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## **POTENTIAL OPPORTUNITIES OF BLOCKCHAIN TECHNOLOGY IN STREAMLINING THE MALAYSIAN COMMERCIAL OFFICE BUILDING OPERATION MANAGEMENT PROCESS**

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### **Abstract**

Managing commercial real estate is extremely complex and cumbersome and involves many stakeholders who provide access to and modify a variety of information. This led to some common issues with traditional commercial real estate management such as lack of transparency, third-party interference, the complexity of the agreements, record keeping and security, and absence of real-time data. Accordingly, blockchain technology is anticipated to address the issues of data openness, trustworthiness, and correctness in the global real estate market. This research aims to discover the potential opportunities that blockchain could offer in streamlining the commercial office building operation management process. A conceptual framework of blockchain-based technology adoption in the current Malaysian commercial office building operation management process was developed based on the literature review and focus group discussion (FGD). The framework was underpinned by four core operation management that emerge from the research findings including financial, administrative, technical, and promotional management.

**Keywords:** Blockchain technology, commercial office building, operation management process, digitalization

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## **INTRODUCTION**

Commercial real estate management is an extremely complicated and cumbersome task and not as easy and straightforward as other types of real estate (Wouda & Opdenakker, 2019). It includes many stakeholders such as owners, tenants, operators, investors, lenders, real estate agents, contractors, and service providers who provide access to and change a wide variety of information. Accordingly, commercial properties require full and ongoing management by the owner ranging from finding, managing, and retaining tenants, overseeing leases and financing opportunities, to coordinating the maintenance and marketability of the property.

Besides that, there are some common problems and issues with traditional commercial real estate management such as lack of accessibility, lack of transparency, high capital barrier, third party intervention, lack of liquidity (Namrata, 2020), the complexity of agreements, management of cash flow, record keeping and security as well as the Lack of real-time data (Akash, 2019). Most properties are either managed offline through manual paperwork or through multiple software programs that generally do not work properly and do not integrate well with each other (Bansal, 2019). Day-to-day duties were physically completed, and all work set out in a meeting, support bills, and individual contact numbers were collated on the papers (Mokhsin et. Al, 2020). This traditional way of recording and documenting complicates the process of tracking and maintaining property records, contributing to the lack of real-time data, inefficient property search process, and a high risk of fraud.

To overcome these disadvantages and challenges, blockchain technology is one of the promising technologies that is believed to revolutionize the way the real estate industry operates worldwide, from smart contracts to managing and keeping records of the execution of real estate sales and rentals up to takeover by land (Franks, 2020; RICS, 2020; Bhatia & Wright de Hernandez, 2019; Hoxha & Sadiku, 2019; Grover et al., 2019; Karamitos, I., Papadaki, M, Al Barguthi, 2018). Accordingly, blockchain technology adoption is gradually gaining momentum in the real estate sector, with a particular focus on the commercial part of the industry (Namrata, 2020; Deloitte, 2016).

In response to the above issues, the following research questions are formulated to provide an overview of the various ways of blockchain technology integration into the commercial office building during the operations management process.

- RQ1. What are the distinct phases of the current commercial office building operation management process in Malaysia?
- RQ2. What are the challenges encountered by the property manager in managing commercial office buildings in Malaysia?

RQ3. What are the possible opportunities of blockchain technology in streamlining the commercial office building operation management process in Malaysia?

This paper aims to explore at which stages of the commercial office building management process could be benefited from the adoption of blockchain technology by analysing the current management process for office building operations and gaining insights into the implementation of blockchain technology.

## **RESEARCH BACKGROUND**

### *Commercial Office Building Operation Management Process*

Commercial real estate management includes the tasks and responsibilities of operating an investment property such as offices, retail space, warehouses, shopping centres and industrial buildings. It covers a range of two-fold functions: (i) to maintain the investments in the property, and (ii) to maintain the physical aspects of the property at a point of optimum efficiency and economy.

