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INFLUENCE FEATURES OF OFFICE BUILDING RENTAL: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

In reviewing rental trends, investors are unable to rely on market data from real estate transactions due to inaccurate property rental valuations by valuers. Hence the objective of this research which is to identify the influencing features of office building rentals. This study performs a systematic review on the influencing features of office building rentals based on the PRISMA systematic review and meta-analysis. The results obtained indicate that office rent determinants such as green labels, vacancy levels, and location-specifics, have significant impact on office rents. This paper provides new insights for investors and valuers in determining office rental values in the real estate market.

Keywords: *Office Building Rental, Influencing Features, Systematic Literature Review*

INTRODUCTION

Real estate has always been attracting high demands in every country and city throughout the world. Investing in a real estate sector such as office buildings can be very profitable for investors since it generates guaranteed capital gains and ensures cash flow. Nowadays office building rental has become the criterion for any investor to decide on purchasing the property. It is also necessary to determine and predict office building rentals to aid investors in reviewing rental trends and forecasting rentals for a specific period. Investors rely on the validity of various assumptions defining the predicted dynamics of the project's major value drivers that underpin an accurate assessment of potential profitability of real estate projects (Kołodziejczyk et al., 2020). To that end, accurate statistical data from local real estate markets remains as a vital input to any effective financial model. However, in forecasting property capital values and rentals, it is noteworthy that investors are unable to rely on the analyses of market data from real estate transactions happening over that time period (Ź. Sabina and M. Trojanek, 2014). This problem persists due to the valuer's reservations in property valuation decision making such as the accuracy of the valuations that greatly depends on the quantity and quality of available market data(Mohammad et al., 2018). The valuer's limited knowledge and experience may have contributed to the inaccurate capital and rental valuations (Babawale & Omirin, 2012). The inaccuracy in determining capital and rental values by valuers causes unreliable valuation outcomes (Ajibola & Ogungbemi, 2011; Narayan et al., 2017). Rather than depending on unreliable property market data, this research primarily aims to explore the influencing features affecting the volatility of office building rentals. The outcomes of this research will be beneficial to investors and valuers in reviewing rental trends and variables that constitute office rental values. This research adds to the existing body of knowledge emphasising the factors influencing office building rental values. For instance, locational factors can positively impact office rental values(Čeh et al., 2012; Fuerst, 2007; Oven & Pekdemir, 2004), and green labels improve building sustainability leading to higher rental rates of office spaces (Cheah et al., 2015; Kok & Jennen, 2012; Reichardt et al., 2012). However, the most influential features affecting office building rental values are yet to be revealed. Thus, this research will fill the gaps by determining the most influential features among the office building rent determinants. This is achieved based on the Preferred Reporting Items

for Systematic Reviews and Meta-Analysis (PRISMA) systematic review and meta-analysis as secondary objectives.

OFFICE BUILDING - DEFINITION

An office building is a type of commercial building that has spaces that are primarily intended to be used as offices. It consists of a commercial building with the main lounge designed predominantly for office use (Bird, 1996). A typical office building is divided into multiple parts and these segmented parts are occupied by various organisations. Alternatively, it may also house a single company in the building alone based on their business activities and administration (Safian et al., 2011). According to Lah et al. (2015), office space may be divided into space management, utilisation, and efficiency. An office building's primary purpose is to provide a workspace and a working atmosphere for information and knowledge processing activities such as administrating, managing, filing, planning, designing, overseeing, analysing, deciding, and communicating (Hassanain, 2010; Safian et al., 2011).

