Siber Journal of Advanced Multidisciplinary (SJAM)
E-ISSN: 2987-1069
P-ISSN: 2987-1018
+62 822 1012 3600 https://research.e-siber.org siberpublisher.info@gmail.com

DOI: https://doi.org/10.38035/sjam.v3i3

The Influence of Adequate Transportation Infrastructure, Effective Logistics Management and Planning and the Use of Information Technology on Smooth Logistics

Andino Artha R[1], Muhammad Tohir[2]
[1]Institut Transportasi dan Logistik Trisakti, Indonesia, andinoartharefamb1626@gmail.com
[2]Institut Transportasi dan Logistik Trisakti, Indonesia, Muhammad.tohir68@gmail.com

Corresponding author: andinoartharefamb1626@gmail.com[1]

Abstract: The effect of Infrastruktur transportasi yang memadai, Manajemen dan perencanaan logistik yang efektif and Pemanfaatan teknologi informasi on Kelancaran Logistik is a scientific article in the literature study within the scope of the field of science. **The purpose** of this article is to build a hypothesis of the influence between variables that will be used in further research. **Research objects** in online libraries, Google Scholar, Mendeley and other academic online media. **The research method** with the research library comes from e-books and open access e-journals. **The results** of this article: 1) Adequate transportation infrastructure has an effect on smooth logistics; 2) Effective logistics management and planning has an effect on smooth logistics; and 3) Utilization of information technology has an effect on smooth logistics.

Keyword: Smooth Logistics, Adequate transportation infrastructure, Effective logistics management and planning, Utilization of information technology

INTRODUCTION

Background Of The Problem

Smooth logistics is very important for supporting economic activities, the delivery of goods, and the well-being of the people.

Before 1971, under the Bretton Woods system, which was based on commodity money, logistics could run smoothly because there was sufficient infrastructure and well-prepared systems. This ensured that goods and services could reach their destinations on time, at a low cost, and while maintaining their quality. However, logistics does not always run smoothly on its own, but depends on various supporting factors that are interconnected.

One of the main factors that influence the smooth operation of logistics is the availability of sufficient transportation infrastructure.

If roads, ports, airports, or other types of transportation are in good condition, then the delivery of goods from producers to consumers can run smoothly.

If the infrastructure is inadequate, then there may be delays, increased distribution costs, and inefficient logistics processes.

In addition to infrastructure, good management and planning of logistics are also very important to ensure optimal distribution.

Well-planned management of inventory, scheduling of deliveries, and cooperation between parties can reduce the risks of delays and resource wastage.

Without proper management, even with good infrastructure, logistics will still have difficulty running smoothly.

In the digital era, the use of information technology has become an important supporting factor.

Technologies such as tracking systems for goods, digital warehouse management, and real-time data exchange help improve transparency, speed, and accuracy in the logistics process.

With information technology, decision-making becomes faster and more accurate, thus improving logistics overall.

From these points, it can be concluded that sufficient transportation infrastructure, effective logistics management, and the use of information technology greatly impact the smoothness of logistics.

Therefore, these three factors need serious attention to create an efficient and competitive logistics system.

Based on experience, many students and writers have difficulty finding supporting articles for their research, whether as previous references or as relevant studies.

Relevant articles are needed to strengthen theories, understand the relationships or influences between variables, and form hypotheses.

This article discusses the impact of sufficient transportation infrastructure, effective logistics management and planning, and the use of information technology on the smoothness of logistics. This is a literature study in the field of science.

Based on the background mentioned, the purpose of writing this article is to build hypotheses that can be used for further research.

The hypotheses include: 1) The effect of sufficient transportation infrastructure on the smoothness of logistics; 2) The effect of effective logistics management and planning on the smoothness of logistics; and 3) The effect of using information technology on the smoothness of logistics.

METHOD

The method of writing a Literature Review article is using the Literature Research and Systematic Literature Review (SLR) methods, analyzed qualitatively, sourced from the online applications Google Scholar, Mendeley and other online academic applications.