According to Ring (1967), in addition to the physical maintenance of the premises and handling tenant complaints, additional tasks would include marketing space, advertising and finding attractive tenants at the best possible prices. Purchases of consumables and equipment and expenses for repairs and proper accounting and preparation of regular reports. This is due to commercial leases, which are generally longer than other properties, with built-in extensions such as a five-year lease with renewal options and rent increases. The marketing and lease negotiation processes are also longer and more complex than with other types of property management.

RICS (2017) has shown that property managers should support the business in planning and executing fundamental property decisions such as the best use of space, appropriate technology solutions, staff and a safe environment. Property management activities highlighted by RICS (2017) include day-to-day management of properties on behalf of the owner, collecting rent and other receivables, managing utilities, paying expenses, maintaining including repairs and providing services such as insurance, supervising staff engaged in services, providing health and safety advice, and negotiating with tenants or prospective tenants. According to Malaysian Property Management Standards (MPMS) 2nd Edition, during the operation and management of the building, seven property management activities are involved, including maintenance management, financial management, administrative management, insurance management, health, safety and emergency management, rental/lease management and facilities management (BOVEAP, 2016).

### *Overview of Blockchain Technology in Malaysia*

Under the National Fourth Industrial Revolution (4IR) Policy, blockchain technology has been identified among the five foundation technologies in Malaysia besides artificial intelligence, internet of things (IoTs), cloud computing and big data analytics, and also advanced materials and technologies. Additionally, the Ministry of Science, Technology, and Innovation (MOSTI) launched *Dasar Sains Teknologi dan Inovasi Negara (DSTIN) 2021-2030* to introduce a 10-10 Malaysian Science, Technology, Innovation and Economy (MySTIE) Framework that highlighted on the 10 key Malaysian socio-economic drivers with 10 global leading science and technology drivers. Through this framework, blockchain technology has been seen as a technology that could shift Malaysia up the global innovation for business and financial socio-economic drivers including asset and retail management (Academy of Sciences Malaysia, 2020).

Individuals wishing to conduct a transaction on a blockchain network, such as transferring a unit of cryptocurrency or ownership of a property to another person relinquishes control of the asset by transferring the blockchain representation (also known as a token) using cryptography based on the use of a public key and a private key from their blockchain address to the other person's blockchain address. A hash of a public key and some additional data (which works in a similar way to a zip code) indicate the destination of a particular transfer of value. Every public key has a private key associated with it. To approve and complete the transaction, the person uses their private key to digitally sign the transaction. The digitally signed transaction (rendered as a transaction output hash) is then bundled with other digitally signed transactions, authenticated, verified, and entered the ledger, indicating that the transaction took place in the ledger's shared copy (called a replica) on all computers in the blockchain network (Lemieux, 2019).

### *Opportunities of Blockchain Technology Adoption in Commercial Office Building Operation Management Process*

In traditional real estate practice, the process of property management is very complex, especially when multiple stakeholders are involved. The property is managed either offline through manual paperwork or using independent software. Consequently, the information remains limited to a specific database or individual. However, with the increasing role of blockchain in real estate transactions, the future of real estate may change. Blockchain has the potential to revolutionize the way the real estate sector works, from smart contracts to managing and executing property sales and rentals to being taken over by land registries. According to Virmani et al. (2018) through the Credit Suisse report, they mentioned that blockchain technology is constantly evolving in the real

estate sector, and they believe that the areas of development are (1) ownership of real estate, (2) increased transparency, and (3) and increasing usage of smart contracts. Real estate industry players now realized that blockchain-based property management system that uses smart contracts can play a much larger role in the commercial real estate industry (Surabhi & Saurabh, 2017).

In general, it could be summarized that there are five opportunities for the implementation of blockchain technology that can be pointed out (Martijn, 2017; Barrington, 2016; Spielman, 2016; Tapscott & Tapscott, 2016). Firstly, digital records of real estates. The entire life cycle of a property can be digitized and transferred to a blockchain. Blockchain could create a system where each property has its digital passport with all information of the asset such as sales process, transaction of data, leases, maintenance contracts, property registration and many more are recorded digitally.

Secondly, redesigning real estate process. Transactions on a blockchain could be processed similarly to how payments between parties are processed using digital currencies if real estate values are stored digitally on the blockchain. Two parties could complete a transaction instantly without requiring a trusted third party to verify the transaction with a fully secure and verifiable system.

