



The Characteristics of Purpose-built Office: Occupants' perception

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Abstract

Report from Asia Pacific Colliers had suggested that continued proactive marketing efforts and tenancy offerings could maintain the local office market performance. Therefore, the characteristics of PBO are significant factors that need to be studied. The aim of this paper is to examine the occupiers' perceptions and needs as well as the importance of the characteristics that applied in PBO. Hence, this paper identified the issues that could provide ideas to the property market participants in improving PBO's market and building performance via investigating the perception of occupants in order to determine the factors that affect office market property performance.

Keywords: Purpose-built office; characteristics; occupants; perceptions.

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1.0 Introduction

Malaysia enjoyed an increasing demand for purpose-built office (PBO) supported by strong economic fundamentals since 1990s. Even though, there was a competitive PBO's market in the country, the vacancy rate of PBO is still relatively high. Reports from Asia Pacific Colliers showed that the average vacancy rate of Malaysian's PBO in 2012 was maintained as the previous quarter, but with the new supply coming on stream by the end of 2012, vacancy rate is expected to increase (Colliers International, 2012). Fortunately, previous research and reports had suggested that proactive marketing efforts and tenancy offerings could maintain the local office market performance. In this context, earlier studies have shown building characteristics of PBO are significant factors that need to be studied. Previous research identified several factors affecting the rate of vacancy from the occupier/tenant's point of views. However, PBO occupation studies have been founded in developed countries but are extremely limited in Malaysia (Adnan, et. al 2012). Moreover, none of the research investigates in detail, particularly both building and locational characteristics of PBO in the country from the occupier's perspectives. The aim of this study hence is to examine the occupiers' perceptions and needs as well as the importance of the building and locational characteristics in Malaysian's PBO.

2.0 Literature review

2.1 Recent Issues On The Characteristics Of Purpose-Built Office In Malaysia

The characteristics of PBO can be found in any office building assessment. These characteristics consist of physical and non-physical elements of the office building depending on types of assessment. Based on the previous studies, Sivitanidou (1995); Arkin and Paciuk (1997); Aygun (2000), the frameworks of the office building characteristics were dramatically established in order to categorise it to be more detailed and structured. Identifying the attributes or characteristics of the office building is fundamental in developing tools to evaluate the quality level of the office building in any building assessment. For example, previous research shown many building assessments such as a green building model was revealed since 1970, by a basic conceptual of building characteristics (Wilson, 2006).

In Malaysia, the structured framework of building and locational characteristics of the office building is still unclear. There are many building assessments unveiled by government and private sectors. It can be seen during 1990s when City Hall of Kuala Lumpur announced a classification guideline of the office building and a private sector which is Rahim & Co developed a rating star of the office building in 1992 (Adnan et. al, 2008). However, there are only two characteristics have been focused namely location and facilities in that building assessments. Since then, the characteristics of the office building frameworks in Malaysia have constantly evolved. In 2005, Green Building Index Malaysia (GBIM) was official launched, and six characteristics of the office building were considered, which are energy efficiency, indoor environment quality, sustainable site planning and management, material and resources, water efficiency and innovation (Retno et. al, 2010). Besides, Purpose-built Office Rent Index (PBO-RI) also has been revealed recently on 19 July 2012 by Ministry of

Finance Malaysia. The report contains seven characteristics of the office building that has been reviewed in the hedonic model, which are building age, building grade, lettable area, number of floors, average floor area, location and level.

Therefore, this paper is proposed to identify the occupier's perception on these existing characteristics in Malaysian context. Due to limitation of the occupation studies in the country, this paper highlighted several characteristics of PBO that cover building and locational characteristics of PBO consist of presentation, management, functionality, services, green building, location, access and circulation as well as amenities. These characteristics have been developed by the researcher in the earlier research. Table 1 shows the building and locational characteristics that have been applied in this study. The next topic will discuss the significance influence of the office building's characteristics on occupation of PBO.

Table 1: Building and Locational Characteristics of Purpose-built Office

Characteristics	Sub-characteristics
Presentation	External design Finishing Lobby design Number of storey Age of building
Management	Security Maintenance Cleaning services Energy services/ recycle policy Computerise Building Management System (CBMS)
Functionality	Floor size Floor ceiling height Space efficiency Column layout Floor loading
Services	Toilet facilities Electrical & IT services Work environment Heating, ventilation & air-conditioning (HVAC) Ease of services upgrading & maintenance
Access & Circulation	Lift performance Lift design Number of car park Car park distance from building Building way finding
Location	Location of commercial features Availability of transport options Transportation distance Vehicle flow Efficiency of property market

Green building

Indoor environment quality
Sustainable Site Planning
Material & Resources
Water Efficiency
Innovation

Amenities

Landscape
Bank, postal & other retails
Gym & sport club
Restaurant/ cafe
Pantry, Prayer Room & Children Nursery

2.2 The Significance Influence Of The Office Building's Characteristics On Occupation Of Pbo

In a global context, office building's characteristics have been well studied due to tremendous development of the office building such as in United States, Australia, and Hong Kong. In Australia, Ho et al. (2005) has identified the importance of key factors influencing the quality of CBD office buildings. From these identified characteristics of the office building, they were found a strong relationship between office building quality and rent. The grading system is also reported as 'A Guide to Office Building Quality' by the Property Council of Australia (PCA) in 2006 from the structured framework of the office building characteristics.