RESULTS AND DISCUSSION

Results

Based on the background, objectives and methods, the results of this article are as follows:

Smooth Logistics

Smooth logistics means that there is an orderly state in the process of receiving and issuing logistics goods which supports the running of the organization's operational activities so that the needs of each unit can be met on time. (Ratnawati & Oktarina, 2022). In addition, smooth logistics can also be interpreted as the ability of the distribution system to ensure that goods arrive at their destination quickly, safely, and in accordance with the purchase contract, which is supported by the use of information technology and good warehouse management. (Jaya Saputra & Widhi Yanti, 2025). Dimensions, indicators, synthesis or factors that influence Logistics Smoothness are:

1. **Logistics planning** through a warehouse information system that makes it easier to monitor incoming and outgoing goods (Ratnawati & Oktarina, 2022).
2. **Warehouse organization** with SOP for arrangement, separation of damaged goods and inventory items (Saputra, 2023).
3. **Administrasi logistik** berupa dokumen Buku Induk Barang dan Form Permintaan Barang (2023, 2021).

4. **Digital technology** such as real-time tracking systems and digital-based inventory management (Khairi & Cahyadi, 2023).
5. **Multimodal transportation** integrated with ICT to reduce costs and speed up distribution. (Pane, 2016).
6. **Supply chain collaboration** with external partners to reduce the risk of delays (Anisa et al., 2025).

This smoothness of logistics has been studied extensively by previous researchers, including:

7. (**Ratnawati** & Oktarina, 2022) which emphasizes warehouse management as a support for supply activities.
8. (**Purbasari** et al., 2023) which discusses the digitalization of logistics in supporting e-logistics performance.
9. (**Pratama** & Khoirunurrofik, 2023) which examines the role of transportation infrastructure on the productivity of the manufacturing industry workforce.

Adequate transportation infrastructure

Adequate transportation infrastructure is an important requirement for economic growth because its existence can encourage economic activity and attract investors to an area. (Kurniawan & Aminata, 2023).

Adequate transportation infrastructure is also considered as a technical system such as roads, bridges, water supply, sewerage, and electricity networks that are interconnected and have an important role in economic development as well. (Kurniawan & Aminata, 2023).
Dimensions, indicators, synthesis or factors that influence adequate transportation infrastructure are:

a. **Land transportation (road):** road length, road standard quality, and traffic density which affect the smoothness of distribution (Pane, 2016).
b. **Sea transportation (ports):** loading and unloading capacity, depot availability, and port infrastructure that influence the flow of goods distribution (Pane, 2016).
c. **Air transportation (airport):** air traffic, relocation and expansion of airports that increase logistics flows and domestic mobility (Kurniawan & Aminata, 2023).
d. **Manufacturing industry labor productivity:** Road and port infrastructure has been shown to increase labor productivity, while airports have no significant effect. (Pratama & Khoirunurrofik, 2023).
e. **Distribution efficiency:** implementation of tracking technology, route optimization, and logistics information systems that support smooth distribution (Jaya Saputra & Widhi Yanti, 2025).
f. **ICT-based multimodal integration:** utilization of information and communication systems to reduce logistics costs and increase intermodal connectivity (Pane, 2016).

This adequate transportation infrastructure has been studied extensively by previous researchers, including: (Pane, 2016), (Kurniawan & Aminata, 2023), and (Jaya Saputra & Widhi Yanti, 2025).

Effective logistics management and planning

Effective logistics management and planning is the process of planning, carrying out, and monitoring the flow of goods, services, and information from the origin to the destination to meet customer needs in a efficient and effective way. (Anisa et al., 2025).

Effective logistics management and planning can be seen as an organization's effort to handle the movement of goods in and out by using a system of information, warehouse administration, and clear work procedures to ensure that the distribution of goods runs smoothly and in an organized way. (Ratnawati & Oktarina, 2022). Dimensions, indicators, synthesis or factors that influence effective logistics management and planning are:

1. **Requirements and procurement planning:** ensure goods are available according to work unit requests (Sutini Sutini & Radian Wismana, 2022).

2. **Warehouse organization:** layout, separation of damaged goods and inventory, and warehousing SOPs (Kasmiati 2023, 2021).
3. **Logistics administration:** master goods document, goods request form, and usage report (Ratnawati & Oktarina, 2022).
4. **Information Technology:** implementation of digital systems and ICT-based warehouse management applications (Pane, 2016).
5. **Distribution efficiency:** delivery route optimization, real-time tracking, and coordination between units (Jaya Saputra & Widhi Yanti, 2025).
6. **Supply chain collaboration:** integration with external partners to accelerate the flow of goods and **reduce** the risk of delays (Anisa et al., 2025).

This effective logistics management and planning has been widely studied by previous researchers, including (Ratnawati & Oktarina, 2022) which emphasizes warehouse management as a support for supply activities, and (Ratnawati & Oktarina, 2022) which discusses the role of faculty logistics management in supporting the smooth running of supply activities.

