



Review Article

**COMPREHENSIVE ANALYSIS OF NATIONAL DISTRIBUTION
IN THE DIGITAL ERA**

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ABSTRACT

Background. The rise of digital technology has significantly transformed the global economy, particularly influencing the distribution systems for goods and services. In Indonesia, national distribution is vital for ensuring price stability and accessible goods across various regions. The digital era presents new possibilities through e-commerce, smart logistics, and data integration, which enhance speed, transparency, and efficiency in distribution. This study aimed to investigate a comprehensive analysis of national distribution in the digital area.

Research method. This research utilizes a descriptive-analytical literature review to examine the national distribution system in the digital era, covering logistics, e-commerce, digital technology, public policy, and distribution infrastructure. It analyzes secondary data from credible sources through a systematic search for articles published in the last 5-10 years, in Indonesian and English. The analysis used five stages.

Findings. National distribution is reshaped by digital advancements in e-commerce and logistics, enhancing efficiency and market access while meeting consumer demand for speed. In Indonesia, digital distribution improves economic competitiveness and public welfare, supported by government infrastructure and regulations for consumer protection. The private sector fosters innovation, aiding MSMEs in accessing broader markets. However, sustainability challenges, such as carbon emissions, require eco-friendly practices. Future efforts aim for efficient, monitored systems through digital platforms, promoting economic resilience and stability while addressing ethical consumer protection issues for inclusive growth.

Conclusion. Success in national distribution depends on collaboration among the government, the private sector, and the community, alongside adaptive policies and sustainable practices for an effective and equitable system.

Keywords: Comprehensive Analysis, Digital Technology, National Distribution, Public Policy.

BACKGROUND

The development of digital technology has changed the global economic landscape, including the distribution system for goods and services. In Indonesia, national distribution plays a strategic role in maintaining price stability, the availability of goods, and equitable development across regions[1]. The digital era opens up new opportunities through the use of e-commerce, smart logistics systems, and data integration that enable distribution to be faster, more transparent, and more efficient. However, this transformation process is not without its challenges. Indonesia's geographical condition as an archipelagic country, digital infrastructure disparities, and human resource readiness are crucial factors that affect the effectiveness of digital-based national distribution. Therefore, a comprehensive study is needed to understand the dynamics of the challenges and opportunities of national distribution in the digital era.

The digitization of national distribution is a consequence of the development of the digital economy, which is characterized by the increasing use of information technology in production, trade, and consumption activities. The Indonesian government, through various strategic policies, has encouraged the acceleration of digital transformation to improve the efficiency of the distribution system and strengthen connectivity between regions. This is increasingly relevant given the high cost of national logistics, which has been one of the main obstacles to improving the competitiveness of national products in domestic and global markets. On the other hand, the growth of e-commerce platforms and digital logistics services shows great potential in shortening the distribution chain and increasing market access for businesses, especially micro, small, and medium enterprises[2].

The rapid digital transformation of supply chains and distribution networks has fundamentally reshaped how goods and services move across national markets, creating both unprecedented opportunities and complex challenges that traditional distribution studies have yet to fully address. As digital technologies such as e-commerce platforms, real-time logistics tracking, and data-driven inventory systems become deeply embedded in national distribution infrastructures, there is an urgent need for a comprehensive analysis that integrates technological, economic, and policy dimensions. Despite substantial advances in isolated digital distribution solutions, gaps remain in understanding their broader implications for equity, regional connectivity, resilience to disruptions, and long-term economic development. This research is critical not only for informing effective national strategies that leverage digital innovation but also for guiding policymakers and stakeholders in mitigating risks, enhancing competitiveness, and ensuring inclusive access across diverse geographic and socio-economic contexts.

