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ISCU 2025

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Embracing Construction Revolution 4.0 (CR4.0): Transforming Malaysia's Built Environment

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WELCOME SPEECH FROM THE CHAIRMAN

RISM 17th International Surveying Conference for Undergraduates (ISCU 2025)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ السَّلَام

عَلَيْكُمْ وَرَحْمَةُ اللَّهِ وَبَرَكَاتُهُ

Greetings to all,

It is with great pleasure that I welcome you to the 17th RISM International Surveying Conference for Undergraduates (ISCU 2025), themed “*Embracing Construction Revolution 4.0: Transforming Malaysia’s Built Environment.*” On behalf of the Royal Institution of Surveyors Malaysia (RISM), I also wish to express our sincere appreciation to Universiti Teknologi MARA (UiTM), Perak Campus, for graciously hosting this significant event.

As we navigate the era of the Fourth Industrial Revolution (IR4.0)—or in our context, Construction Revolution 4.0 (CR4.0)—we are witnessing transformative advancements across the global construction sector. Technologies such as Building Information Modelling (BIM), the Internet of Things (IoT), artificial intelligence (AI), robotics, big data analytics, and cloud computing are redefining the way we build, manage, and interact with our built environment. For Malaysia, embracing CR4.0 is a strategic imperative to achieve our socio-economic and environmental goals.

This conference serves as a vital platform to unite surveying undergraduates from various disciplines, fostering critical dialogue on industry challenges, enhancing professional networking, and preparing a new generation of talent for the rapidly evolving construction landscape. It is also an opportunity for employers to engage with and inspire our future professionals.

I would like to extend my heartfelt thanks to all industry speakers, paper presenters, judges, and participants for their time, contributions, and support in making ISCU 2025 a success. I also commend the organising committee for curating a meaningful and dynamic conference experience.

May the knowledge gained, connections formed, and ideas exchanged during this event inspire all participants to lead and innovate in their future endeavours.

Wishing everyone a productive and memorable conference.

Prof. Ts Sr Dr. Adi Irfan Bin Che Ani'

Chairman, Universities' Partnering Committee

RISM Session 2024/2025

May 2025

WELCOME SPEECH FROM CO-CHAIRMAN

RISM 17th International Surveying Conference for Undergraduates (ISCU 2025)

Bismillahirrahmanirrahim.

السلام عليكم ورحمة الله وبركاته and greetings to all.

It is my great pleasure to welcome everyone to the 17th International Surveyor Conference for Undergraduates (ISCU 2025), proudly hosted by Universiti Teknologi MARA (UiTM) Perak Branch in collaboration with the Royal Institution of Surveyors Malaysia (RISM). This event is a meaningful platform for students in the built environment to share ideas, showcase innovations, and build professional networks. We are honoured by your presence and enthusiastic participation, with 135 accepted papers and 78 poster presentations this year.

UiTM Perak, home to the College of Built Environment, has long been a hub for academic excellence in architecture, planning, and surveying. Our commitment remains strong in nurturing competent graduates who meet industry demands and contribute to nation-building.

While you're here, we invite you to experience the heritage and culture of Perak Tengah from the architectural richness of Rumah Kutai to the historical towns of Pasir Salak, Bota, and Kampung Gajah.

To all presenters and winners, congratulations on your achievements. Let your work today be a catalyst for future success and academic growth. We hope this conference will inspire you to explore new ideas, foster collaboration, and make lasting memories.

My deepest thanks to the Royal Institution of Surveyors Malaysia (RISM) and the organising committee for making this event a success.

We hope your experience here will be rewarding and unforgettable.

Thank you. Selamat datang dan selamat berjaya.

Associates Professor Dr. Nur Hisham Ibrahim, *PMP*

Co-Chairman, Universities' Partnering Committee

RISM Session 2024/2025

May 2025

WELCOME SPEECH FROM THE PROJECT DIRECTOR

RISM 17th International Surveying Conference for Undergraduates 2025

Alhamdulillah, all praise to Allah S.W.T. for His guidance and blessings in making the RISM 17th International Surveying Conference for Undergraduates (ISCU) 2025 a reality.

It is with great honour and gratitude that I welcome all participants, guests, academicians, and industry professionals to this prestigious event, proudly organized under the Royal Institution of Surveyors Malaysia (RISM). This 17th edition of ISCU stands as a proud testament to our collective dedication toward academic excellence, professional collaboration, and youth empowerment in the field of surveying.