Concept of Rent

Rental is important in property assessment since every positive or negative influence on rent will affect the value of a property. Rental value is frequently used by key property market participants such as investors and developers to assess the viability of their real estate development and investment projects (Ojok, 2018). The International Valuation Standard (IVS) defines market rental as "the estimated amount for which an interest in real property should be leased on the valuation date between a willing lessor and a willing lessee on appropriate lease terms in an arm's length transaction, after proper marketing, and where both parties have acted knowledgeably, prudently, and without compulsion". In every country and city, real estate has historically been high in demand. The real estate market may be roughly classified into two broad segments: the real estate purchasing market and the real estate rental market. The term "rental market" refers to properties that include lands, buildings, and natural resources that may be rented or leased (Liu et al., 2020). The rental market for real estate is often thought to play a huge role in the overall real estate industry. From the economic aspect, rental differs in concept and form as an economic return

on real property. Czerniak & Rubaszek (2018) articulate rental as properties that are used by non-owners who pay at market rent, or at reduced rent. Rent determination occurs through demand and supply interactions in the property market without any intervention from the government. It is also known as commercial rent (Harvey & Jowsey, 2003; Udoekanem et al., 2015; Whipple, 1991) or market rent (Sirmans & John, 1991).

METHODOLOGY

The goal of a Systematic Literature Review (SLR) is to identify the relevant primary articles and synthesise the findings to gain a deeper and broader understanding of the topic under research (van Dinter et al., 2021). This strategy retrieves articles concerning the influence features of office building rents. This study implements the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) method which involves the utilisation of online databases to carry out the systematic reviews. The reviews of the methodologies involve four steps under the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA). These are (identification, screening, eligibility), and data abstraction, and analysis. Figure 1 demonstrates the phases of the SLR method used in this study.

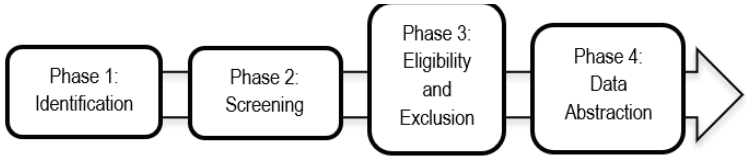

Figure 1. Four (4) phases involved in SLR Method

Source: Shaffril et al., (2018)

Phase 1: Literature Identification

The literature was identified with a substantial search on established publication databases by including the related terms or topics related to the influence features of office building rentals. In categorising these works, the authors examined online databases including Google Scholar, Science Direct, Web of Science, and Scopus to classify the literature reviews that were supported by the abstracts and citations. Related terms and keywords

outlined during the search process are "factors affecting" AND "office building" AND "office rental" OR "building rental". From the results, 181 literature items were identified. Among the 181 literature items, four (4) items were excluded due to the duplication of authors and research titles.

Table 1. Systematic Review Search String

Databases	Keywords
Scopus	TITLE-ABS-KEY (factors AND affect AND office AND building AND rent OR rental)
Web of Science (WoS)	TOPIC: (factors* affect* office* building* rent*)
Science Direct	("factors" AND "affect" AND "office" AND "building" AND "office" AND rental)
Google Scholar	("factors" AND "affect" AND "office" AND "building" AND "office" AND rental)

Source: Researcher, (2021)

Phase 2: Literature Screening

The second phase involves the literature screening from which 50 literature items were excluded. The reasons for the exclusion of those literature items was because some items were identified as book series, conference proceedings, books, and chapters in the book. Thus, 50 literature items were omitted, and 135 items were eligible to be assessed in the next phase.

Phase 3: Eligibility and Exclusion

The third phase involves the eligibility and exclusion assessments in which literature items with full articles will be evaluated. After a thorough examination, 3 items were excluded as these items were acknowledged as narrative reviews, hence were deemed ineligible for inclusion. 89 literature items were excepted as they are not aligned with this paper's objectives. With regard to the timeline, a period of 21 years was determined (between 2000 and 2021) which was deemed an adequate time period to see the research's evolution and related publications relating to factors affecting the rental of office buildings. Therefore, a total of 92 items were excluded and only 32 items are considered as eligible for inclusion in this paper.