The use of digital technology enables the distribution process to be carried out in a more integrated, data-driven, and consumer-oriented manner. However, the implementation of digital distribution has not been fully optimized due to infrastructure limitations, low digital literacy, and the uneven use of technology across all regions of Indonesia. Distribution is one of the main components of the national economic system because it connects producers with consumers. The effectiveness of the distribution system greatly determines the availability of goods, price stability, and the smooth running of economic activities in a country. In Indonesia, the challenges of national distribution are quite complex given the vast geographical conditions and archipelagic nature of the country. Entering the digital era, the national distribution system has undergone a fundamental transformation.

The use of information technology, such as e-commerce, digital logistics, big data, and artificial intelligence, has changed conventional distribution patterns to be faster, more transparent, and more efficient[3]. The digitization of distribution not only impacts large businesses but also opens opportunities for micro, small, and medium enterprises to reach national and even global markets. However, the digital transformation in national distribution also faces various challenges.

Limited digital infrastructure in remote areas, low digital literacy, and cybersecurity and regulatory issues are obstacles that need to be overcome. Therefore, a comprehensive study is needed to understand the challenges and opportunities of national distribution in the digital era in order to formulate the right policy strategies. The development of national distribution in the current digital era cannot be separated from the influence of globalization dynamics and the rapid advancement of information technology. Digital transformation has changed economic interaction patterns from conventional ones to digital platform-based ones that rely on speed, accuracy, and efficiency. In this context, the national distribution system is required to be able to adapt in order to remain relevant and competitive amid dynamic changes in the business environment. Furthermore, effective national distribution has a strategic role

in maintaining economic stability and national resilience.

The smooth distribution of goods and services not only impacts economic growth but also influences economic stability and national resilience. In addition, effective national distribution has a strategic role in maintaining economic stability and national resilience[4,5]. The smooth distribution of goods and services not only has an impact on economic growth but also influences inflation control, the availability of basic necessities, and the equitable distribution of prosperity among the people. Therefore, optimizing national distribution through the use of digital technology has become an important agenda in national economic development. However, the implementation of digital distribution in Indonesia still faces various structural obstacles. Differences in development levels between regions have resulted in the use of digital technology in distribution not being evenly distributed. Urban areas tend to adopt digital distribution systems more quickly than rural areas and remote regions. This situation has the potential to widen the economic gap if it is not balanced with inclusive and equitable policies. Based on these conditions, a study of national distribution in the digital era is relevant and urgent. A comprehensive analysis is needed to identify the main challenges faced and the opportunities that can be utilized in the development of a national distribution system. Thus, this paper is expected to contribute to academic thinking in the formulation of adaptive, efficient, and sustainable national distribution strategies in the digital era.

RESEARCH METHODS

This research uses a literature review with a descriptive-analytical approach. This method aims to identify, analyze, and synthesize previous research findings relevant to the national distribution system in the digital era, including aspects of logistics, e-commerce, digital technology, public policy, and distribution infrastructure. The literature review was chosen because the topic of national distribution in the digital era is multidimensional, involving changes in technology, policy, and market behavior, and has been extensively studied by various disciplines.

The research data consisted of secondary data obtained from reliable scientific sources, including reputable national and international journal articles, scientific conference proceedings, academic books, policy reports, and publications of national and international institutions (e.g., ministries, statistical agencies, and economic organizations). Databases used in the literature search included: Google Scholar, Scopus, Web of Science, ScienceDirect, and Literature Search Strategy. The literature search was conducted systematically using relevant keywords, such as: national distribution system, digital distribution, logistics in the digital era, e-commerce and supply chain, and digital transformation of distribution. Keywords were combined with Boolean operators (AND, OR) to obtain more specific and relevant results.