I extend my heartfelt appreciation to RISM for its unwavering support, to the hardworking ISCU 2025 Organising Committee, and to all 16 partnering universities across Malaysia for their commitment and contributions. Your efforts have shaped this conference into a dynamic platform for knowledge exchange, innovation, and professional growth.

To the academicians and practitioners present, your insights are invaluable in bridging the gap between academic theory and real-world practice. To our undergraduate participants, your passion, curiosity, and commitment are the very foundation of our future. May this conference not only deepen your academic journey but also ignite a spirit of leadership, integrity, and sustainable thinking.

Let this gathering serve as more than an academic milestone. May it foster lifelong networks, inspire transformative ideas, and chart new directions in our shared professional journey.

Wishing everyone a rewarding and inspiring conference experience.

Sr Dr. Nurul Fadzila Zahari

Project Director

RISM 17th ISCU 2025

TRANSPORTATION FACTOR TO LOGISTICS PROPERTIES SITE SELECTION IN SHAH ALAM

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ABSTRACT

The study examines the critical role of transportation infrastructure in the site selection of logistics properties in Shah Alam, Malaysia. The primary objectives of this research are to analyse the transportation factors influencing logistics property site selection and to study the impact of transportation infrastructure on logistics properties in Shah Alam. Using spatial analysis tools such as QGIS, the study evaluates the proximity of logistics properties to various transportation infrastructures, including ports, railways, airports, and road networks. The findings reveal that road networks have the strongest influence on site selection, with properties like PKT Logistics Group, CMG (0.0816 km) and SNT Global Logistics Fulfilment Centre (0.0826 km) benefiting from superior road connectivity. Port accessibility emerged as the second most crucial factor, with MDL Distribution Sdn Bhd showing optimal port proximity (0.1268 km). The study identified significant gaps in railway integration, with no logistics properties falling within the 3 km coverage area of railway stations. In terms of air connectivity, the airport was found only within the 3 km coverage area of Nippon Express (BJLC). The study provides recommendations for infrastructure development and emphasizes the importance of balanced transportation access in logistics property site selection decisions.

Keywords: Logistics properties, site selection, transportation infrastructure, Spatial Analysis, GIS

I. INTRODUCTION

The logistics sector in Malaysia has experienced remarkable growth driven by e-commerce expansion, regional trade, and foreign investment surge. This has led to an increased demand for strategically located warehousing spaces, making site selection a pivotal factor for logistics firms. Accessibility plays a key role, and while traditional factors influence site selection, recent research highlights the importance of transportation infrastructure (Verhetsel et al. 2015). This study focuses on Shah Alam, a prominent industrial hub within the Klang Valley, investigating how transport factors such as highway access and proximity to ports affect site selection decisions.

II. RESEARCH BACKGROUND

Malaysia's logistics sector is undergoing rapid growth due to the expansion of e-commerce, increased regional trade, and rising foreign investment (MIDA, 2023). This growth has created a surge in demand for warehousing and logistics facilities, with strategic location selection becoming a critical consideration. For instance, Swift Haulage Bhd has expanded its storage capacity to 1.3 million square feet, while Tiong Nam Logistics Holdings plans to invest RM376.4 million across FY2024 and FY2025 to increase its warehousing capacity by 30% (MIDA, 2023). Shah Alam, situated in the Klang Valley, is a key logistics and industrial hub in Malaysia. Its strategic location offers excellent connectivity via major highways such as the Federal Highway, North-South Expressway Central Link (ELITE), and Guthrie Corridor Expressway (GCE). Additionally, Shah Alam benefits from its proximity to Port Klang, Malaysia's largest port, and its accessibility to key transportation nodes like the Kuala Lumpur International

Airport (KLIA) and the Kuala Lumpur International Airport 2 (KLIA2). These factors underscore the city's significance as a logistics center.