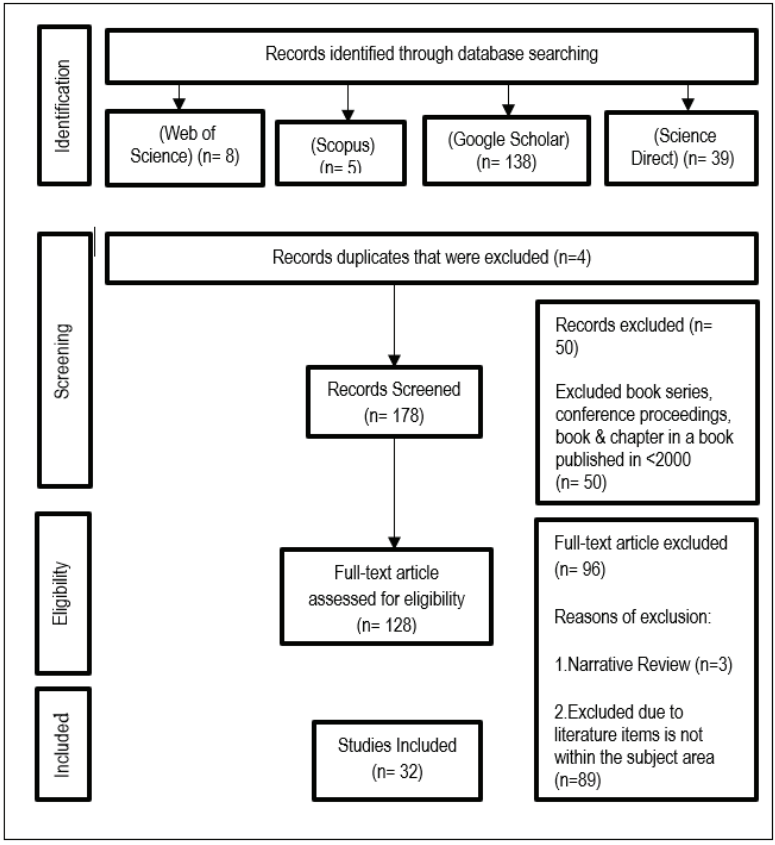

Figure 2. Systematic Review Flow Diagram

Sources: Author

Table 2. Variable Matrix

Summary of Office Rent Determinants																							
Authors	Locational						Macroeconomics Physical												Financial				
	Locations-specific	Nearest Public Transport	Access to Commercial Centres	Traffic Condition	Building Frontage	Neighbourhood Characteristic	Employment Rate	GDP	Lending Rates	Population	Green Labels	Multimedia Super Corridor (MSC) status	Vacancy Levels	Building Age	Amenities and In-house Services	Building Appearance and Design	Building Height and Floor Area	Building Grade	Depreciation	Tenancy Duration	Lease Details	Operating Cost	Taxation
(Smith et al., 2000)													√										√
(Slade, 2000)													√	√			√						
(Oven & Pekdemir, 2004)	√	√	√							√			√	√	√								
(Öven & Pekdemir, 2006)	√	√	√										√	√	√								
(Fuerst, 2007)	√	√	√			√							√	√	√		√						
(Fuerst & McAllister, 2008)											√							√					
(Ke & White, 2009)								√					√							√	√		
(Ozus, 2009)	√												√	√									
(Wiley et al., 2010)											√												

(Chalermpong & Wattana, 2010)																							√
(Crosby et al., 2012)																			√				
(Čeh et al., 2012)	√	√	√	√						√			√	√									
(Reichardt et al., 2012)											√												
(Kok & Jennen, 2012)	√	√									√				√					√	√		
(Wickramanayake & Weerakoon, 2014)					√																		
(Cheah et al., 2015)											√	√								√	√		
(Hui et al., 2015)	√	√	√								√				√								
(Udoekanem et al., 2015)								√					√										
(David & Boon Foo, 2015)							√		√				√										
(Fontoynont et al., 2016)																√							
(Oyedokun, 2017)											√												
(Stanley & Wang, 2017)											√											√	
(Robinson et al., 2017)											√												
(Nurzukhrufa et al., 2018)															√	√							
(Bokhari & Geltner, 2018)																			√				

(Kopczewska & Lewandowska, 2018)	√	√	√																				
(Jang et al., 2018)											√								√				
(Wadu Mesthrige & Chan, 2019)											√												
(Wan Rodi et al., 2019)	√														√	√							
(Bera & Uyar, 2019)	√					√									√	√					√		
(Kołodziejczyk et al., 2020)													√	√									
(Hong et al., 2021)											√												
Total (f)	10	7	6	1	1	2	1	2	1	2	12	1	11	7	8	4	2	1	2	4	4	1	2

Sources: Author

Data Abstraction

After completing all the required phases under the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA), the review then moves on to the last phase which is data abstraction. In this phase, all the office building rent determinants provided in Table 2 (variable matrix) will be included as the research findings. Based on Table 2, the influence features of office building rents were classified into four (4) categories which are locational, macroeconomics, physical, and financial. Each category consists of multiple significant attributes corresponding to office building rentals. Findings on influence features of office building rents will be explained in greater detail in Section 4.0.