Inclusion criteria included: articles discussing national distribution, logistics, or supply chains in a digital context, publication within the last 5–10 years, sources in Indonesian and English, and articles directly relevant to the research objectives. Exclusion criteria included: articles that had no direct connection to national distribution, publications that were non-scientific or lacked a clear methodology, and articles that were duplicated or not fully accessible. Data analysis was conducted through several stages: 1) Literature Identification, collecting all relevant articles based on predetermined keywords; 2) Literature Selection and Evaluation, assessing the quality and relevance of articles based on the research objectives; 3) Theme Classification, the literature was grouped into main themes, such as: Digitalization of National Distribution, The Role of Technology (Big Data, AI, Digital Platforms), Distribution Efficiency and Equity, National Distribution Challenges and Policies; 4) Synthesis and Interpretation, findings from various sources were compared and synthesized to gain a comprehensive

understanding of the dynamics of national distribution in the digital era, 5) Data Validity and Reliability, to increase the validity and reliability of research results, the following was conducted: source triangulation, by comparing various types of publications; use of reputable sources, such as indexed journals, and critical analysis, not just a summary, but also assessing the strengths and limitations of each study.

FINDINGS

National distribution is the process of distributing goods and services from producers to consumers across an entire country. In the digital era, national distribution has undergone a transformation by utilizing information and communication technology, such as e-commerce platforms, digital logistics systems, big data, and internet-based applications. This digitalization aims to improve efficiency, accelerate the distribution process, and expand market reach[6].

Changes in national distribution patterns have been triggered by developments in digital technology and increasing public demand for fast and efficient services. Globalization and technological advances have encouraged the integration of national distribution systems with digital economic networks. In the context of Indonesia, with its vast geographical area and archipelago, the digitization of distribution is a strategic solution to overcome the obstacles of distance and time[7,8]. National distribution in the digital era plays an important role in enhancing national economic competitiveness, maintaining price stability, and supporting inclusive economic growth. With an efficient and equitable distribution system, public welfare can be improved in a sustainable manner.

1. The Role of Government in Strengthening National Digital Distribution

The government has a strategic role in ensuring the success of national distribution transformation in the digital era. This role includes providing digital and logistics infrastructure, developing adaptive regulations, and strengthening human resource capacity. The development of an internet network that reaches remote areas is a key foundation for ensuring that all communities and businesses have equal access to digital distribution systems. In addition to infrastructure, the government is also responsible for creating a conducive regulatory climate. Policies related to electronic commerce, consumer protection, data security, and business competition need to be adjusted to the dynamics of digital distribution. Clear and adaptive regulations will provide legal certainty for business actors while protecting consumer interests.

2. The Role of the Private Sector and Technological Innovation

The private sector acts as the driving force behind innovation in national digital distribution. Technology companies, logistics service providers, and e-commerce platforms contribute to the development of more efficient and integrated distribution systems. The use of technologies such as big data, artificial intelligence, and the Internet of Things (IoT) enables more accurate supply chain management that is responsive to market needs. Technological innovation also encourages the creation of new business models in distribution, such as app-based delivery services and smart warehouse systems. Collaboration between the private sector and MSME players is a key factor in expanding the positive impact of national distribution digitalization.

3. The Impact of Digital Distribution on MSMEs and Consumers

Digital distribution has a significant impact on MSMEs by opening up wider market access and reducing dependence on conventional distribution channels. Through digital

platforms, SMEs can market their products directly to consumers in various regions, thereby increasing competitiveness and income. For consumers, digital distribution provides convenience in obtaining goods and services with more diverse choices, more transparent prices, and faster delivery times. These conditions encourage the creation of a more efficient and competitive market.

4. Sustainability Challenges and the Future of National Digital Distribution

Despite its significant potential, national distribution in the digital era also faces sustainability challenges. Increased logistics activities have the potential to cause environmental impacts, such as increased carbon emissions and packaging waste. Therefore, a digital distribution approach oriented towards sustainability and environmental friendliness is needed. In the future, national digital distribution is expected to develop into a more integrated, inclusive, and sustainable system. Synergy between the government, private sector, and society is the key to building a national distribution system that can address global challenges and support national economic development.

