

The Role of Valuers in Leveraging Big Data in Real Estate Industry in Malaysia

Atiqah Najwa Azrul Than^{1*}, Zulkifli Esha¹

¹ *Universiti Malaya, Department of Real Estate/Faculty of Built Environment/Lembah Pantai, 50603 Kuala Lumpur, MALAYSIA*

*Corresponding Author: atiqahnjw4@gmail.com

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Abstract

Big data, originating in the 1990s, is a vast and complex datasets that surpasses the capacity of traditional data management tools. The International Business Corporation Machines claimed that daily data creation reaches 2.5 quintillion bytes, indicating the complexity nature of big data. Apart from its sheer volume, the complexity also arises from its attributes such as velocity, and veracity as reflected in the 7Vs framework. Transitioning to the real estate sector, big data has a major influence on Malaysia's real estate market. Big data adoption enhances the transparency and reliability of the market, benefiting both buyers and sellers. Given its position as a significant driver of economic growth, the real estate market is influenced by diverse factors namely economic conditions, market trends and others. As the market is dynamic and constantly changing, it is imperative that big data is employed in the industry. The central focus of this research is on the vital role of valuers in leveraging big data in the real estate industry in Malaysia to gain accurate and precise valuation. This research addresses three key questions, exploring factors encouraging big data adoption among valuers, the impacts of the adoption and the challenges faced in daily operations. The study uses a quantitative approach, relying on primary data from surveys, to assess real-world scenarios and experiences of valuation practice and big data utilization. In conclusion, this research provides a detailed exploration on the relevance of big data in the real estate sector and serves as a foundation for future studies to harness the full potential of big data in real estate practice.

1. Introduction

In today's data driven era, big data emerges as a pivotal concept. Since the 1990s, the term 'big data' has been generally referred to extremely large and massive datasets that are challenging to manage, process and analyze using conventional data processing methods. The problem lies not only in handling ever-increasing amounts of data, but also in handling data that is becoming more complex and interconnected and in a wider range of formats (Riahi & Youssra, 2018). As we navigate the dynamic landscape of big data, it has revolutionized entire industries and making its mark on our daily lives, shaping the foundations of how the industries operate and individuals engage in the modern world. With that being said, big data has undeniably evolved into an integral component of the cultural and behavioral landscape of humanity. Big data is considered characteristically complex and it is a phenomenon that needs to be fully explored as a great deal of emphasis has been placed on the anticipated benefits of mining data that will generate new understanding of human behaviour, lifestyle and habits (Winson-Geideman & Krause, 2016).

It is essential to emphasize that the term 'big data' extends beyond the sheer volume of data. Instead, it refers to a broad concept that consists of several characteristics (7V) known as Volume, Velocity, Variety, Variability, Veracity, Value and Visualization. Each of those characteristics has its own role and impact in the domain of contemporary data analytic. In addition, the most commonly used classification of big data includes three main types which are structured, semi-structured and unstructured.

Shifting to the real estate sector, it refers to the industry involved in the development, buying, selling, leasing, and management of real estate properties. Malaysia's real estate market is diverse and plays a crucial role in the overall economy, serving as a significant driver of economic growth, investment, and wealth creation. In addition, this sector is influenced by factors such as economic conditions, demographics, interest rates, and market trends.

According to De Mauro et al., (2016), utilization and management of big data are impacting many fields of activities of our society and applications of big data have shown a consistent level of adaptability to the different requirements arising from disparate scientific domains and industrial organizations. Big data has a significant impact on numerous industries, including real estate and it is pertinent to understand and adapt to changing market dynamics, mitigate risks, and provide efficient services to the respective clients. Furthermore, big data plays a pivotal role in enhancing the accuracy and efficiency of the valuation process while real estate valuers utilize vast amounts of datasets to compare recent property sales, assess neighbourhood characteristics, and take into account economic factors, resulting in more precise and timely property valuations. This data-driven approach not only benefits buyers and sellers, but also contributes to a more transparent and reliable real estate market.