Similarly, Building Owners and Managers Association (BOMA) in United States have categorised office building characteristics into six groups, which are rents, building finishes, systems standards and efficiency, building amenities, location/accessibility and market perception (BOMA, 2007). These characteristics have been grouped and transformed into grading system. The need of this grading system is to show the competitive ability of each building to attract similar tenants (Daud et al. 2010).

Unlike Hong Kong, they developed a basic grading matrix from combinations of physical building features, management and parking facilities. Location is not in priority since there was a trend to be located in office buildings at accessible areas, not within the CBD with good transportation infrastructure. It is because the majorities of these office buildings are new and are well constructed with impressive technology and facilities (Daud et al. 2010).

In Malaysia, the research on identifying office building's characteristics is still in maturation. Previous studies on office building occupation have shown different characteristics of the office building affect the occupier's decision (Adnan et al. 2012). Hence, there are some significance of the office building's characteristics on occupation of PBO that has been studied from a global and local context (Alexander, 1979; Ho et al. 2005; Ahmad and Isa, 2008; Adnan et al. 2008; Daud et al. 2010; Zainordin et al, 2012).

- To give an idea for the property market participants to develop tools for any building assessments (building performance, green building, sustainable, classification, intelligent building).

- To attract and retain tenants for existing office buildings.
- To improve the occupancy status of the existing and incoming supply.
- To fulfil their (building owners, investors, tenants, marketing agents) specific objective.
- To maximise the returns when office building was attractive.
- To show the competitive ability of each building to attract similar tenants.

This paper is intended to identify the occupier's perception on building and locational characteristics of PBO in Malaysia. However, the main objective in this study is to develop a reliable measurement in examine occupier's perception on the characteristics of PBO that provided from the previous study. Therefore, further discussion on the methodology, samples and data collection will be discussed in the next topic.

3.0 Methodology

There are many measurements or methods that can be applied to examine occupier's perception, preference, satisfaction as well as needs on PBO's characteristics. These measurements consist of qualitative, quantitative or both method. This paper will highlight several methods that have been applied relates to this area of research, including a local and global context. It is hoped that this paper can reveal a reliable method that suitable to be used in this study.

3.1 Research Method

This study had identified several research papers that similar to this area whereby occupiers of PBO, including tenants, office workers and non-office workers as respondents. It has found that most of the method or techniques that have been used to examine and analyse occupier's perception on PBO were based on the decision-making method. Table 2 shows similar research on investigating occupier's perception and preference on office building's characteristics.

Table 2: List of Similar Research on Examine Occupier's Perception on the Characteristics of Office building.

Technique	Title	Author(s)	Year of published
Questionnaire survey	Office space requirements: comparing occupiers' preferences with agents' perceptions	C. Leishman, N.A. Dunse, F.J. Warren, C. Watkins	2003
Analytical Hierarchy Process -AHP	The importance of property-specific attributes in assessing CBD office building quality	Daniel Ho, Graeme Newell, Anthony Walker	2005
Semi-structured in-depth interviews	Retrofitting commercial office buildings for sustainability: tenants' perspectives	Evonne Miller, Laurie Buys	2008

Structured face-to-face interviews	Managing "keep" factors of office tenants to raise satisfaction and loyalty	Rianne Appel-Meulenbroek	2008
Questionnaire survey	Occupier perceptions of green workplace environment: the Australian experience	Hikari Kato, Linda Too, Ann Rask	2009
Questionnaire survey and interviews	Methods for evaluating office occupiers' needs and preferences	Jessica Niemi, Anna-Liisa Lindholm	2010
Questionnaire survey and interviews	Office sustainability: occupier perceptions and implementation of policy	Jorn van de Wetering, Peter Wyatt	2011
Questionnaire survey - statistical analysis	User preferences of office occupiers: investigating the differences	Peggie Rothe, Anna-Liisa Lindholm, Ari Hyvönen, Suvi Nenonen	2011
Multi Criteria Decision Making (MCDM) - AHP	Property specific criteria for office occupation by tenants of purpose built office buildings in Kuala Lumpur, Malaysia	Yasmin Mohd Adnan, Mohd Nasir Daud, Muhammad Najib Razali	2012
Internet-based questionnaire with e-mail invitations (Likert Scale)	The green preferences of commercial tenants in Helsinki	Jessica Karhu, Ari Laitala, Heidi Falkenbach, Anna-Liisa Sarasoja	2012
Questionnaire survey and interviews	Light and Space: Users Perception towards Energy Efficient Buildings	Nadzirah Binti Zainordin, Siti Marina Binti Abdullah, Zarita Binti Ahmad Baharum	2012
Analytical Hierarchy Process - AHP	Introduction of AHP Satisfaction Index for workplace environments	Thadsin Khamkanya, George Heaney, Stanley McGrea	2012