5. National Distribution System Integration and Digital Transformation

The integration of the national distribution system is an urgent need in the digital era to create an efficient and coordinated distribution flow. The use of digital platforms enables integration between producers, distributors, logistics providers, and consumers in a single interconnected ecosystem. With an integrated system, the planning, monitoring, and evaluation of distribution processes can be carried out more accurately and based on data. Digital transformation in national distribution also encourages the use of integrated logistics information systems capable of monitoring the movement of goods in real time. This contributes to a reduction in distribution delays, increased delivery accuracy, and optimization of inventory management in various regions.

6. Digitalization of Distribution and National Economic Resilience

Effective and digital-based national distribution plays an important role in strengthening national economic resilience. The smooth distribution of goods, especially basic necessities and strategic commodities, is a determining factor in price stability and people's purchasing power. A transparent and efficient digital distribution system can minimize market distortions and unhealthy distribution practices. In crisis situations, such as natural disasters or global economic disruptions, digital distribution systems enable a faster and more coordinated response. The government and business actors can utilize distribution data to make the right decisions in maintaining the availability of goods and avoiding scarcity.

7. Ethical Challenges and Consumer Protection in Digital Distribution

The development of digital distribution also raises ethical challenges and consumer protection issues. Unfair business competition practices, misuse of personal data, and bargaining power imbalances between digital platforms and small businesses are issues that require serious attention. Therefore, strengthening consumer protection and oversight of digital distribution activities are important aspect in maintaining fairness and public trust. Regulations emphasizing transparency, accountability, and consumer rights protection need to be implemented consistently.

8. National Digital Distribution Policy Direction and Development

The development of national digital distribution requires a clear and sustainable policy direction. The policy must include strengthening infrastructure, developing human resources, and supporting technological innovation. In addition, synergy between ministries, local governments, and the private sector is key to the successful implementation of digital

distribution policies. With the right policy direction, national distribution in the digital era can become a strategic instrument in promoting inclusive and highly competitive economic growth at the national and global levels[9,10].

DISCUSSION

1. Challenges Facing National Distribution in the Digital Era

Transformation in the digital era in the national distribution system brings significant changes, but on the other hand, also raises various structural and technical challenges that need to be seriously anticipated[11]. These challenges are not only technological in nature, but also involve social, economic, and institutional aspects, including:

a. Digital and Logistical Infrastructure Inequality

One of the main challenges of national distribution in the digital era is the uneven distribution of digital and logistical infrastructure throughout Indonesia. Limited internet access, particularly in remote, frontier, and outer regions (3T), hinders the optimal implementation of digital-based distribution systems. Additionally, the lack of modern transportation and logistics facilities results in high distribution costs and inefficient delivery times.

b. Low Digital Literacy and Human Resource Readiness

Digital distribution requires human resources with adequate technological skills and digital literacy. However, some business actors, especially MSMEs, still face limitations in utilizing digital technology. A lack of understanding of e-commerce systems, digital logistics management, and online marketing is an obstacle to optimizing digital-based national distribution.

c. Data Security and Cybercrime Risks

The increased use of digital platforms in national distribution has implications for increased data security and electronic transaction risks. Data leaks, online fraud, and cyber attacks can harm businesses and consumers, as well as reduce the level of trust in digital distribution systems. These challenges require strong security systems and effective data protection regulations.

d. Regulatory Readiness and Legal Certainty

The rapid development of digital technology is often not matched by adaptive regulations. The lack of readiness of regulations related to digital commerce, consumer protection, and business competition creates legal uncertainty for distributors. This condition can hamper innovation and investment in the digital distribution sector.

e. Dominance of Digital Platforms and Business Competition Imbalances

National distribution in the digital era also faces challenges in the form of the dominance of large digital platforms that have the potential to create business competition imbalances. Small and medium-sized businesses often have a weak bargaining position in the digital ecosystem, making them vulnerable to unfair business practices.

f. Environmental Impact of Digital Distribution Activities

The increase in digital-based distribution and logistics activities has the potential to cause environmental impacts, such as increased carbon emissions due to the delivery of goods and an increase in packaging waste. These challenges require the application of sustainability

principles in the national digital distribution system.