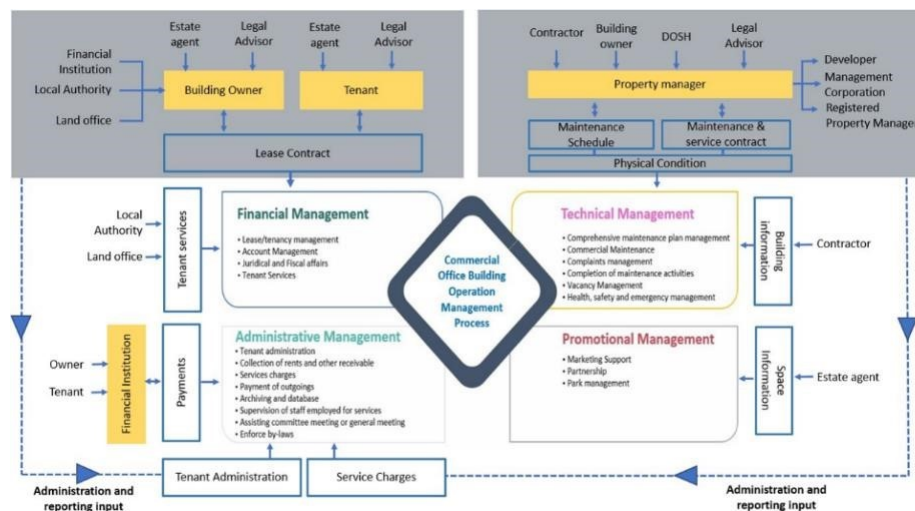
Thirdly, by creating a public transaction register, the real estate market becomes more transparent and new platforms can emerge and falling prices or other fraudulent activities can be reduced. Transparency can also come in the form of unchanging outcomes of the performance of actors in the process. Having stakeholder performance results stored via blockchain can create an immutable track record and potential new scoring system besides allow regulators and rating agencies to better understand the risks associated with real estate.

Fourthly, the use of cryptocurrencies for payment system. For example, rent payments or as a deposit for leases. The strength of software lies in its programmability. The power of cryptocurrency is that you can program it to store and distribute itself.

Finally, smart contracts that can automatically observe and implement transactions once certain conditions are met, reducing the chance of manual errors. They can reduce the number of intermediaries needed and enable automatic payment either directly from the buyer's bank account or from escrow, allowing for faster processing. Based on the agreed terms, the smart contract could automatically initiate rental payments from tenants to landlords, as well as to any contractors performing regular maintenance and requesting a maintenance notification. At the end of the lease, the smart contract could automatically transfer the deposit back to the tenant.

*Conceptual Framework of Commercial Office Building Operation Management Process*

The literature review demonstrates the management activities during the commercial office building operation stage, the stakeholders involved, and the potential information/data exchange throughout the process as conceptualised in Figure 1. A distinction can be made between four main responsibilities of the property manager that relate to day-to-day management of property namely, (i) financial management, (ii) administrative management, (iii) technical management, and (iv) promotional management. This is referring to Martjin (2017) and after taking into consideration the interview results from the panel of experts in real estate that define similar things.



**Figure 1:** Conceptual framework of commercial office building operation management process

Source: Author, 2022

In financial management, the property manager is responsible for advising and coordinating the operational task to maximize the return on investment of the commercial office building including setting up a system to collect all financial data related to the management of the properties, daily contact with the tenants and other external parties, all daily operational tasks in relation to the rental of vacant space (Martjin, 2017, Van Welsens, 2012). A property manager's role in financial management may also include tenancy/lease management, including billing, rent collections and payments, tenant relations, coordination between contractors, management of utilities and services, and

overseeing the restoration of premises upon termination or expiration of the tenancy or lease term Tenancy (MPMS, 2016).

The second component of property manager responsibility is technical management aimed at maintaining and improving the desired quality level of the property. Maintenance is an important aspect of property management, and it is imperative that the building is kept in good condition and facilities are kept in optimal working order. Therefore, during the technical management, a comprehensive maintenance management program must be developed and implemented according to the customer's goals and investment strategies. A comprehensive maintenance management program of a property should include corrective maintenance, planned maintenance and service providers (MPMS, 2016).

