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WELCOME SPEECH FROM THE CHAIRMAN

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

بسم الله الرحمن الرحيم السلام

عليكم ورحمة الله وبركاته

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

THE IMPACT OF RAILWAY STATIONS ON COMMERCIAL PROPERTY VALUE IN KLUANG, JOHOR USING GEO-INFORMATION SYSTEM (GIS) APPLICATION

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ABSTRACT

The railway transport system is a crucial component of urban development, facilitating mobility and connectivity between locations. In the context of real estate, the presence of railway stations is anticipated to influence property values in surrounding areas. This paper explores the theoretical relationship between railway infrastructure and commercial real estate values, focusing on the case of the Kluang ETS and the future EDTP Gemas-Johor Bahru Twin Track project. The study will examine key factors that contribute to property value fluctuations, such as accessibility, commercial density, and urban planning considerations. A framework will be proposed using the Geo-Information System (GIS) application and multiple regression analysis (MRA) to assess the potential impact of railway stations on commercial property values. By synthesizing existing literature and theoretical models, this paper aims to provide insights for policymakers, urban planners, and real estate stakeholders on the implications of railway infrastructure for commercial property investment and development.

Keywords: Railway stations, Electric Train Service (ETS), Commercial Property Value, GIS

I. INTRODUCTION

Property value is an important aspect of urban economics since it directly affects the financial well-being of individuals, businesses, and communities. A variety of factors influence property value, including location, accessibility, and proximity to essential services and infrastructure. Understanding the dynamics of property value in Kluang, Johor, is important for making informed urban planning, development, and investment decisions. The value of a property can have a considerable impact on both its tenants' quality of life and the general economic vitality of the surrounding area. As such, it is important to examine the various variables that influence property value and identify the main drivers of change. Furthermore, infrastructure developments have a positive impact on property values in surrounding areas. The construction of new highways, public transportation systems, and other essential facilities can transform an area, making it more appealing for both residential and commercial purposes. As accessibility improves, property values tend to rise. Investors often aim areas earmarked for infrastructure projects as they signal potential future appreciation. Therefore, the purpose of this study is to analyse the impact of railway stations on commercial property value in Kluang, Johor. This study uses GIS application to gain a thorough understanding of the spatial relationships between transportation infrastructure and property value.

Research Background

The advent of railway stations often brings about significant changes in the urban landscape, influencing various aspects of socio-economic life. One such impact is on property values, particularly commercial properties. The presence of a railway station can enhance the attractiveness of a location, making it a bustling hub of activity. This,

in turn, can increase the demand for commercial properties in the vicinity, thereby driving up their values. Railway stations, as nodes in transport networks and urban environments, have accessibility and environmental impacts that contribute to property value (Debrezion, Ghebreegziabiher, et al., 2007). The impact of railway stations on commercial property value has been a topic of interest in urban economics and real estate finance. Existing literature on railway station effects on property value yields mixed findings, ranging from negative to insignificant or positive impacts. In the context of Kluang, Johor, a district in Malaysia, understanding this impact is crucial for urban planning and development. Kluang is home to a significant number of commercial properties and has a well-established railway network. This study will provide valuable insights for policymakers, urban planners, property developers, and investors, contributing to more informed decision-making processes in urban development and real estate investment in Kluang, Johor.

Problem Statement

The criteria of railway stations that influence commercial property values have been identified in various studies as the properties' physical, accessibility, and environmental features. Railway stations function as nodes in transport networks and places in an urban environment. They have accessibility and environmental impacts, which contribute to property value. Commercial properties within a quarter mile of a station sell or rent for 12.2% more than residential properties in the same distance range. For every 250 metres closer to a railway station, the property value effect is 2.3% higher for residential properties than commercial properties. (Debrezion, Ghebreegziabiher, et al., 2007). Moreover, while the potential of Geo-information System Applications in property valuation has been recognized, its application in measuring the impact of railway stations on commercial property values in Kluang, Johor, is yet to be explored. This technology could provide a more accurate measurement of the impact, considering the identified criteria. Furthermore, the GIS provides a powerful tool for analysing spatial data and revealing patterns that might not be apparent in tabular data. It allows for the visualisation of the proximity of properties to railway stations and the correlation with property values. This can help identify areas of increased value due to their closeness to stations. In addition, GIS may integrate several forms of data, allowing for a more comprehensive study that considers multiple aspects that influence property prices. Therefore, the main purpose for this study is to identify the criteria of railway stations that can influence commercial property values in Kluang, Johor and to develop a method to measure the impact of railway stations on commercial property values in Kluang, Johor using Geo- information System (GIS).

Research Questions

This study aims to address the following research questions:

- i. What are the criteria of railway stations that can influence commercial property value in Kluang, Johor?
- ii. How to measure the impact of railway stations on commercial property values in Kluang, Johor?