2. Problem Statement

Real estate remains to be the biggest asset class in the world and can be considered as a developing sector in emerging economies or regions experiencing rapid urbanization and economic growth. As the industry expands, there are some advancements in the real estate sector involving the integration of data driven technologies to enhance property valuation processes. Real estate valuers can harness the power of big data to analyze massive datasets, identify market trends and predict future property values. On top of that, this data-driven approach allows for more accurate market assessments and their adaptation to Big Data tools is crucial for enhancing accuracy, efficiency, and overall decision-making in the valuation process. However, there are some potential problems are identified as follows:

- a) Big data offers numerous benefits to the industry, from uncovering valuable insights on the real estate market, improved efficiency and enhanced decision-making. However, a recent report made by World Bank Group indicated that Malaysia still lags behind neighbouring countries in the adoption of user-friendly and data-driven digital solutions (Sanghi et al., 2023). Therefore, there exists a notable lack of awareness regarding the potential of utilizing big data in real estate industry.
- b) Although big data has the potential to revolutionise the real estate industry, there will be a few challenges in dealing with the massive number of datasets that require scalable and powerful tools. According to (Miwfm, 2023), it is stated that this industry has yet to fully embrace the potential of big data due to the traditional mindset and industry fragmentation, lack of data integration and interoperability, data security and privacy concerns, and limited awareness and expertise.
- c) Real estate industry has always been a data-driven sector due to the massive amounts of datasets that are processed every day and big data should be implemented in order to minimize the workload on professionals. Xiao (2022) claims that the potential of big data in real estate is in gradual progress since it characteristically remains a complex subject.

Given that there is a lack of research and a critical gap in understanding in leveraging big data among real estate valuers in Malaysia real estate industry, this research is undertaken. This research will be more specific and focused on Klang Valley only.

3. Research Questions

The following questions have directed this research to accomplish the objectives:

- a) What are the factors that encourage the adoption of big data among real estate valuers?
- b) What are the impacts of adopting big data among real estate valuers?
- c) What are the challenges faced by real estate valuers in adopting big data in their daily operations?

4. Research Objectives

The main aim of this research is to identify the factors and challenges faced by real estate valuers in leveraging big data in real estate valuation practice. To achieve this aim, the following objectives have been identified as follows:

- a) To identify the factors that encourage the adoption of big data by real estate valuers.
- b) To study the impacts of adopting big data among real estate valuers.
- c) To explore the challenges faced by real estate valuers in adopting big data in their daily operations.

5. Literature Review

5.1 Big Data Definition

In this era of modernization, big data stands as a transformation catalyst affecting every aspects of our lives. This is the realms of big data – a concept that goes beyond just numbers and bytes. Factually, big data is defined as too large and diverse datasets which are beyond the ability of conventional database software tools to capture, store, manage and analyze. Madden (2012) neatly summarises Big Data as data that is “too big, too fast, or too hard for existing tools to process”— too big as organisations are now collecting petabytes of data, too fast as processing applications must provide nearly instantaneous results, and too hard when new technologies are required to analyse it.

5.2 Real Estate

In general, land, buildings and other improvements on the land are all considered to be part of real estate. The term also extends to the natural resources associated with the land such as minerals, water and vegetation. Chen (2023) defined that real estate refers to the land and any permanent structures, like a home, or improvements attached to the land, whether natural or man-made. In the broader context, real estate refers to the industry involved in the development, buying, selling, leasing and management of real estate properties. Malaysia’s real estate market has always been diversified as well as crucial to the overall economy. It serves as a significant driver of economic growth, investment and wealth creation.

On top of that, the dynamics of real estate sector are heavily influenced by economic conditions, demographics, interest rates and prevailing market trends. Demographic trends such as population growth and age distribution significantly impact the real estate market. Understanding demographic shifts is essential for anticipating market demands.

5.3 Big Data and Real Estate

Big data has become a cornerstone of innovation within the real estate industry. Leveraging big data in the industry has resulted in transformative changes, offering valuable insights, enhancing decision-making processes and increasing overall efficiency. Real estate professionals can harness the power of vast datasets encompassing market trends, property values and economic indicators in order to make more accurate predictions. This enables them to make well-informed decisions concerning property investments, development projects and pricing strategies.

Moreover, big data has a significant impact on the landscape of property valuation. Utilization of big data allows for more precise property valuations by taking into account a wide range of variables such as comparable sales, surroundings, market trends and property conditions. This data-driven approach significantly reduces the risks of overvaluation and undervaluation, resulting in a more reliable basis for property appraisals.

5.4 Valuers

In the context of real estate industry, valuers are professionals who specialize in determining the market value of properties. (Aliasak, 2016) states that valuation surveyors provide services in terms of property values and professional advice on the real estate valuation of land, buildings, plants and machinery, as well as the valuation of businesses in Malaysia. Valuers who are frequently certified and qualified, are responsible for assessing the various factors that contribute to a property's overall value. The contributing factors would include the property's location, condition, size and recent comparable sales in the market.