In technical management, the property manager also takes charge as well of financial management to maintain the commercial competitive position on the market space. This is to ensure that the building is attractive for the tenant while taking into consideration the continuously changing market demand. Another responsibility of the property manager in technical management is to manage the complaints of the tenants regarding technical issues, responsible for the delivery of planned maintenance, responsible for the energy policy that consists of reducing the energy consumption in the building, responsible for health, safety and emergency issues which also become the priority (MPMS, 2016; RICS, 2017).

The next component is administrative management, including rent management, collections, utility billing, archiving the information, providing services to tenants, and providing information and reports to management. Therefore, administrative management staff need to have good financial and economic skills as well as communication skills as they are in constant contact with tenants and other parties within property management (Van Welsens, 2012, MPMS, 2016). The property manager may also aid the joint management body, management company or sub-management company in arranging and organising committee meetings and/or general meetings, subject to prior agreement with the client.

The final component is the support management, which highlights all activities aimed at improving the market position of the given asset or strengthening the owner's position towards various stakeholders. Property Manager responsibilities include assisting in the marketing of the property to ensure the building is fully occupied.

## **RESEARCH METHODOLOGY**

Due to the explorative character of this study, this research engages with the qualitative research strategy. A qualitative method is suitable to be used when

there is a lack of information regarding the subject to be studied, and/or if the purpose of the research is to investigate the future opportunities within the subject (Corluka & Lindh, 2017). Since the implementation of blockchain in commercial real estate management in Malaysia is relatively new, Saunders et al. (2009) mentioned that the inductive research approach is a good approach to be used when the subject is new and there is little literature has been published on the related subject. Accordingly, the research methodology of this study involves two different phases I and phase II as explained below:

*i) Phase I: Investigation Phase*

This phase comprises identifying problem statements, formulation of research questions, establishing research objectives, and identification of the appropriate research method. The initial information is needed for understanding the whole issue and concept. In the first phase, the literature is reviewed to focus and explore on the phenomenon of blockchain technology (why blockchain technology, how does blockchain technology work, the challenges of blockchain technology implementation, potential opportunities of blockchain applications in the real estate industry and advantageous of blockchain technology application in real estate industry), which lead to the development of a conceptual framework of this study. The literature review will also cover the inventory of the current commercial office building operation management process and how it is organized (stakeholders involved during the operation management process of commercial office building and data streams required during the process).

The feedbacks, perspectives, and opinions from the experts in related areas of real estate and blockchain technology are also very important to strengthen the information relating to the development of problem statements, research objectives, and research questions of this study. Hence, the unstructured interview with the panel of experts consisting of real estate industry experts and blockchain technology experts has been conducted in this phase. This eventually leads to the development of a conceptual framework that defines the commercial office building operation management process and will highlight the potential opportunities for blockchain technology adoption in the process. The information obtained from this part allows this study to address the RQ1 and RQ2.

*ii) Phase II: Development Phase*

This phase focuses on identifying which technologies for the storage and transferring of information and assets are used during the commercial office building operation management process and how blockchain technology can contribute. The identification will be conducted via semi-structured interviews with identified stakeholders through Focus Group Discussion (FGD). The potential stakeholders that have been identified in phase I such as building



owners, occupiers, estate agents, local authorities, land offices, contractors, legal firms, and financial institutions. The analysis thereafter is conducted to identify the opportunities for the implementation of blockchain technology in commercial real estate management to address the RQ3 of this study.

FGD is frequently used as a qualitative approach to gain an in-depth understanding of certain issues and widely used in social sciences research. A focus group consists of 3 major components: (1) A method for data collection, (2) interaction as a source of data, and (3) the active role of the researcher in creating group discussion for data collection (Morgan et al., 1996). It is the most appropriate method for the purposeful use of interaction to generate meaningful opinions, suggestions, and feedback as the group interaction might be more informative than individually conducted interviews (Creswell, 2007).

