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THE ADAPTABILITY OF INDUSTRIAL REVOLUTION 4.0 IN VALUATION FIELD

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ABSTRACT

The research study investigates the adaptability and effects of Industrial Revolution 4.0 (IR4.0) technologies in the property valuation field in Malaysia. By integrating advanced technologies like big data analytics, artificial intelligence (AI), machine learning (ML), geographic information system (GIS), and drones, valuers have witnessed significant improvements in efficiency, accuracy, and cost savings. The study reveals that the majority of valuers have embraced IR4.0 technologies, finding them beneficial for simplifying work processes and making informed decisions. Drones and GIS systems have been utilized for property inspections and site analysis, while AI and ML algorithms have automated data analysis, leading to improved decision-making. The integration of digital platforms and applications has further enhanced connectivity and collaboration among valuers. The study emphasizes the importance of staying updated with the latest technological advancements to remain competitive and deliver reliable services. The support of professional organizations, such as the Royal Institution of Surveyors Malaysia (RISM), will be crucial in guiding valuers through the challenges and opportunities presented by IR4.0 in the valuation field. By embracing these technologies, valuers can revolutionize the industry, ensuring a progressive and successful future for property valuation in Malaysia.

Keywords: Industrial Revolution 4.0, Property valuation, Adaptation, Malaysia

INTRODUCTION

The advent of Industry 4.0, also known as the fourth industrial revolution, has had a significant impact on various industries, including property valuation in Malaysia. This revolution involves the integration of advanced technologies, such as big data analytics, artificial intelligence (AI), and machine learning (ML), into valuation processes. By leveraging these technologies, valuers can access and analyze vast amounts of data from multiple sources, resulting in more accurate property valuations. The Royal Institution of Surveyors Malaysia (RISM) recognizes the importance of technology and digitalization in valuation procedures and emphasizes the need for valuers to embrace Industry 4.0 advancements.

One study, "Big Data Analytics in Real Estate Valuation" by Tan, C. T., Ooi, G. B., and Teh, P. L. (2019), highlights the potential benefits of adopting big data analytics in the valuation industry. It explores how utilizing big data and sophisticated analytics methods can enhance risk assessment procedures, uncover market trends, and improve the accuracy of property appraisals. This study further supports the integration of Industry 4.0 technologies in the valuation sector.

As a result of Industry 4.0's influence, traditional valuation techniques are evolving in Malaysia. Valuers can make better-informed decisions, work more efficiently, and provide more precise property valuations by incorporating big data analytics, AI, and ML algorithms into their processes. The recognition of this trend by professional organizations like RISM, along with research studies like the one conducted by Tan, C. T., Ooi, G. B., and Teh, P. L. (2019), further substantiate the advantages of adopting Industry 4.0 technology in the valuation industry.

Problem Statement

The integration of Industrial Revolution 4.0 technologies in the valuation field in Malaysia presents challenges that need to be addressed for effective implementation and to harness the potential benefits. These challenges include integrating advanced technologies like big data analytics, AI, ML, GIS, and drones into valuation processes. Research studies, such as Abdul-Rahman and Hussein's (2020) study, highlight the benefits of these technologies in enhancing accuracy and efficiency while identifying challenges faced by valuers in Malaysia. Overcoming challenges such as data availability and quality, developing necessary skills among valuers, addressing regulatory and ethical considerations, integrating new technologies with existing systems, and managing practical implementation is crucial. Collaboration among stakeholders, including professional bodies like RISM, is essential. By providing guidance and support, stakeholders can navigate the transformative process of

adopting Industry 4.0 technologies in the valuation field, ensuring successful integration for improved accuracy, efficiency, and transparency.

OBJECTIVE OF RESEARCH

The objective of this research study is to identify and investigate the adaptation and effects of Industrial Revolution 4.0 technologies in the valuation field, specifically focusing on their use and impact in valuation works.

LITERATURE REVIEW

The adaptability of Industrial Revolution 4.0 technologies in the valuation field in Malaysia highlights the potential benefits, challenges, and impacts of integrating these advanced technologies. Abdul-Rahman and Hussein (2020) explore the adoption of Industry 4.0 technologies, including AI, ML, GIS, and drones, in the real estate valuation process in Malaysia, shedding light on the benefits and challenges associated with their implementation. Mahdzar et al. (2021) investigate the impact of artificial intelligence, particularly machine learning algorithms, on property valuation accuracy in Malaysia, emphasizing the positive effects on accuracy and efficiency. Additionally, Tan, Ooi, and Teh (2019) discuss the potential benefits of incorporating big data analytics in real estate valuation, showcasing its ability to improve accuracy, identify market trends, and enhance risk assessment processes. These studies collectively contribute valuable insights into the adaptability of Industrial Revolution 4.0 technologies in the valuation field in Malaysia, providing guidance for stakeholders in navigating the challenges and harnessing the benefits associated with their integration.

