted marketing decisions and product innovation. These results support research by Wamba et al. (2023), which found that data analytics capabilities positively impact company performance and accelerate digital business innovation.

   E-commerce startups leverage data for product recommendation systems, while fintech startups use data for customer risk assessment. This study also found that startups with a data-driven work culture tend to be more adaptable to market changes. However, managing big data requires robust digital infrastructure and cybersecurity. Therefore, data control must be accompanied by responsible information governance to maintain customer trust.

3. Platform Economy and Market Expansion

   The platform economy is a highly relevant business model for Indonesian startups because it connects sellers, buyers, business partners, and service providers within a single digital system. Research shows that marketplace-based startups and service apps experience faster growth than conventional models. Digital platforms facilitate transactions, expand market reach, and create added value through user interactions. These findings align with Parker et al. (2023), who explain that platform businesses thrive through network effects, where the more users, the greater the benefits.

   In Indonesia, the platform economy holds significant potential due to its large population and increasing internet penetration. Startups can reach cross-regional markets without opening physical branches. However, platform success depends not only on user numbers but also on service quality, transaction security, and user experience. Therefore, startups need to maintain consumer trust for sustainable platform growth.

4. Challenges of Technology Startup Development

   Indonesian startups still face serious challenges in developing their digital businesses. Research shows that a shortage of digital talent is a major obstacle, particularly in data science, AI engineering, and platform system development. These findings align with the OECD (2023), which asserts that developing countries often experience a digital competency gap and a limited technology workforce. This shortage of human resources slows down the innovation process and increases dependence on external parties.

   The cost of technology implementation is also a major challenge, especially for early-stage startups. Investments in cloud computing, data security, and AI development require significant capital. Fierce market competition also puts pressure on startup profitability. Therefore, this study emphasizes the importance of ecosystem support in the form of funding, digital education, adaptive regulations, and collaboration between the government, universities, and industry to ensure sustainable growth for Indonesian startups.

V. CONCLUSION

Based on the research results, it can be concluded that global trends in digital business through the use of artificial intelligence, big data, and the platform economy play a crucial role in the development of technology startups in Indonesia. These three factors have proven to be key drivers of business transformation, increased operational efficiency, market expansion, and strengthened startup competitiveness in the face of increasingly dynamic global competition. Artificial intelligence is widely used for customer service automation, market demand prediction, and transaction security. Big data serves as the basis for strategic decision-making through consumer behavior analysis and market evaluation.This research shows that Indonesian startups have moved towards a more mature digital ecosystem.

The adoption of modern technology offers significant opportunities for startups to grow faster, be more innovative, and adapt to changing societal needs. However, the success of digital transformation is not yet fully optimal due to several key obstacles. These obstacles include limited digital talent, high technology implementation costs, intense market competition, and increasingly complex data protection regulations.Thus, the development of technology startups in Indonesia requires strong ecosystem support through improved human resource quality, access to funding, digital infrastructure development, and government policies that adapt to innovation. Collaboration between the government, universities, investors, and industry is a crucial factor in accelerating the growth of national startups. Overall, Indonesian startups have significant potential to become a major force in Southeast Asia's digital economy if they can sustainably optimize the use of AI, big data, and the platform economy.

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