Overall, the challenges of national distribution in the digital era require a comprehensive and integrated approach. Without proper handling, these challenges have the potential to hinder the optimization of national distribution and widen the economic gap[12,13]. Therefore, inclusive policy strategies, infrastructure strengthening, and human resource capacity building are key prerequisites in addressing the challenges of national distribution in the digital era.

2. Opportunities that will arise in the Implementation of National Distribution in the Digital Age

Amidst various emerging challenges, the digital age also presents strategic opportunities for strengthening the national distribution system. The appropriate use of digital technology can be a catalyst for increasing economic efficiency, equitable development, and national competitiveness.

a. Increased Distribution Efficiency and Productivity

Digitalization enables supply chain optimization through the use of logistics information systems, real-time distribution monitoring, and data-driven distribution planning. With an integrated system, delivery times can be shortened, logistics costs can be reduced, and the rate of goods loss can be minimized.

b. Expansion of National and Global Market Access

Digital platforms open opportunities for businesses to reach a wider market without geographical limitations. Products from regions can be marketed nationally and even internationally through e-commerce and digital marketplaces. This is highly beneficial for MSMEs that previously had limited market access.

c. Empowerment and Strengthening of MSMEs

Digital-based national distribution provides opportunities for MSMEs to actively participate in the digital economy. With relatively low entry costs, MSMEs can market their products directly to consumers, build brands, and enhance competitiveness through product and service innovation.

d. Business Model and Logistics Service Innovation

The digital era has driven innovation in distribution business models, such as app-based logistics services, smart warehouses, and integrated delivery systems. These innovations not only improve the quality of distribution services but also create new jobs in the digital economy sector.

e. Price Transparency and Consumer Protection

The digitization of distribution enables greater transparency in pricing and product information. Consumers can easily compare prices, quality, and services, creating a more competitive and fair market. This transparency also contributes to consumer protection and controls unhealthy distribution practices.

f. Equitable Development and Strengthening of Regional Economies

Digital distribution has the potential to promote equitable economic development across regions. Local products from regions can more easily enter the national market, thereby increasing regional income and reducing economic disparities. With the right policy support, national digital distribution can become an instrument for equitable welfare[14].

The opportunities for national distribution in the digital era must be utilized strategically and sustainably. The success of utilizing these opportunities is highly dependent on synergy between the government, the private sector, and the community[15]. With an inclusive and technology-based approach, national digital distribution can become a key pillar of national economic development. Initiatives that the government must take in this regard:

a. Accelerating the Equitable Distribution of Digital Infrastructure and Logistics

The government needs to establish accelerated development of digital infrastructure and logistics as a national priority policy, especially in remote, frontier, and outermost (3T) areas. Integration of internet network development with transportation and logistics facilities must be carried out in an integrated manner to ensure equitable and efficient digital distribution.

b. Strengthening Digital Distribution and Trade Regulations

Regulations are needed that are adaptive and responsive to developments in digital distribution, covering consumer protection, data security, price transparency, and healthy business competition. These regulations must provide legal certainty while encouraging innovation and investment in the digital distribution sector.

c. Empowering MSMEs through Digital Inclusive Policies

The government needs to develop affirmative policies for MSMEs so they can actively participate in the digital distribution system. These policies can include digital literacy training, subsidies for access to digital platforms, logistics incentives, and ease of financial technology-based financing.

d. Strengthening Cybersecurity and Data Protection Systems

To maintain public trust, policies are needed that emphasize strengthening cybersecurity systems in national digital distribution. Data security standards, oversight mechanisms, and strict sanctions for violations must be consistently implemented.

e. Developing a Sustainable Digital Distribution Ecosystem

The government needs to promote digital distribution policies that are oriented toward environmental sustainability, such as the use of eco-friendly logistics, reducing carbon emissions, and managing packaging waste. These policies are crucial to ensure that digital transformation does not negatively impact the environment.

f. Strengthening Coordination and Synergy Between Stakeholders

The national digital distribution policy must be supported by strong coordination between the central government, local governments, the private sector, and the public. Establishing a coordination forum or special task force for digital distribution could be a strategic step in ensuring effective policy implementation[16]. The implementation of these government policy recommendations will strengthen the national distribution system to be inclusive, efficient, and highly competitive in the digital era. With targeted and sustainable policies, national digital distribution can become a crucial pillar in supporting economic growth and equitable national development.