FINDINGS ON INFLUENCE FEATURES OF OFFICE BUILDING RENT

Twenty-three (23) influencing features of office building rents based on the variable matrix were characterised into four (4) categories which are 1) locational, 2) macroeconomics, 3) physical, and 4) financial. To provide a better insight into office building rent determinants, a conceptual framework has been developed based on the discovered independent variables. The idea of establishing this conceptual framework evolved from a previous study by Wong (2002) which focused on property forecasting by considering independent variables. This idea has been used by various authors in causal models developed over last 20 years. The independent variables are categorised into macroeconomics, spatial and financial in his variable matrix. Bera & Uyar (2019) further divided the local and global determinants of office rents in Istanbul into three (3) characteristics which are locational, physical, and lease characteristics. By referring to prior studies in relation to office rent determinants, a variable matrix and conceptual framework were developed by considering the categorisation elements.

Conceptual Framework

The Conceptual Framework is mainly positioned in the chapter that addresses the literature review. It is the interpretation of an established theory's model that any researcher readjusts to fit his or her research intent

(Adom et al., 2018). This study has developed a conceptual framework based on four (4) categories of office rent determinants; locational; macroeconomics; physical and financial as mentioned in Table 2 (variable matrix).

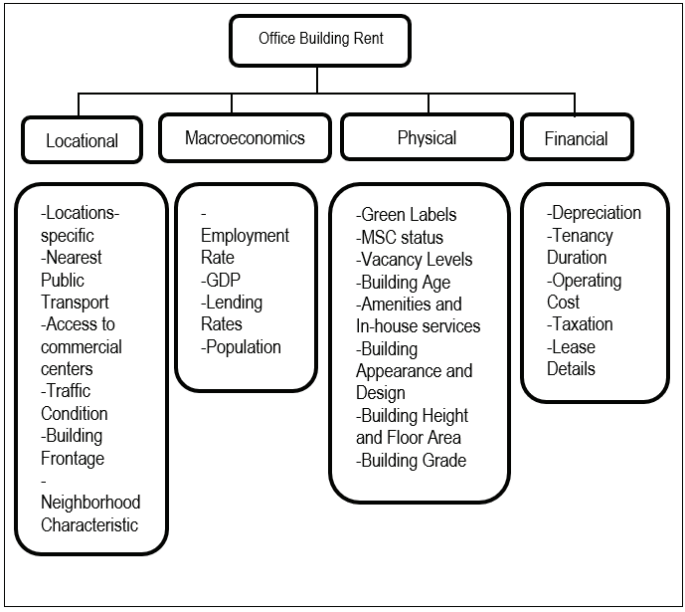

Figure 3. Conceptual Framework

Sources: Author

Locational

The conceptual framework highlights the location-specific; proximity to public transport; access to commercial centres; traffic conditions, and neighbourhood characteristics determinants categorised under the locational characteristics. Locational characteristics demonstrate that office rentals vary by locations (Bera & Uyar, 2019). Several authors have acknowledged that the variations of building prices and rentals are addressed by locational trade-off theories. Similarly, the placement of a building within the Central Business District is, likewise, strongly connected with office rentals in the sample commercial buildings (Dunse et al., 2002; Fuerst, 2007; Hui et al., 2015; Öven & Pekdemir, 2006). Location effects which are distinctly perceived or observable characteristics of an area, also have impacts upon property prices and rentals (Fuerst, 2007; Oven & Pekdemir, 2004; Öven &

Pekdemir, 2006). This is because, location is a fluid phenomenon driven by a range of characteristics recognised by retail investors (Čeh et al., 2012).