Research Objectives

The objectives of this research are:

- i. To identify the criteria of railway stations that can influence commercial property values in Kluang, Johor.
- ii. To measure the impact of railway stations on commercial property values in Kluang, Johor using Geo-information System (GIS).

Scope of Study

The scope of this research is to measure the influence of railway stations on the value of commercial properties in Kluang, Johor. The study focused on the Kluang Electric Train Service (ETS) and how it affects the neighbouring real estate area. Furthermore, Kluang's mix of urban and rural surroundings provides a varied selection of commercial property for research, resulting in a valuable dataset for the study. Furthermore, Kluang's railway system is an important aspect of its infrastructure, making it an ideal place for studying the impact of railway proximity on property values. The findings will provide valuable insights for property investors, urban planners, and policymakers in Kluang, Johor, and contribute to the broader understanding of urban economics and real estate studies.

Significance of Study

This study is significant because it gives unique insights on the relationship between railway stations and commercial property values, which will benefit a variety of stakeholders. For academic institutions, it provides a resource for students interested in real estate management and appraisal. For the government, it emphasises the socioeconomic

impact of transport infrastructure, which helps policymakers and urban planners maintain balanced development and affordability. The insights can help developers and investors identify high-potential areas for commercial developments and make informed investment decisions. Furthermore, the study urges landowners to build properties based on demand, so maximising the benefits of the Electric Train Service (ETS) train station in Kluang, Johor.

II. LITERATURE REVIEW

This chapter summarises previous studies on railway stations, property valuations, and GIS applications in real estate analysis. It explores at the key elements that influence commercial property values, as well as the role of transportation infrastructure.

The History of Malaysia's Railway Stations

Malaysia's railway system has evolved substantially, with ETS offering faster and more efficient transit. The construction of railway networks has influenced urban growth and real estate development in various regions.

Kluang Electric Train Service (ETS) Railway Stations

Keretapi Tanah Melayu (KTM) operates the Electric Train Service (ETS), an intercity high-speed rail service in Malaysia. KTM launched the ETS service between Ipoh and Seremban in 2010, then expanded it to Padang Besar via Butterworth in 2015. The ongoing electrification and double-tracking project between Gemas and Johor Bahru, which is planned to be completed by July 2024, will allow the ETS to move at a maximum speed of 160 km/h and shorten the journey time between Kuala Lumpur and Johor Bahru. The ETS project is part of a wider initiative to improve Malaysia's railway infrastructure and connectivity.

The Railway Stations Construction Sites

The Electric Train Service (ETS) construction in Kluang has had a positive impact on property values in the area. Based on the National Property Information Centre (NAPIC), The development of the ETS service, as part of the Gemas-Johor Baru Electrified Double Track project, has enhanced connectivity and accessibility in Kluang, making the area more desirable for residents and businesses. Additionally, the presence of key development projects in Kluang indicates growth and potential economic opportunities, which can positively impact property values by attracting investments and businesses (Bambale et al., 2020). The ongoing construction and completion of various projects in Kluang signify long-term growth and development, contributing to an increase in property values due to improved infrastructure and amenities in the area. Overall, the ETS construction has played a significant role in boosting property values in Kluang by improving connectivity, attracting investments, and fostering economic growth. Moreover, an improved transportation infrastructure often leads to increased property values as it makes areas more desirable for residents and businesses. The ETS construction and associated development projects in Kluang are likely to have a positive impact on property values in the area by enhancing connectivity, attracting investments, and fostering economic growth.

The Advantages of Railway Stations (ETS) Services

Railway stations serve as key transportation hubs that connect people to various destinations via train and other modes of transport like buses, taxis, and personal vehicles (Bachok et al., 2013). They provide for the efficient transit of large numbers of persons and commodities. Stations are generally situated in the centre of cities and towns, making them easily accessible. Railway stations can encourage economic growth and development in their surrounding communities. Railway stations can also increase property value in surrounding communities, and railway stations are important for sustainable mobility by encouraging the use of trains, which are more energy-efficient and emit lower emissions than private vehicles.

The Criteria That Influence Railway Stations

The criteria of railway stations are important to improve service quality and strengthen the country's economy.

A. Infrastructure

Infrastructure determines a region's economic benefits and serves as a leisure and retail hub. It comprises features such as sustainable design, digitization, rail connection, and passenger experience, all of which are required for effective train station and railway architecture (Petrović et al., 2010). Stations located closer to populated areas with adequate parking options are more accessible and can attract a larger ridership.

B. Comfortability

The comfort and satisfaction of passengers are crucial factors in evaluating the quality of a railway station. This

includes amenities such as seating, lighting, and air conditioning, as well as the overall cleanliness and maintenance of the station (Arreeras et al., 2020). Ensuring a comfortable indoor and outdoor environment is important, particularly for those who travel long distances or use the Electric Train Service (Akhuan et al., 2024).