Several suggestions can be taken into consideration in strengthening national distribution in the digital era, namely as follows:

- a. Government Interests. The government needs to accelerate the equitable development of digital and logistics infrastructure, especially in remote, frontier, and outermost (3T) areas. Additionally, the government is expected to develop and update regulations that are adaptive

to digital technology developments, particularly regarding electronic commerce, consumer protection, data security, and business competition.

- b. For Business Actors and the Private Sector. Business actors are expected to increase the use of digital technology in distribution systems and supply chains. Innovation in business models, collaboration with digital logistics service providers, and service quality improvement are important steps to increase competitiveness in the digital era.
- c. Recommendations for MSMEs. MSMEs need to be encouraged to improve their digital literacy and capacity so that they can make optimal use of digital distribution platforms. Support in the form of training, mentoring, and access to digital financing is essential to strengthen the role of MSMEs in national distribution.
- d. Specifically for Academics and Researchers. Further in-depth research is needed on digital-based national distribution, particularly based on empirical data and case studies in various regions. The results of this research are expected to form the basis for policy formulation and the development of a more effective national distribution system.
- e. Benefits for the Community and Consumers. The community is expected to increase its awareness and digital literacy in utilizing digital distribution services wisely. Active consumer participation in monitoring digital distribution practices is also important to create a healthy and equitable distribution ecosystem.

With the consistent and sustainable implementation of these recommendations, national distribution in the digital era is expected to support national economic growth, improve public welfare, and realize an inclusive and highly competitive distribution system.

This literature review is subject to several limitations. First, the study relies primarily on secondary sources, many of which are published within a rapidly evolving digital context, causing some findings to become outdated as new technologies and distribution models emerge. Second, the reviewed literature demonstrates considerable heterogeneity in theoretical frameworks, data sources, and methodological approaches, which complicates systematic comparison and synthesis of results. Third, existing studies tend to emphasize technological efficiency and economic performance, while social, regulatory, and regional equity dimensions of national distribution are less consistently addressed. Additionally, the predominance of English-language and nationally aggregated studies may limit the inclusion of local, sector-specific, and subnational perspectives, thereby constraining the generalizability of conclusions. Finally, the absence of primary empirical data restricts the ability to validate secondary findings against real-world distribution practices and policy outcomes in the digital era.

CONCLUSIONS

National distribution in the digital era is an inevitable transformation process along with the development of information and communication technology. Digitalization has changed conventional distribution patterns to be more efficient, transparent, and integrated, thereby accelerating the flow of goods and services and expanding market reach throughout Indonesia. The implementation of digital-based national distribution still faces various challenges, such as disparities in digital and logistics infrastructure, low digital literacy among business actors, data security risks, and regulations that are not yet fully adaptive. These challenges have the potential to hinder the optimization of national distribution if they are not addressed comprehensively and sustainably. In this digital era, there are also strategic opportunities for strengthening national distribution, including improving supply chain efficiency, empowering SMEs, expanding market access, innovating business models, and promoting economic development

equity across regions. Capitalizing on these opportunities can enhance national economic competitiveness and support inclusive economic growth. The success of national distribution in the digital era is highly dependent on synergy between the government, the private sector, and the community. Adaptive policy support, strengthening infrastructure and human resources, and applying the principles of sustainability are key to realizing an effective, fair, and competitive national distribution system in the digital era.

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