By referring to Table 2, specific locations of office buildings show the highest score (f=10) in locational characteristics indicating that the determinants have been widely used in previous studies as variables in outlining office rentals. Furthermore, proximity to public transport is also used by seven (7) (f=7) prior studies based on the collated literature. In general, proximity to public transport has a beneficial influence on rent levels since it represents ease of access to clients and business services. The majority of prior research have denoted this determinant as having an effect on office rentals (Fuerst, 2007; Hui et al., 2015; Öven & Pekdemir, 2006). Traffic conditions and proximity to public transport are considered as influencing features of office building rents since they affect the commuting time for the office workers to reach their workplaces. Seminal contributions have been developed by previous studies that consider access to commercial centres; neighbourhood characteristics, and traffic conditions as locational determinants to identify the influencing features of office rents (Čeh et al., 2012; Kok & Jennen, 2012; Kopczewska & Lewandowska, 2018). According to Table 2, access to a commercial centre is supported by six (6) (f=6) studies to position it at the top. Meanwhile traffic conditions with (f=1), building frontage (f=1), and neighbourhood characteristics (f=2) indicate that these determinants are rarely used as office rent determinants.

Macroeconomics

Employment rate; Gross Domestic Product (GDP); lending rates; and population are the macroeconomics variables mentioned in the conceptual framework as influence features of office rents. Macroeconomics is a field of economics that analyses an economy's overall performance, structure, behavior, and decision-making. Macroeconomics factors such as GDP, unemployment, income levels, and stock market performances are all considered as macroeconomics determinants of demand-side factors affecting office rents (Leung, 2007). A series of recent studies has shown that macroeconomics determinants can strongly influence the volatility of office rent markets (Ng & Higgins, 2015; Tsolacos et al., 1998; Udoekanem et al., 2015).

The variable matrix of this study illustrates that among the macroeconomics determinants, only a few prior research has implemented this determinant on office building rent study over the last twenty (20) years. According to Table 2, the variable matrix demonstrates that employment rates and lending rates both have similar scores with only one (1) (f=1) study implemented these variables. A previous study by (Ng & Higgins, 2015) denoted that a contemporaneous office sector employment was determined as one of the key factors in the variations of office rents in the Central Region of Singapore. On the other hand, Mourouzi (2012) observed that office employment plays a role in the equilibrium factor of office rents. Office rents react positively to a rise in employment especially when the vacancy rate is lower than the long-term average (Dirk & Maarten, 2009). Additionally, other macroeconomics factors were also used as variables in determining office rents such as Gross Domestic Product and population with both acquiring similar scores at (f=2). In European studies, rental values are determined by the Gross Domestic Product (GDP) specifically on the demand side (Giussani et al., 1993). Nevertheless, it is not a strong determinant that can affect the rental of office buildings in commercial property markets worldwide. As mentioned by Wei (2003), Gross Domestic Product (GDP) is not a driving factor for office building rents in Kuala Lumpur and Hong Kong. Paradoxically, population affects property demand and drives up prices and rentals due to the high concentration of people who live and work in the CBD region (Čeh et al., 2012).

Physical

The physical characteristics affecting office rents include quality, prestige, environmental aspects, and internal services (Bera & Uyar, 2019). In reference to the developed conceptual framework, physical characteristics that influence office rents are green labels; MSC status; vacancy levels; building age; amenities and in-house services; building appearance; design and building height; and floor area and building grade. A large number of existing studies in the broader literature have examined the physical characteristics as office rent determinants. For instance, Čeh (2012) addressed that office rent declines with effective age and rises with office building density. Bera & Uyar (2019) suggested that as the height of an office building increases, it alters the building's setting and draws the attention of the public. These could potentially increase its worth. Other studies that considered physical characteristics as office rent determinants

include (Kołodziejczyk et al., 2020; Nurzukhrufa et al., 2018; Öven & Pekdemir, 2006).