Technology Used In Valuation Field

Incorporating big data analytics into valuation processes has shown significant benefits, including enhanced accuracy and efficiency. Tan, Ooi, and Teh (2019) emphasize its capacity to analyze vast amounts of data, identify market trends, and improve risk assessment. The integration of AI and ML algorithms has also had a transformative impact, automating data analysis and decision-making processes to improve accuracy and efficiency. Mahdzar et al. (2021) find that AI techniques, particularly machine learning algorithms, enhance property valuation accuracy. Geographic information system (GIS) technology has gained prominence, allowing for spatial data visualization and analysis, thereby improving valuation accuracy. Chau et al. (2019) highlight GIS's role in incorporating location and proximity to amenities into the valuation process. Drones have emerged as valuable tools in property valuation, enabling efficient data collection and high-resolution imagery for

site analysis. Ho et al. (2021) discuss the use of drones in data collection, site inspection, and improving valuation accuracy. These technologies collectively contribute to improved accuracy, efficiency, and insights in the valuation field, benefiting practitioners and decision-makers. Therefore it can be concluded from this table that are five technology used in the valuation field with the usage of the technology.

Table 1: The Technology Used In Valuation Field

Technology	Source	Usage
Big Data	Tan, Ooi, and Teh (2019)	<ul style="list-style-type: none"> ● Market trends ● Economic indicators ● Property related information
Artificial Intelligence (AI)	Mahdzar et al. (2021)	<ul style="list-style-type: none"> ● Data collection ● Data Analysis
Machine Learning (ML)		<ul style="list-style-type: none"> ● Historical valuation data
Geographic Information System (GIS)	Chau et al. (2019)	<ul style="list-style-type: none"> ● Property location ● Surrounding infrastructure ● Environmental factors
Drones	Ho et al. (2021)	<ul style="list-style-type: none"> ● Capture Aerial imagery ● Conduct Survey ● Gather data on properties

METHODOLOGY

The research aims to identify the adaptation of Industrial Revolution 4.0 (IR4.0) in the valuation field, investigate the effects of IR4.0 adoption, and determine the utilization of IR4.0 technologies in valuation work. To achieve these objectives, a quantitative research methodology is employed, as it involves the evaluation of hypotheses or theories through the measurement of variables with numerical data and statistical analysis.



Figure 1 : Northern Malaysia and A few Valuer's Company

The research design involves gathering data from valuers using a survey methodology, with a questionnaire as the primary data collection tool. The study focuses on the northern states of Malaysia, namely Perlis, Kedah, Penang, and Perak, with a population size of 180, including professionals from prominent firms like Rahim & Co, Jurunilai Bersekutu, Fadzilah and Fikri, and IM Global Property Consultant. Using the Krejcie and Morgan formula, the appropriate sample size of 123 participants is determined, with 37 respondents targeted for response. This choice of quantitative research methodology allows for the collection of confident and in-depth information about the use of IR4.0 in the valuation profession. It provides a systematic approach to analyze the data collected from valuers and draw meaningful conclusions about the adaptation and effects of IR4.0 in the valuation field.

Online platforms like Facebook, email, and WhatsApp were utilized to distribute the survey questionnaire, enabling efficient data collection from a broad range of participants. However, it's essential to acknowledge potential limitations, such as non-response bias due to the online methodology and the study's focus on specific IR4.0 technologies, potentially neglecting broader contextual factors.

In conclusion, this quantitative research approach provides a comprehensive understanding of IR4.0 adoption and its effects in the valuation field of northern Malaysia. While focusing on a specific region and valuer population, the study offers valuable insights into technology integration. Nonetheless, limitations related to methodology and scope should be considered when interpreting the findings.

ANALYSIS AND FINDINGS

The research study aimed to identify the adaptation of Industrial Revolution 4.0 technologies in the valuation field in Malaysia. The socio-demographic analysis revealed that the majority of respondents were females, aged between 18 and 25 years, working in the private sector, and earning between RM3,000 and RM4,500. However, table below shows the finding of the research study.