Valuers may employ different methodologies in order to derive the market value of the property. On top of that, valuers provide unbiased assessments of property values in their capacity as impartial and objective experts. In addition to the quantitative side of property valuation, valuers possess a comprehensive understanding of market dynamics, legal regulations and economic conditions. Their diverse knowledge and skills are crucial for maintaining the integrity and reliability of the real estate sector.

5.5 Factors Influencing the use of Big Data

5.5.1 Enhanced Accuracy and Precision

Real estate valuers are adopting big data in order to improve accuracy and precision in property valuation. Big data enables valuers to process and analyze massive datasets with a level of detail that was previously unattainable. With the utilization of big data, valuers can take into accounts a wide range of variables such as property features, market trends and comparable sales data in order to produce more accurate assessment of the diverse real estate market. According to Xiao (2022), valuations can be done more accurately based on the data that has been acquired or shared by different players. This precision analysis is crucial for both valuers and clients as it will lead to decision-making in the dynamic real estate market.

5.5.2 Improved Market Insights

Big data offers real estate valuers an enormous amount of information that goes beyond what traditional sources can provide. The adoption of big data offers real estate valuers access to a diverse array of datasets, including social, economic, and demographic information. By analyzing diverse datasets, valuers can gain a deeper level of understanding trends, regional dynamics, user preferences and so on. For example, this detailed analysis allows valuers to identify overarching market trends, such as fluctuations in property values, shifts in demand for specific property types, and evolving preferences among buyers. Real estate valuers are better equipped to provide informed advice to clients, effectively navigate market fluctuations and contribute to strategic decision-making by combining these diverse insights.

5.5.3 Competitive Advantage

In a highly competitive real estate market, valuers who embrace big data gain a significant competitive advantage. Kok et al. (2017) claims that there is huge and fierce competition among the technologies to handle the market. The adoption of big data streamlines and accelerates the valuation processes and also empowers valuers to adapt swiftly to changing market dynamics. By applying this data driven approach, this not only sets valuers apart from competitors but also has the ability to provide the clients with insights into emerging opportunities and potential risks. Wei et al. (2022) adds that having access to this kind of data supports business decision-making processes. In addition, valuers harnessing the potential of big data not only attract clients seeking advanced methods but also establish a foundation for client retention. The consistent delivery of high-quality, innovative, and adaptable services becomes a hallmark of their approach, creating a symbiotic relationship where clients not only seek their expertise initially but continue to rely on their services over time.

5.5.4 Risk Mitigation

Big data plays a pivotal role in risk mitigation for real estate valuers. By analyzing historical data and employing predictive analysis, valuers may assess the potential risks and uncertainties associated with potential developments of specific properties. This approach also allows valuers to anticipate challenges such as economic downturns, property values' fluctuations and changes in zoning regulations. For example, valuers may apply market comparison approach in order to derive the market value of a property. A study conducted by Grybauskas et al. (2021) highlights that the risk of selecting the wrong property is also minimized by reliance on big data. As a result, this insight enables them to guide clients on strategies to navigate downturns effectively, potentially minimizing the impact on property values and investment portfolios.

5.6 The Impact of Using Big Data

5.6.1 Optimized Valuation Workflow

Efficient workflow optimization is a major driving force behind real estate valuers' adoption of big data. This factor includes several advantages that contribute to efficiency, accuracy and adaptability in the property valuation process. Automated data analysis is a key feature of an optimized workflow. By leveraging big data in the valuation process, valuers are able to eliminate manual and time-consuming processes, which speeds up the identification of patterns, trends and correlations within the data. Thorough integration of big data in the industry, real estate valuers acquire the capability to access and utilize real-time market information. This ensures that their analyses and decision-making processes are based on the most current and relevant data, allowing for quick adjustments to changing circumstances during the valuation process. Wei et al. (2022) also indicates that the real-time details ought to be represented in an authentic and profound way for better understanding and engagement of clients. By adopting big data for workflow optimization, valuers can differentiate themselves by offering faster, more accurate, and efficient services, attracting clients who prioritize these qualities.