Based on Table 2, green labels achieved the highest score with (f=12) in which twelve (12) authors implied green labels as variables in office rent studies. This variable shows a significant increase in terms of application in office building rental studies over the last ten (10) years. Buildings with green designations have a lower environmental effect than ordinary buildings (Lop et al., 2016). Due to current global concerns regarding environmental sustainability where the concept of sustainable architecture, particularly the development of green buildings, appears to be exploding recently (Jamil et al., 2020). Vacancy levels which are frequently used variables in prior studies relating to office rent, also show a high score with (f=11). Vacancy levels can be expressed as in percentage and these levels compare the amount of time a property could be rented to the amount of time a property was rented over a one-year period. This determinant is interpreted as a proxy for the general attractiveness of an office building, and it needs to be considered as a significant element in office rent studies (Fuerst, 2007; Oven & Pekdemir, 2004; Öven & Pekdemir, 2006). Subsequently, amenities and in-house services have been frequently used in past research relating to office rental studies with eight (8) (f=8) authors supporting this variable. Fuerst (2007) suggested that office tenants will pay a premium for convenient access to these amenities, and this is confirmed in the significant levels of this variable throughout the estimated period.

In addition, building age can be considered a strong variable as one of the office rent determinants. The variable matrix indicates that seven (7) studies have considered building age as their independent variables in office rent studies. The longevity of real estate is directly tied to physical deterioration and functional obsolescence, where ageing effects appear to be especially relevant for commercial real estate. These phenomena influence the dynamics of property prices and consequently the returns on real estate investment (Levkovich et al., 2018). Other studies on office market determinants addressed office rent declines with effective age and appreciations with office building density (Čeh et al., 2012). Interestingly, older buildings tend to offer lower asking rents (Kołodziejczyk et al., 2020).

Other physical characteristics used by previous studies in determining

office rents were MSC status (f=1) which is related to building certifications that promote sustainability and technology advancement in an office building; building appearance and design (f=4); building height and floor area (f=2); and building grade (f=1).

Financial

The conceptual framework demonstrates that financial aspects can be identified as office rent determinants. These include operating costs; tenancy duration; taxation; and lease details. Wong (2002) suggested that finance can be considered as microeconomics variables in real estate studies. Numerous studies have managed to investigate the influence of financial aspects on office rents that mainly focus on rent charges; operating costs; lease characteristics between owner and occupants; and property taxation that involves government interventions (Jang et al., 2018; Kok & Jennen, 2012; Rosen, 1984). A study by Hendershott & Kane (1995) suggested that positive percentage changes on office rentals corresponded with equilibrium and actual rental rates.

A well-documented study by Cheah & Siew (2015) concedes that the tenancy duration on lease terms can positively affect office rental rates. Among the financial aspects, the 2 most common variables that were identified as office rent determinants are tenancy duration (f=4) and lease details (f=4). Tenancy duration is referred to as a periodic tenancy or estate from period to period. This is a sort of leasehold estate in real estate terms. According to Cheah & Siew (2015), tenants with longer-term leases should pay lower rents to minimise turnover costs. These are interrelated to the financial management element that involves the commercial property and associated investors. The length of the lease can be used as a criterion for determining rent. Other financial aspects used as variables are operating costs (f=1), current rents (f=1), and property taxation (f=2)

CONCLUSION AND RECOMMENDATION

Based on the systematic review findings, twenty-three (23) features were identified which were then categorised into four (4) specific characteristics. They are namely 1) locational; 2) macroeconomics; 3) physical; and 4)

financial. These features were identified thoroughly based on previous studies gleaned from online databases. As a result, by identifying the influencing features affecting office rents based on the research's evolution and related publications over the last 21 years, investors can predict rental trends more precisely based on reliable and updated sources. Furthermore, by discovering the latent variables which correspond to office building rents, it can provide new insight for valuers to calculate accurate valuation values on property prices and rentals.

In addition, this study would like to emphasise the most influential featu

res in determining office rents which are green labels (12); vacancy levels (11); and location-specifics (10) based on the multiple variables that were discovered in the literature. By successfully identifying the most influential features of office building rental, this research can assist future research on real estate studies involving price or rent determinants.

As a recommendation, this study would like to propose future research with objectives in focusing on office rent determinants using a different approach such as forecasting the influence features of office buildings.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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