Table 2: The Findings

Statements	Objective	Yes	No
Is it difficult to learn to value real estate using available apps?	Adoption	8	35
Is it difficult for you to adapt in the way of real estate valuation?	Adoption	10	33
Does it take you a long time to learn something new?	Adoption	10	33
Improved quality	Effect	22	21
Save costs	Effect	22	21
[Drone]	Used	28	15
Save time	Effect	29	14
Simplify works	Effect	32	11
[The Agency Application]	Used	36	7
Does this Industry Revolution save costs in valuation work?	Effect	36	7
[Connection between others]	Used	37	6
In your opinion, is the IR 4.0 used in the valuation work?	Adoption	41	2
[Website]	Used	41	2
Does the use of the latest technology make evaluation work easier?	Used	42	1
Is the use of the latest technology more time-saving?	Effect	42	1
In your view, is the use of IR4.0 appropriate for your career field?	Adoption	43	0
[Google Maps/Street View]	Used	43	0
Are the effects of using the industrial revolution 4.0 useful?	Effect	43	0

The analysis of Part B focused on the respondents' views on the adoption of IR4.0 technologies. It was found that the majority of valuers believed that IR4.0 was widely used in valuation work and considered it appropriate for their career field. They also recognized the benefits of IR4.0, including time savings, simplified work processes, improved quality, and cost savings. The analysis of Part C explored the views on the use of new technologies in valuation work. Most valuers did not find it difficult to adapt to new technologies and acknowledged the usefulness of IR4.0. They agreed that the latest technology made evaluation work easier, more time-saving, and could save costs.

The research findings aligned with previous literature, highlighting the use of drones and GIS systems like Google Maps in property valuation. The study concluded that Malaysian valuers have started adopting IR4.0 technologies, finding them beneficial and not difficult to adapt to. The technologies, such as drones, GIS systems, agency applications, and websites, have improved efficiency, saved time and costs, and enhanced the quality of work.

In conclusion, the research study achieved its objectives of identifying the adaptation of IR4.0 in the valuation field, investigating its effects, and understanding its usage. The findings demonstrated the positive impact of IR4.0 technologies on valuation practices in Malaysia. It is recommended that valuers continue embracing and leveraging these technologies to further enhance their efficiency, accuracy, and overall performance in the valuation industry.

RECOMMENDATION

In the recommendations for future research, it is suggested to expand the scope of the study to include valuers from all over Malaysia to obtain more accurate and comprehensive research results. Additionally, a combination of qualitative and quantitative research methods should be employed to gather a wider range of information and insights. This would ensure a more thorough understanding of the usage of Industrial Revolution 4.0 technologies among valuers and their impact on the valuation field in Malaysia.

To improve future research, sufficient time should be allocated for the study to allow for comprehensive data collection and analysis. By avoiding rushing the research process, all necessary information can be examined thoroughly. Moreover, the study should delve deeper into various examples of Industrial Revolution 4.0 technologies used among valuers in Malaysia to identify additional elements and opportunities for improvement in the valuation sector. Valuers in Malaysia are also recommended to stay up-to-date with the latest technological advancements to provide fast and high-

quality evaluation services, which will further elevate the property valuation industry in the country. Embracing the latest technology will lead to improved customer satisfaction and foster the industry's growth and competitiveness.

CONCLUSION

The research study focused on the adaptability and effects of Industrial Revolution 4.0 (IR4.0) technologies in the valuation field in Malaysia. By integrating advanced technologies such as big data analytics, artificial intelligence (AI), machine learning (ML), geographic information system (GIS), and drones, valuers have witnessed significant improvements in their processes and outcomes. The findings demonstrated that the majority of valuers have embraced IR4.0 technologies and found them beneficial, leading to improved efficiency, cost savings, and enhanced work quality.

The study revealed that IR4.0 technologies have not only simplified work processes but also enabled valuers to make more informed decisions, thereby enhancing the accuracy of property valuations. Drones and GIS systems, like Google Maps, have been utilized for property inspections and site analysis, while AI and ML algorithms have automated data analysis and improved decision-making. Additionally, the integration of digital platforms and applications has further streamlined valuers' tasks and communication, promoting better connectivity and collaboration in the valuation field.

Overall, the research study confirmed that the adoption of IR4.0 technologies has been well-received and positively impacted the valuation industry in Malaysia. It is evident that embracing these technologies has become essential for valuers to stay competitive and deliver efficient, accurate, and reliable services. Moving forward, continuous efforts to enhance skills, adaptability, and knowledge in the rapidly evolving technological landscape will be critical for valuers to fully harness the benefits of IR4.0 and further revolutionize the valuation profession in Malaysia. With the support of professional organizations like the Royal Institution of Surveyors Malaysia (RISM), valuers can confidently navigate the challenges and seize opportunities presented by the fourth industrial revolution in the valuation field. By doing so, they can ensure a successful and progressive future for the valuation industry in Malaysia.

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