PROBLEM STATEMENT

Site selection is a critical decision for logistics companies, directly impacting operational efficiency and customer satisfaction (Korem, 2022). Traditional site selection factors include access to suppliers, available land, tax incentives, utility costs, workforce quality, and environmental considerations. However, Verhetsel et al. (2015) emphasize that transportation infrastructure, although crucial, often receives less attention in such evaluations. For instance, a study in Flanders, Belgium, highlighted that transportation factors such as proximity to ports, motorways, and inland terminals significantly influenced logistics site selection (Verhetsel et al., 2015). Land rent was identified as the most critical factor, but transportation-related factors ranked closely behind. The study also noted that the specific transportation needs of a logistics company sha Site selection is a critical decision for logistics companies, directly impacting operational efficiency and customer satisfaction (Korem, 2022). Traditional site selection factors include access to suppliers, available land, tax incentives, utility costs, workforce quality, and environmental considerations. However, Verhetsel et al. (2015) emphasize that transportation infrastructure, although crucial, often receives less attention in such evaluations. Despite these findings, there is a limited understanding of how transportation infrastructure specifically impacts logistics property site selection in Shah Alam. Addressing this gap, this research aims to investigate the role of transportation infrastructure in influencing logistics property site selection within the city.

RESEARCH QUESTIONS

- (i) How does transportation infrastructure influence logistics property site selection in Shah Alam?
- (ii) What is the impact of transportation infrastructure on logistics properties in Shah Alam?

RESEARCH OBJECTIVES

- (i) To analyze the factors that influence logistics property site selection in Shah Alam.
- (ii) To study the impact of transportation infrastructure on logistics properties in Shah Alam.

SCOPE OF THE STUDY

This research focuses on logistics properties in Shah Alam, Malaysia. Other properties, such as industrial properties, and other locations in Malaysia, are excluded. The study aims to explore the relationship between transportation infrastructure and logistics property site selection. Other factors influencing site selection are beyond the scope of this research. The study will rely exclusively on secondary data sources and Geographic Information System (GIS) analysis, without primary data collection through surveys or interviews.

SIGNIFICANCE OF THE STUDY

The significance of this study lies in its potential to offer actionable insights for logistics companies, policymakers, and urban planners. By examining the relationship between transportation infrastructure and logistics property site selection, the study can inform better decision-making to optimize logistics operations, enhance Shah Alam's regional competitiveness, and support sustainable urban development (Yue et al., 2005; Sarder, 2020). Findings from the research can guide infrastructure investments, urban planning initiatives, and corporate strategies, contributing to the efficiency and resilience of Shah Alam's logistics sector.

III. LITERATURE REVIEW

This section synthesizes existing literature on site selection and the role of transportation factors in logistics property development, focusing on the interplay between transportation networks, cost considerations, and methodological approaches in decision-making.

SITE SELECTION

Site selection is a critical process that involves evaluating potential locations by considering a range of financial, demographic, and geographical factors. The process aims to identify sites that maximize success while minimizing operational and logistical costs (Papacostas & Prevedouros, 2001). The concept of "situs" underscores the importance of interconnected economic activities and movement between activity centers, highlighting the

flexibility of land use despite fixed physical locations.

Key factors influencing site selection include:

- **Demographic Data:** Insights into the target market, such as age, income levels, and consumer preferences.
- **Local Factors:** Accessibility to public transportation, land availability, utilities, and local tax incentives.
- **Market Considerations:** Comparative cost studies to optimize profitability.
- **Labor Availability:** The presence of a skilled labor pool aligned with industry needs.
- **Government Policies:** Zoning regulations and incentives that encourage development.

For residential properties, additional factors such as income, commuting costs, neighborhood amenities, and job access also play a significant role in determining location preferences.

TRANSPORTATION FACTORS IN SITE SELECTION

Transportation infrastructure is a pivotal determinant in logistics property site selection, directly affecting supply chain performance, operational efficiency, and cost-effectiveness. The following aspects are critical:

1. **Transportation Networks:** The accessibility and quality of transportation networks, including highways, ports, and railroads, are vital for logistics operations. Efficient transportation networks minimize transit times and costs, which is crucial for optimizing supply chain performance (Yildiz et al., 2020). Proximity to major transportation routes enhances service delivery and reduces operational inefficiencies (D.Ravindran et al., 2024).
2. **Cost Considerations:** Transportation costs significantly influence site selection decisions, encompassing both distance and market volume. Studies, such as those by Ryu and Song (2022), highlight how regions with lower transportation costs tend to attract more logistics centers. Conversely, higher land prices can lead to increased logistics costs, creating a trade-off that affects site selection strategies.
3. **Site Selection Methodologies:** Advanced methodologies are employed to assess transportation factors in logistics property site selection. Techniques such as the DEMATEL method, linear programming, and network analysis allow researchers to evaluate distances, costs, and network efficiency systematically (D.Ravindran et al., 2024; Liu, 2012). These approaches provide a structured framework for identifying optimal locations by integrating transportation considerations with other factors such as labor availability, infrastructure, and regional policies.