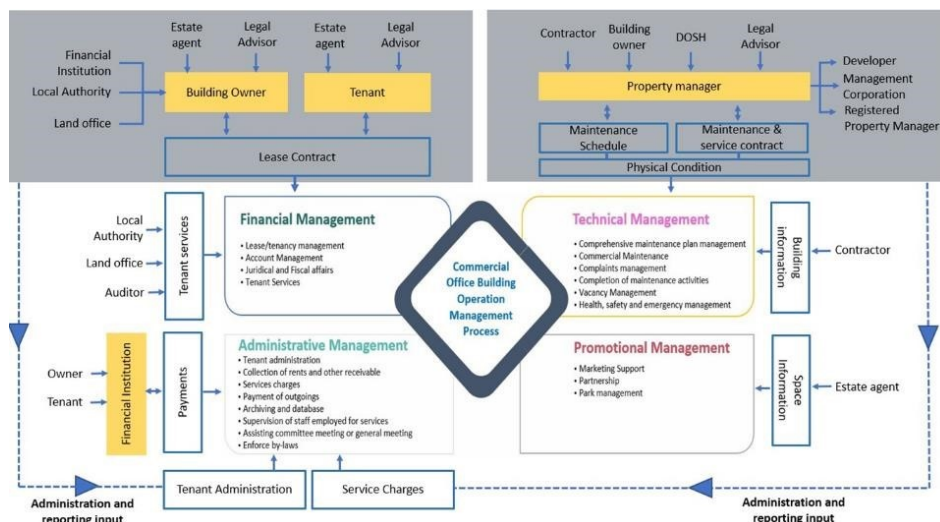
## **RESULTS AND DISCUSSIONS**

*RO1: To study the current commercial office building operation management process*

The first research objective addresses the first research question of this study. Therefore, the data collected through unstructured interviews required the respondents to describe the property management activities that involve the current commercial building operations management process in Malaysia. In general, property managers' responsibilities began with the acquisition of the property, at which time due diligence, such as a building conditional survey, building defects reports, and the process of transferring all documents from the developer to the client, were all verified and reviewed. Most of the processes of commercial office building operation management as mentioned by the respondents were in line with the Malaysian Property Management Standards (MPMS) including maintenance management, insurance management, facility management, financial management as well as health, safety and emergency management (MPMS, 2016).

The division of commercial office building operation management categories that have been captured during the interview is also could be related to the established categories by Van Driel & Van Zuijlen (2016) and Martijn (2017). Based on this finding, this study adapts these categories of office building operation management processes to be integrated with the concept of blockchain technology. Each category defines the different operation management activities as highlighted by the Real Estate and Housing Developers' Association Malaysia (REHDA, 2018), Royal Institute of Chartered Surveyors (RICS, 2017), Van Driel & Van Zuijlen (2016), and Malaysian Property Management Standards (MPMS, 2016). The operation of commercial office building also requires the involvement of various parties from different fields including but not exhaustively the clients (developers / joint management body/management

corporation), the third-party contractors, financial institutions, auditors as well as legal practitioners. In summary, all required information to achieve research objective 1 has been conceptualised as in Figure 2 with some modifications from Figure 1 previously.



**Figure 2:** Conceptual framework of commercial office building operation management process  
Source: Author, 2022

*RO2: To examine the challenges of a property manager in managing a commercial office building.*

The second research objective was addressed by investigating the challenges that interviewees experienced in managing the commercial office building. In summary, the challenges in managing the commercial office building during the operation phase could be summarised in Table 1.

**Table 1:** Summary of Challenges in Managing the Commercial Office Building During the Operation Phase

No	Challenges	No	Challenges
1	Lack of accessibility	10	Record keeping and security
2	Lack of transparency	11	Absence of the real-time process
3	High capital barrier	12	Inefficiency property search process
4	Third-party interference	13	Higher risk of fraud

No	Challenges	No	Challenges
5	Lack of liquidity	14	Concerns about the data sharing
6	Lengthy transactions	15	Process of strata tribunal
7	Multiple entities can modify the database	16	Conducting AGM during the pandemic
8	Complex agreements	17	Redevelopment of the strata building
9	Managing cashflow	18	Complexity in managing ongoing lease agreements

Source: Author, 2022

Among the concern brought up by respondents is the lack of accessibility due to the cost element. There is several real estate's player hooked on funds and their business are not operating in a lucrative financial model. As a result, the adoption of new technology in commercial real estate management is rather challenging owing to cost constraints. Besides that, the respondents also agree that the lack of liquidity of real estate is one of the biggest banes of real estate investments, which causes many to turn away from it. The lengthy transaction process, laced with regulatory hurdles, and high fees all contribute to the low liquidity of real estate investments.