5.6.2 Insightful Projections of Real Estate Development Opportunities

Adopting big data among real estate valuers has a significant impact on fostering insightful projections of real estate development opportunities. With the intention of delivering expert viewpoints, valuers must analyze and extract information from diverse datasets such as market trends, demographic information and economic indicators. This comprehensive analysis with the utilization of big data goes beyond historical data, allowing valuers to discern pattern, identify emerging opportunities and make informed projections regarding the potential developments.

On top of that, valuers can delve into micro-level details such as consumer behaviour and urbanization trends to gain a comprehensive view of the opportunities and challenges associated with specific regions or property types. (Cheryshenko and Pomernyuk, 2021) also adds the significant expansion in data access and the probability of collecting each kind of information measurable gives room for development and novel revenue models in the real estate market.

5.6.3 Client-centric Services

Client-centric services are approaches in which a business or service provider focuses on meeting the specific needs, preferences and expectations of individual clients. Through big data, valuers can adapt their methodologies to align with each client's investment portfolio and objectives. Clients are likely to prefer valuers who can provide more reliable and precise valuations, positioning these professionals as leaders in the industry. Additionally, big data facilitates more effective communication between valuers and clients, leading to transparent communication that builds trust and enhances the overall client experience, reinforcing the client-centric nature of the services provided. (Xiao, 2022) indicates big data makes it possible to manage assets in a rational and individualized manner, thus improving investors and clients' fulfillment.

5.6.4 Aid Better Decision-making

Leveraging big data in real estate industry significantly aids in better decision-making as it provides nuanced understanding of market dynamics by incorporating diverse data sources and factors influencing real estate market. In addition to its capacity for historical data analysis, big data also facilitates real-time access to market information. This enables the valuers anticipating shifts in property values, market demand and other factors, resulting in more robust and insightful decision-making. A study by Li (2021) states that the massive data from the real estate industry can effectively produce the prediction of growth of consumer demands and productivity, and data can provide the basis and sources for business decision-making and strategy formulation. This approach also align well with the diverse needs and goals of clients, making the decision-making process more inclusive and informed.

5.7 Challenges of Using Big Data

5.7.1 Data Quality And Standardization

Big data relies heavily on the quality and standardization of data. Valuers may encounter challenges in obtaining accurate and standardized data since the data comes in various formats and from various sources. Datasets from various sources may have inconsistencies, inaccuracies, or lack uniform standards, making it difficult to maintain reliable and accurate information. (Rossini, 2011) indicates that if huge datasets are aggregated over time, it is mostly challenging to assess the quality of this data. As a result, inaccurate or inconsistent data can jeopardise the reliability of valuations, limiting the effectiveness of big data adoption in daily operations. Other than that, poor data quality can lead to flawed analyses, misleading conclusion and inaccurate valuation.

5.7.2 Data Security And Privacy Concern

Real estate valuers normally deal with sensitive information related to property details, financial transactions and clients' personal information's. It is known that real estate data comes in various formats and often rely on third-party data providers, including public records, government databases and proprietary datasets. Managing the variety and complexity of these data types can be challenging. Due to its sheer volume of data, real estate valuers must carefully assess and validate the credibility of external data providers to ensure the accuracy of the information they incorporate into their analyses. However, a research conducted by Ali & Siniak (2020) highlights that the contradictions between privacy protections and big data remain irreconcilable.

5.7.3 Lack of Talent Pool

Real estate valuers may lack the necessary skills and training to effectively leverage big data tools and technologies. (Kumar & Jothimani, 2017) stated that there is a need for talent with the increase in amount of data being generated. The adoption of big data requires specialized skills in data analytic, machine learning, and data management and valuers may struggle to harness the full potential of big data without adequate skills. On the other hand, real estate has traditionally been a field driven by expertise in property valuation, market trends and legal considerations. The incorporation of big data signals a shift towards a more data-centric approach. However, due to lack of exposure, professionals may be unaware of the potential applications and benefits of big data in their field.

6. Research Methodology

6.1 Research Approach

There will be only one approach used for this research, known as quantitative approach. This approach entails analyzing and collecting numerical data in order to identify trends, calculate averages, assess relationships, and derive broad insights. The decision to exclusively use a quantitative approach is based on the need for numerical precision and statistical generalizability in addressing the specific objectives of the research.

6.2 Research Methods

In the pursuit of understanding the awareness and challenges among valuers regarding the utilization of Big Data in real estate valuation practise, this research adopts a non- experimental research approach. By choosing non-experimental research methods, the study focuses on the analysis and interpretation of existing data to uncover the nuances surrounding the awareness and challenges faced by valuers in adopting big data practices within the real estate industry. This method allows for a thorough examination of real-world scenarios and experiences, shedding light on the practical aspects of incorporating big data in the field of property valuation.