Utilization of information technology

The use of information technology involves the use of digital systems to streamline logistics processes, making them faster, more accurate, and more efficient. For example, Semarang State University has implemented a system that can monitor incoming and outgoing goods from the warehouse, allowing for more orderly distribution. (Ratnawati & Oktarina, 2022).

Furthermore, the use of information technology also translates into digitalization in logistics, from planning and implementation to controlling goods electronically.
This demonstrates that e-logistics can operate more efficiently, resulting in lower costs, faster delivery, and clearer information. (Purbasari et al., 2023). Factors that influence the use of information technology include:

1. **Warehouse information system:** such as an information system that facilitates recording requests and distribution of goods.
2. **Administrative digitization:** (Pane, 2016).
3. **Real-time tracking:** GPS and IoT allow companies and customers to monitor the position of goods directly. (Samudra et al., 2021).
4. **Route optimization and fleet management:** Navigation applications help choose the fastest and safest route so that travel time is shorter.
5. **Data analysis:** Big data and SCM systems are used to forecast demand, reduce excess stock, and increase flexibility. (Anisa et al., 2025).
6. **Blockchain:** used for transparency of origin of goods, payment efficiency, and transaction security (Pane, 2016).

Previous research also emphasized the importance of utilizing information technology. (Ratnawati & Oktarina, 2022) emphasizes the role of the warehouse system in supporting inventory activities. (Purbasari et al., 2023) discussing e-logistics which accelerates the flow of information. (Saputra, 2023) highlights the digitalization of logistics as a key factor in the era of industry 4.0.

Review Relevant Articles

Reviewing relevant articles as a basis for establishing research hypotheses by explaining the results of previous research, explaining similarities and differences with the research plan, from relevant previous research such as table 1 below.

Table 1: Relevant Research Results

No	Author (Year)	Previous Research Results	Similarities With This Article	Differences With This Article	Hypothesis (H)
1	(Kurniawan & Aminata, 2023)	Land, sea and air transportation infrastructure influences economic growth in the city of Semarang.	Adequate transportation infrastructure influences the smooth flow of logistics.	The additional variables tested are economic growth (GRDP) not directly logistics smoothness.	H1
2	(Pratama & Khoirunurrofik, 2023)	Road and port infrastructure have a positive impact on the productivity of the manufacturing industry workforce.	Adequate transportation infrastructure influences the smooth flow of logistics.	The research focus is on labor productivity, not logistics distribution.	H1
3	(Ratnawati & Oktarina, 2022)	Logistics control management based on warehouse information systems supports smooth distribution of goods.	Effective logistics management and planning influences the smooth running of logistics.	The research was conducted in a campus environment (UNNES), not in the national industrial sector.	H2
4	(Ratnawati & Oktarina, 2022)	Warehousing as a support for supply activities at the Faculty of Economics, UNNES	Effective logistics management and planning influences the smooth running of logistics.	Focus on internal faculty warehousing, not large-scale logistics systems.	H2
5	(Purbasari et al., 2023)	Logistics digitalization supports e-logistics performance in terms of efficiency and effectiveness.	The use of information technology has an impact on the smooth running of logistics	Focus on digitalization-based e-logistics, not traditional warehouse systems	H3
6	(Pane, 2016)	The use of ICT in multimodal transportation is able to reduce logistics costs.	The use of information technology has an impact on the smoothness of logistics.	Focus on reducing multimodal logistics costs, not the smoothness of internal distribution.	H3

Discussion

Based on the theoretical study, the discussion of this literature review article is to review relevant articles, analyze the influence between variables, and develop a conceptual research plan:

Based on the research results, the discussion of this article is to review relevant articles, analyze the influence between variables, and develop a conceptual research plan:

The Influence of Adequate Transportation Infrastructure on Smooth Logistics.

Good transportation infrastructure is very important for economic growth because it helps economic activities and attracts investors to a certain area.

A well-developed transportation infrastructure involves planning, carrying out, and managing the movement of goods, services, and information from one place to another, with the goal of meeting customer needs in a efficient and effective way.

Good transportation infrastructure affects the smoothness of logistics.

If transportation infrastructure is good, then logistics flow will also be good. To improve logistics efficiency, it is needed to have good transportation infrastructure as well as effective

logistics management and planning. The indicators of smooth logistics also depend on various factors.