Several entities such as owners, tenants, operators, lenders, investors and service providers are also involved in the processing and management of real estate, providing, accessing and changing a large amount of information. This creates another challenge in terms of maintaining the integrity of commercial office building data whereby multiple entities can modify the database. Apart from that, commercial real estate involves complex agreements, such as real estate leasing, involving many companies and between which several contracts have been signed. Any error or discrepancy in any of these documents can disrupt business operations and result in a loss for all parties involved.

The most typical response to the problems of maintaining a commercial office building based on the responses is the collection of maintenance fees and managing cash flow. Keeping track of things, making sure payouts are received, taking confirmations, allocating maintenance fees to units, and more makes the whole process cumbersome. This is followed by the challenges in terms of the client's lack of knowledge of technological requirements, which creates obstacles for property managers to adopt new technologies in property management. Record-keeping was also challenging as so many transactions happening.

The inefficient property search process becomes a challenge in managing real estate due to fragmented listings data. Commercial real estate agents, owners, tenants, buyers, and sellers often use multiple listing services, or MLS, to access property data such as location, rent rates, capital values, and

property features. Because all real estate contracts are paper based and trust is based on people, there is a higher risk of fraud in the real estate industry. Other challenges provided by many of the respondents when managing commercial office buildings is the process of strata tribunal and conducting AGM, especially during the Covid-19 pandemic. In the current system, both processes cannot proceed virtually without a proper system that ensures transparency.

*RO3: To evaluate the potential opportunities of blockchain technology to enhance the commercial office building operation management process* On top of all the benefits that blockchain technology could offer in streamlining the commercial office building operation management process, there are some other concerns from the respondents for instance regarding data sharing. Looking into the blockchain technology that is still at the infancy stage in Malaysia, the clients are quite worried on data sharing. No data protection regulations are currently available. As such, blockchain technology poses new challenges for regulators looking to protect consumers and markets, but the rigidity with which regulators in the world's major economies have approached blockchain has helped stifle innovation and growth.

According to the National Fourth Industrial Revolution (4IR) Policy (Trust No.3, Strategy 11), data integrity issues have been highlighted with updating the legal framework for personal data management and cybersecurity to build trust in society. Initiatives include introducing specific cybersecurity laws and improving laws, regulations and policies to protect personal information. To address data sharing and data security challenges, governments and heavily controlled sectors may need to create regulations for blockchain. As such, regulators across all industries need to understand technology and how it impacts businesses and consumers in their sector.

As discussed in the conceptual framework, the commercial office building operation management process is divided into four processes namely financial management, administration management, technical management and promotional management. The findings from the interview did not provide any contrary results compared to the conceptual framework. Hence, within the operational process of a commercial office building, the findings indicate that the responsibilities of all stakeholders were in line with what has been discovered in the literature review.

Based on the input from the interviewees and also result from the literature review, this study discovers two potential opportunities for blockchain adoption in commercial office building operation management process namely (i) Digital lease contract management, and (ii) Digital record on maintenance and building performance (refer to Figure 3 and Figure 4 respectively). Once the property has been acquired and handed over to the new owner/lessee, the

operational process begins, which involves four identified management phases including financial management, administrative management, technical management and promotional management. Therefore, the blockchain opportunity exists for both digital lease management and the digital record of maintenance and building performance in smart contracts, allowing for easier, more transparent and more efficient management of commercial office buildings and also cash flows.