C. Accessibility

Accessibility is a critical criterion, ensuring that passengers can easily reach the station and navigate its facilities. This includes factors such as proximity to urban centers, parking, and pedestrian access (Hasiak & Bodard, 2016). The residents will choose a station that is conveniently located near residential areas, workplaces, and the city centre. Placing the station adjacent to the residing allows users to easily and quickly access the station to move to other locations.

D. Convenience

Convenience refers to the ease with which passengers can access and use the station's services, including ticketing, and baggage handling. According to Crockett and Hounsell (2005), four key themes encompass the concept of convenience in rail travel which is the accessibility, station facilities and frequency of service and interchanges between train services. Ensuring that ETS stations in Kluang provide a good service even during its service. A comprehensive approach to convenience that addresses service quality, information systems and stations amenities is essential for enhancing the attractiveness and usage of railway services like ETS.

E. Safety

The safety of rail stations is influenced by the complex interactions between various elements, including infrastructure, equipment, and human behaviour. (Bracaglia et al., 2020). Effective safety measures include the adoption of security systems, emergency response plans, and regular facility maintenance to prevent accidents and ensure the station's smooth operation. Safety is determined by the physical environment, which includes the layout of platforms, the condition of tracks and signals, and the availability of emergency services.

F. Location

The location of the railway station is important, as it affects the accessibility and convenience of the station for passengers. A station located near the city centre or major transportation hubs can enhance its appeal and usage. Zemp et al. (2011) stated that the location of railway infrastructure should be based on a comprehensive assessment of factors such as economic growth, potential. Stations situated in strategic locations, such as the city centre or along major transportation corridors, tend to have a higher demand for housing and commercial properties in their vicinity (Cervero & Kockelman, 1997)

Commercial Property Value

Commercial property is a significant asset in real estate, generating revenue through various activities such as office spaces, shopping centres, and industrial parks (Haw et al., 2019). The value of commercial property is influenced by a multitude of factors which can impact its market price and overall performance. The value of commercial property is influenced by a multitude of factors which can impact its market price and overall performance. The distance of a railway station substantially impacts commercial property rental prices. Commercial real estate near railway stations has higher rental rates due to the stations' improved accessibility and mobility.

Geographic Information System (GIS)

Geographic Information System (GIS) applications are used to estimate the property value of commercial real estate in the area surrounding the construction of the Electric Train Service (ETS) station in Kluang, Johor, based on the proximity of commercial properties. GIS also used to determine commercial property value depending on the distance from Kluang's ETS Station. According to Duckham et al. (2023), the Geographic Information System also enables capture and modelling, storage and retrieval, communication and sharing, manipulation and analysis, presentation and exploration of geographically referenced data. A GIS system can analyse spatial, geographical, and other relevant data. Furthermore, in this study, the researcher will use Geographic Information System (GIS) applications to estimate the property value of commercial real estate in the area surrounding the Electric Train Service (ETS) station in Kluang, Johor, based on the proximity of commercial properties to the station.

III. RESEARCH METHODOLOGY

This chapter covers data collecting and gathering methods, as well as data analysis. Furthermore, the research methodology will explain how the entire study is carried out in stages to fulfil the study's stated objectives and goals.

Some of the descriptions and explanations are intended to ensure that the study's objectives can be achieved. Research methodologies and research design, research instruments, content analysis, and data analysis methods are all aspects that must be considered in this study's methodology. In this chapter, the researcher needs to organise the study using a research design that meets its objectives. This chapter describes how to collect the data required to meet the study's objectives. To answer the study's objective, a quantitative method will be used to analyse the criteria of the Electric Train Service (ETS) railway station in the context of Kluang, Johor, as well as the impact of the station's existence on the value of real estate in the surrounding area using GIS applications.

Research Design

This research flow is divided into five such as the first stage (initial understanding and identifying the problem), the second stage (literature review), the third stage (data collection and data analysis), the fourth stage (data analysis) and the fifth stage (conclusion and recommendations).

Methodology for Objective 1

The first objective of the study is to identify the criteria of railway stations that can influence commercial property values in Kluang, Johor. To achieve the first objective, a qualitative method will be used to achieve this objective. This method is used to obtain information about the criteria of Electric Train Station (ETS). Data is collected through interviews with real estate professionals (valuers, estate agents) and analyzed thematically.

Methodology for Objective 2

A quantitative method using GIS and multiple regression analysis is applied to determine the relationship between ETS proximity and commercial property values. Secondary data from the National Property Information Center (NAPIC) and data from the *Jabatan Penilaian dan Perkhidmatan Harta (JPPH)* will also be used in this second objective.

CONCLUSION

In conclusion, the purpose of this study was to address the research question about the impact of the railway station on the rise in commercial property values. So, in this study, valuers and other parties involved in the construction of the ETS train station play an important part in answering questions about the ETS train station's criteria in the context of Kluang, Johor, as well as the impact of the ETS station on the value of commercial properties, thereby influencing property value in the Kluang area. The researcher hopes that this study will be useful as a reference and reading material for future researchers who do comparable research.

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