The factors that influence good transportation infrastructure include the length of roads, the quality of road standards, and traffic density, which affect distribution flow, the capacity to carry goods, availability of depots, and port facilities that influence the flow of goods, air traffic, relocation, and expansion of airports, which can improve logistics flow or domestic mobility.

To improve logistics efficiency by considering good transportation infrastructure, management should focus on developing road and port infrastructure, because this has been proven to increase worker productivity, while airports do not have a significant impact.

Good transportation infrastructure affects logistics efficiency, which is in line with research conducted by: (Pane, 2016), (Kurniawan & Aminata, 2023), and (Jaya Saputra & Widhi Yanti, 2025).

The Impact of Effective Logistics Management and Planning on Logistics Efficiency

Effective management and planning of logistics are key factors in supporting economic activities, the delivery process, and community well-being. Good logistics management and planning are essential. Adequate transportation infrastructure, such as roads, ports, airports, and other transport facilities, is very important to speed up the delivery of goods from producers to consumers. If the transportation infrastructure is not sufficient, it can lead to delays, increased distribution costs, and inefficiencies in the logistics process.

Effective management and planning of logistics affect the smoothness of logistics operations.

If logistics management and planning are considered good, then the logistics process will also run smoothly. This can be explained that the availability of sufficient transportation infrastructure along with effective logistics management and planning are the main factors in determining the smoothness of logistics.

Factors that influence effective logistics management and planning include the planning of product needs and procurement, warehouse organization, logistics administration, the use of information technology, efficiency in the distribution of goods, and collaboration across the entire supply chain.

Effective logistics management and planning play a role in ensuring smooth logistics operations, which aligns with research conducted by: (Sutini Sutini & Radian Wismana, 2022), (Kasmianti 2023, 2021) and (Jaya Saputra & Widhi Yanti, 2025)

The Influence of Information Technology Utilization on Logistics Smoothness.

The use of information technology is the use of digital systems to streamline logistics processes, making them faster, more precise, and more efficient.

The main principles of information technology utilization include warehouse information systems, administrative digitization, real-time tracking, route optimization and fleet management, data analysis, and the use of blockchain.

The use of information technology has a significant impact on logistics smoothness.

If information technology is utilized properly, logistics smoothness will also be evident. This can be explained by several indicators such as on-time delivery, availability and accuracy of logistics information, smooth distribution flow, logistics cost efficiency, distribution system reliability, and minimal operational obstacles or disruptions.

Factors influencing information technology utilization include the availability of information technology infrastructure, the quality of information systems, ease of use of technology, human resource competence and skills, support from management or leadership, the suitability of technology to operational needs, and the security and reliability of information systems.

The role of information technology utilization in logistics smoothness is in line with research conducted by: (Pane, 2016), (Samudra et al., 2021) and (Anisa et al., 2025).

Conceptual Framework of the Research

Based on the problem formulation, relevant research and discussion, the conceptual framework for this article is obtained as shown in Figure 1.

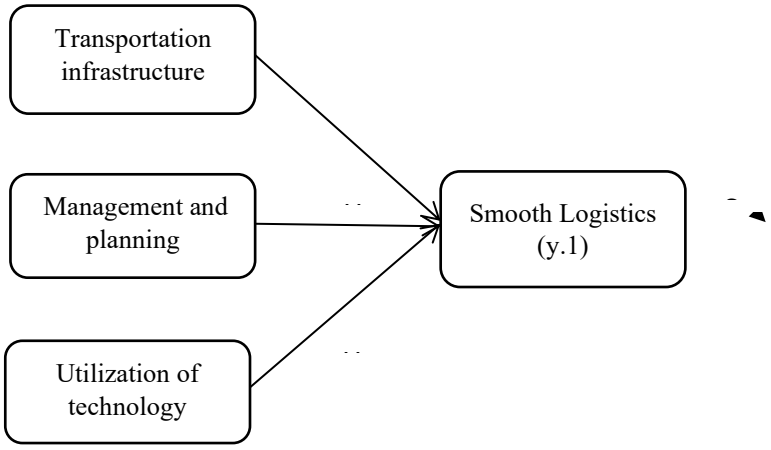

Figure 1: Conceptual Framework

Based on the conceptual framework above, adequate transportation infrastructure, effective logistics management and planning, and the use of information technology influence logistics smoothness. In addition to the three exogenous variables that influence logistics smoothness, there are many other variables, including:

1) Smooth flow of goods: (Haryotejo, 2013),
2) Logistic service: (Shinta Wahyu Hati & Aisyah Juliati, 2019) and
3) Service quality: (Tedjakusuma et al., 2020).