Figure 3 indicates that there is an opportunity to have a digital lease contract during the financial and administrative management where the contractual relationship between tenants and the owner of the property through the lease contract occurs during this stage. Currently, the process of producing and validating the lease contract is conducted manually and traditionally with the involvement of various stakeholders. The lease contract needs to be signed in hard-copy form after both parties, the tenants and owners agreeing on the terms and conditions. The obligations coming from the lease agreement need to be fulfilled by both parties and all information will be administered by the property manager. While Figure 4 shows the second opportunity of blockchain integration during technical management on digital records on maintenance and building performance. Technical management aims to ensure the desired quality level of the building is well maintained and improved. The respondents reveal that during the technical management, the transactional data such as daily water pump readings, daily electricity readings, and temperature control, all could be linked to the Blockchain. It would be the health report of the building. A financial transaction such as billing, and collection can be ledged. With Blockchain, other parties cannot fudge with the data. The property manager, along with the contractors, must know what materials the building was constructed of and how to maintain those materials. Blockchain technology could be able to track the life cycle of all materials. A full supply chain of building materials can be captured during technical management, further integrating the circular economy into the real estate economy. When data is more accurate and a building's performance more insightful, service fees and owner fees can be linked to the lease via smart contracts. This allows service and owner fees to be automatically calculated and linked to payments.

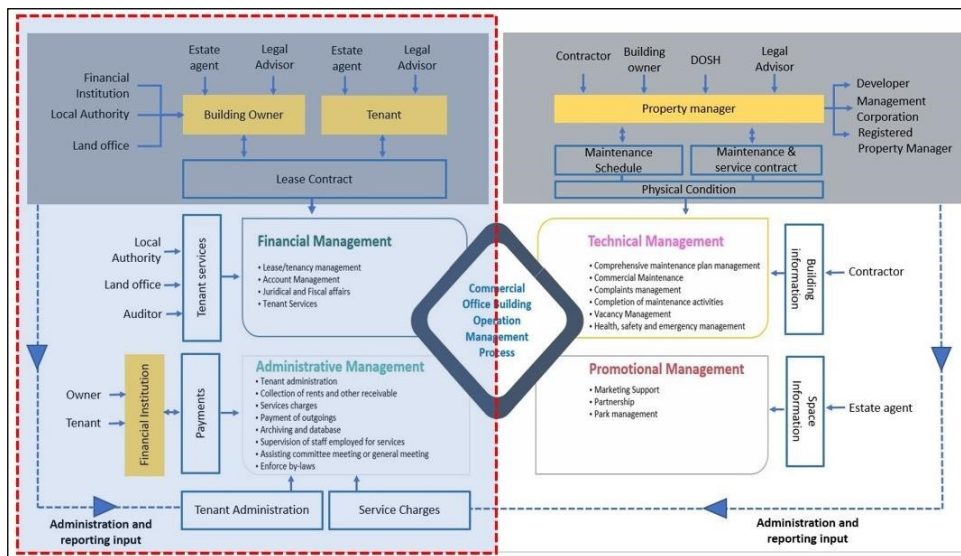


Figure 3: Potential opportunity I: Digital lease contract in financial and administrative management  
Source: Author, 2022