INTEGRATION OF TRANSPORTATION AND SITE SELECTION

The synergy between transportation infrastructure and site selection extends beyond logistical considerations to impact economic growth and regional development (Yue et al., 2005; Ryu & Song, 2022). Effective site selection balances transportation costs with operational needs, ensuring that logistics centers are strategically positioned to capitalize on transportation networks while addressing other critical factors such as labor and infrastructure (Verhetsel et al., 2015; Yildiz et al., 2020). In conclusion, the literature underscores the centrality of transportation factors in logistics property site selection (Yue et al., 2005; Verhetsel et al., 2015). By leveraging advanced methodologies and integrating transportation networks with broader site selection criteria, stakeholders can make data-driven decisions that optimize logistics performance and operational success (Yildiz et al., 2020; Ryu & Song, 2022).

IV. RESEARCH METHODOLOGY

This section outlines the methodological approach employed in this study, encompassing the research design, data collection methods, and data analysis techniques. The objective is to examine the relationship between transportation factors and logistics property site selection in Shah Alam by employing a systematic and data-driven approach.

RESEARCH DESIGN

This research adopts a quantitative approach to analyze the influence of transportation infrastructure on logistics property site selection. The study relies on secondary data and GIS-based spatial analysis to evaluate transportation factors, such as proximity to highways, ports, and rail infrastructure. The research design incorporates descriptive and location analysis methods to identify patterns and relationships between logistics properties and transport infrastructure. The study utilizes a case study approach, focusing specifically on Shah Alam, a key logistics hub in

Malaysia. The case study method allows for an in-depth exploration of the interplay between transportation infrastructure and logistics property locations, providing contextualized insights into the region's logistics landscape.

DATA COLLECTION

This study relies on secondary data, as it is an efficient and cost-effective method for examining existing datasets on transportation and logistics property locations. The data sources include:

- **Government Agencies:** Data on transport networks (roads, ports, railways) and land use in Shah Alam.
- **Industry Reports:** Reports from logistics companies and real estate agencies offering insights into the region's logistics property market.
- **Databases:** GIS datasets for spatial mapping of transportation infrastructure and logistics properties.

Additionally, a survey was designed to collect insights from logistics companies regarding their site selection criteria, emphasizing transportation infrastructure elements like highway access, port proximity, and rail connectivity. This integration of secondary data and survey responses ensures a comprehensive understanding of the factors influencing logistics property site selection.

DATA ANALYSIS

1. Descriptive Statistics

Descriptive statistics were employed to summarize the characteristics of the data collected, focusing on central tendencies and variability:

- **Mean:** To calculate the average distance of logistics properties to transportation infrastructures.
- **Median:** To identify central tendencies and mitigate the impact of outliers.
- **Standard Deviation:** To measure the variability in distances, highlighting the consistency of logistics property proximity to transportation modes.

2. Location Analysis

Location analysis was conducted using Geographic Information Systems (GIS) to map and analyze spatial relationships between logistics properties and transportation infrastructure in Shah Alam. This analysis included:

- Mapping logistics properties and transportation networks to visualize spatial proximity. (Buffer)
- Identifying the distances between logistics properties and key transport nodes (e.g., highways, ports, railways). (Distance Matrix (Hublines))

CONCLUSION

This study anticipates that logistics properties in Shah Alam with superior road access (e.g., PKT Logistics, 0.0816 km from highways) will demonstrate higher occupancy rates and rental premiums, while port-proximate assets like MDL Distribution (0.1268 km) will show stronger long-term valuation growth. Notably, the absence of logistics facilities within 3 km of railways reveals an untapped opportunity for transit-oriented industrial development. From a real estate management standpoint, these findings suggest investors should prioritize highway-adjacent warehouses for stable returns and consider port-linked properties for capital appreciation. Future development strategies should explore rail-connected logistics parks and adaptive reuse of underutilized sites near transport nodes. The results

underscore how transportation infrastructure critically shapes logistics real estate performance, guiding investment, development, and policy decisions in Shah Alam's industrial property market.

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