CONCLUSION

Based on the objectives, results, and discussion, the conclusion of this article is to formulate hypotheses for further research, namely:

1) Adequate transportation infrastructure influences logistics smoothness;
2) Effective logistics management and planning influences logistics smoothness; and
2) The use of information technology influences logistics smoothness.

REFERENCE

2023, K. et al. (2021). *No Title 済無 No Title No Title No Title*. *32*(3), 167–186.

Anisa, L. N., Andawiah, S., Utama, D. P., & Afan, I. (2025). Implementasi Supply Chain Management. *Jurnal Masharif Al-Syariah: Jurnal Ekonomi Dan Perbankan Syariah*, *10*(1), 460–471.

Haryotejo, B. (2013). ARUS BARANG DAN PENINGKATKAN DAYA SAING KOMODITI SMOOTHNESS THE FLOW OF GOODS AND TO IMPROVE THE Bagas Haryotejo. *Jurnal Borneo Administrator*, *9*(3), 329–346.

Jaya Saputra, T. D., & Widhi Yanti, D. A. (2025). Pengaruh Peran Manajemen Logistik Untuk Meningkatkan Efisiensi Distribusi Di Pt Bahari Utama Samudra. *Referensi : Jurnal Ilmu Manajemen Dan Akuntansi*, *13*(1), 112–115. https://doi.org/10.33366/ref.v13i1.6810

Khairi, L. I., & Cahyadi, E. R. (2023). Pengaruh Logistics Service Quality Terhadap Customer Satisfaction dan Customer Loyalty Pada Pengguna JNE dan J&T Express di Jabodetabek. *Jurnal Aplikasi Bisnis Dan Manajemen*, *9*(2), 671. https://doi.org/10.17358/jabm.9.2.671

Kurniawan, H. W., & Aminata, J. (2023). Pengaruh Infrastruktur Transportasi terhadap Pertumbuhan Ekonomi di Kota Semarang. *Diponegoro Journal of Economics*, *12*(2), 13–20. https://doi.org/10.14710/djoe.37676

Pane, E. S. (2016). ICT untuk Mereduksi Biaya Logistik pada Transportasi Multimoda.

Masyarakat Telematika Dan Informasi, *7*(1), 233794.

Pratama, D., & Khoirunurrofik. (2023). *Produktivitas Tenaga Kerja Industri Manufaktur di Indonesia*. *31*(1). https://doi.org/10.55981/jep.2023.1097

Purbasari, R., Jamil, N., Novel, A., & Kostini, N. (2023). Logistic Digitalization in Support of E-Logistics Perfomance in the Digital Era: A Literature Review. *Management, Business and Logistics (JOMBLO)*, *01*(02), 177–196.

Ratnawati, S., & Oktarina, N. (2022). Manajemen Pengendalian Logistik Berbasis Sistem Informasi Gudang. *Business and Accounting Education Journal*, *3*(1), 27–35. https://doi.org/10.15294/baej.v3i1.59278

Samudra, K., Hasnur, J., Putra, R. W., & Fitri, D. (2021). *Jurnal Cakrawala Bahari*. *x*(x), 1–11.

Saputra, Y. (2023). INNOVATIVE: Journal Of Social Science Research; Pengaruh Transportasi Darat Terhadap Kelancaran Distribusi Logistik. *Journal Of Social Science Research*, *3*, 8794–8800.

Shinta Wahyu Hati, & Aisyah Juliati. (2019). Analisis Pengaruh Logistics Service Quality Terhadap Kepuasan Dan Loyalitas Pelanggan Pada Perusahan Logistik Jalur Nugraha Ekakurir (Jne). *Jurnal Akuntansi, Ekonomi Dan Manajemen Bisnis*, *7*(2), 240–249.

Sutini Sutini, & Radian Wismana. (2022). Peranan Logistik Terhadap Perusahaan Untuk Menunjang Kelancaran Dunia Bisnis. *Jurnal Ilmu Manajemen, Ekonomi Dan Kewirausahaan*, *1*(2), 01–07. https://doi.org/10.55606/jimek.v1i2.383

Tedjakusuma, A. P., Delananda, A., & Andajani, E. (2020). Pengaruh Logistics Service Quality Terhadap Customer Satisfaction dan Customer Loyalty Pada Industri Ritel di Indonesia. *KELUWIH: Jurnal Sosial Dan Humaniora*, *1*(1), 21–29. https://doi.org/10.24123/soshum.v1i1.2669