6.3 Data Collection Method and Instrument

This study will rely on primary data which refers to the original data derived from our research endeavour. An online survey will be conducted in order to ease the way for the targeted respondents to complete it. An online survey refers to a set of questions created as Web forms, with analytic provided by statistical software and the answers stored in a database. By directly gathering information from the survey, this research seeks to provide an authentic and firsthand understanding of the subject matter. An online survey will be conducted in order to ease the way for the targeted respondents to complete it.

6.4 Research Phases

This research has three phases, which are as follows:

6.4.1 Literature Reviews

In the first phase of the research methodology, a comprehensive literature review will be conducted to explore and synthesize existing knowledge related to the specified topic. Literature review involve gathering secondary resources from newspapers, reports, journals, articles and books. The gathered information will provide depth understanding the definition, characteristics and the common sources of Big Data is generated. On top of that, the literature reviews will be reviewed to identify the factors that encourage the adoption of Big Data among valuers and the challenges faced by them by the adoption.

6.4.2 Questionnaire Survey

In order to achieve the research objectives, a questionnaire will be designed as the data collection instrument which will explore the utilization of big data in the real estate sector with a specific emphasis on identifying the factors, impacts and also the challenges faced by real estate valuers. The questionnaire will be distributed to valuation firms operating in Klang Valley and the data will be obtained from valuers who are practising in Klang Valley and selected by means of judgmental sampling or also known as 'purposive sampling'.

6.4.3 Data Analysis

In this study, the research methodology exclusively relies on primary data which refers to the original data derived from our research endeavour. With that being said, the data collected for my study is directly obtained from the targeted respondents of real estate valuers who are practising within Klang Valley via structured questionnaires that will be distributed. The decision to concentrate solely on primary data collection ensures that the information gathered is tailored to the specific objectives of this research. The collected data will then be analyzed using the Statistical Package for the Social Sciences (SPSS) software, which will be focusing on descriptive statistics only. The main aim of the data analysis is used to determine the level of awareness on Big Data among real estate valuers, identifying the factors that encourage the adoption of Big Data by real estate valuers and to explore the challenges faced by real estate valuers in adopting Big Data in their daily operations.

7. Significance of Study

The significance of this research has been identified as follows:

- a) This research has the potential to increase awareness among real estate valuers regarding the benefits of leveraging big data into the practices in order to enhance the accuracy of valuation processes.
- b) The study can provide insight into how valuers' decision-making processes are impacted by big data awareness and challenges. Financial institutions, real estate agents, and investors can all benefit from having this knowledge in order to make well-informed decisions based on more accurate and current information.
- c) This research is important in order to lead to improvements in valuation processes by providing a more accurate and reliable property assessments.
- d) This research provides a foundation that may pave the way for the development of new technologies, tools and methodologies that address the specific needs of real estate valuers.
- e) The study can aid in the creation of strategies and solutions by highlighting the difficulties real estate valuers encounter when implementing Big Data. The efficiency and efficacy of real estate valuation procedures could be improved by overcoming these obstacles.

8. Conclusion

Big data is a vast and complex dataset that surpasses the capacity of traditional data management tools. Apart from its sheer volume, the complexity also arises from its attributes such as velocity, and veracity as reflected in the 7Vs framework. Transitioning to the real estate sector, big data has a major influence on Malaysia's real estate market. Big data adoption enhances the transparency and reliability of the market, benefiting both buyers and sellers. As the market is dynamic and constantly changing, it is imperative that big data is employed in the industry. The central focus of this research is on the vital role of valuers in leveraging big data in the real estate industry in Malaysia to gain accurate and precise valuation. This research addresses three key questions, exploring factors encouraging big data adoption among valuers, the impacts of the adoption and the challenges faced in daily operations.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

Author Contribution

*The authors confirm contribution to the paper as follows: **study conception and design:** Atiqah Najwa Azrul Than, Zulkifli Esha; **data collection:** Atiqah Najwa Azrul Than, Zulkifli Esha; **analysis and interpretation of results:** Atiqah Najwa Azrul Than, Zulkifli Esha; **draft manuscript preparation** Atiqah Najwa Azrul Than, Zulkifli Esha. All authors reviewed the results and approved the final version of the manuscript.*

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