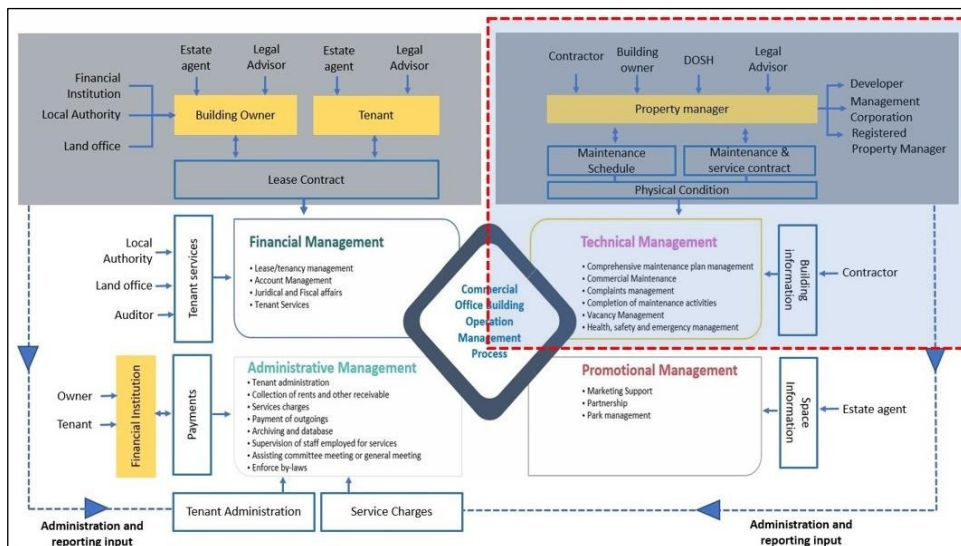


Figure 4: Potential opportunity II: Digital record on maintenance and building performance in technical management  
Source: Author, 2022

On top of all the benefits gained from the adoption of blockchain technology, respondents also raised the issues to be emphasised before implementing blockchain-based real estate in general. The respondents revealed that the digitalisation of assets would become a starting point for the integration of blockchain. Nevertheless, achieving the full digitalisation of assets is seen as the biggest challenge in the whole journey of blockchain integration in real estate. The respondent mentioned that the digitisation knowledge must be levelled up before the real estate industry could embrace blockchain technology.

Another concern from the respondents is on the disruptive character of blockchain. The role of the property manager and other stakeholders such as estate agents and lawyers after the implementation of blockchain should become a focal point of the discussion. Blockchain technology claimed could limit the use of middlemen in the real estate process. The real estate industry player might think that they will lose market share, or their role will even become obsolete. In conclusion, the respondents did not provide any contrary feedback regarding the current real estate management process, as compared to the conceptual framework. Through the response obtained, there are many challenges in managing the commercial office building which required the demand for more structured information management during the operation phase. The respondents agreed about the starting point for blockchain implementation in real estate is through digitalizing the assets, which is seen as the biggest challenge. Therefore, all stakeholders need to cooperate and push behind this movement to create a blockchain environment in the real estate industry.

## **CONCLUSION AND FUTURE DIRECTION**

This study is explorative and solely focused on the identification of the potential opportunities and also challenges for the implementation of blockchain technology in the commercial office building operation management process. The added value of blockchain technology in this study is based on a theoretical basis. Further research is essential to examine the impact of this technology on specific use cases. Nevertheless, this study provides a basis for future research by taking into consideration all the constraints and challenges for the full adoption of blockchain in the real estate industry as follows:

### *i) Study the parametric to implement the blockchain*

A study on the readiness of the real estate industry for the full implementation of blockchain in Malaysia needs to be conducted. The various parameter should be considered such as the digitization of the assets, the awareness of the blockchain among the industry players and their ecosystems, and many more.

*ii) Technical Standards*

In order to achieve broad adoption of blockchain in real estate, technical standards should be established and agreed to ensure their cross-industry compatibility. Accordingly, all stakeholders worldwide must work together to create a uniform legal and technical framework for digital assets on the blockchain. Therefore, technical standards are required to confirm compatibility between different stakeholders and industries. There is no such standardization in the real estate industry. All participants use their systems and infrastructure.

*iii) Regulatory Recommendations*

It is indisputable that blockchain technology is capable of introducing changes across various sectors. Hence, it has become an argumentative issue from the regulatory point of view. With the technology still undergoing major and multiple iteration processes, the government's supporting role in provisioning the regulations for the industry is very crucial to deploy the technology with minimal risks. It could stimulate the state of readiness of the whole local blockchain ecosystem and indicate Malaysia's readiness for the next blockchain-related development. Hence, there is a basic requirement for the study to look into the regulations and guidelines of blockchain implementation in Malaysia with the benchmarking with the global regulations such as the legal landscape of data protection.

*iv) Study the other Opportunities of Blockchain Technology Application in Property Management*

There are a lot of other blockchain technology opportunities in the property management lifecycle beyond the leasing stage including purchasing, renting, and lending the property that involves the smart contract application. The area to be highlighted is the property tokenization involving all sorts of payments made for instance rental payment transactions, deposit payments and so on.

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