There are many research on decision making technique that involve occupiers as respondents. All of these techniques have their unique approach and design such as Social Choice Theory, Creative Problem-Solving Process, Nominal Group Technique, Voting System, Multi Criteria Decision Making and Analytical Hierarchy Process. The understanding of each technique is tremendously crucial because it cannot be applied in every case. Basically, these techniques require expertise, goals, and duration of time. Therefore, researcher has assumed that the occupier of the PBO is an expert.

Horn (2006), have stressed that the ability of the expertise (occupiers) to take decisions is highly influential whereby they have limited to overcome systematic errors such as the characteristics of mental representations or the importance of perception to decision making outcomes is clear. Most of these decision making techniques introduce to psychology, human judgment or decision making, which is extremely difficult to monitor (Josephson Institute of

Ethics, 2005). To avoid these problems, the selecting of a suitable decision making technique is hugely crucial. This research, however, has found that Analytical Hierarchy Process (AHP) is suitable in the occupier's decision-making to examine their perception on building and locational characteristics of PBO in this study.

AHP method is done to access the weightage for each applied characteristic for the occupier's perception about the importance of building and locational characteristics of PBO. All of the occupiers have different opinions towards the importance of each characteristic. In the questionnaire, occupiers would have to state and choose the suitable and essential characteristics in determining the level and weightage of importance for every building and locational characteristics for the occupied PBO. Table 3 illustrates the applied scale in deciding each weightage for the building and locational characteristics of PBO.

Table 3: The Applied Scale (AHP) in Determination of the Weightage Importance for Building and Locational Characteristics of PBO

Intensity Importance	of	Definition	Explanation
1		Equal importance	Two elements contribute equally to the objective
3		Moderate importance	Experience and judgment slightly favor one element over another
5		Strong importance	Experience and judgment strongly favor one element over another
7	Very importance	strong	One element is favoured very strongly over another, its dominance is demonstrated in Practice
9		Extreme importance	The evidence favouring one element over another is of the highest possible order of affirmation

Intensities of 2, 4, 6 and 8 can be used to express intermediate values. Intensities 1.1, 1.2, 1.3, etc. can be used for elements that are very close in importance.

Via this scale, the researcher analyses each answer from the perspective of the main importance for each characteristic that is compared by the occupier. This is because the occupier will make the decision of the importance of each characteristic by comparing between one characteristic with the other to facilitate their perception on building and locational characteristics of PBO.

3.2 Research Samples

The population in this research comprises of the occupiers of the 111 PBOs that are situated in the capital city of Kuala Lumpur consist of four areas namely golden triangle, central business district, within city centre and suburban. As many as 1110 occupiers were involved

in this research whereby 10 occupiers were from each chosen PBO. The type of sampling method that is used in this study is non-probability or quota sampling. This study set up 10 occupiers to represent each of PBO. Meanwhile, the overall total of the PBOs in the Kuala Lumpur area are 301 buildings, however only 111 PBOs are accounted for as research samples. The number of these samples has been determined by applying cluster sampling method which is based on the case study. Cluster sampling method is applied to determine the number of samples that are randomly taken from the population. Please refer Table 4 for more information regarding the research samples that have been applied in this study.

Table 4: Distribution of Sample for the Survey on Occupiers's Perception on the Importance of Building and Locational Characteristics of PBO in Kuala Lumpur.

Building and Educational Characteristics of PBO in Kuala Lumpur							
Purpose-built Offices				Occupants of Purpose-built Office (Respondents)		Total	
Sampling Techniques Purpose-built Offices in the area of Kuala Lumpur		Cluster Sampling		Non-Probability Sampling (Quota Sampling)			
		Unit	Sample Size	No. of occupant (unknown)	Samples of occupant		
		Golden Triangle (GT)	43	34	-		10
		Central Business District (CBD)	89	27	-		10
		Within City Centre (WCC)	94	28	-		10
Suburban	75	22	-	10	220		
Total		111			1110		

4.0 Results and Discussion

In an attempt to identify the perception and preference of PBO's occupiers on the office building, a survey was conducted on occupiers directly or indirectly occupied in the PBOs in several areas of Kuala Lumpur. The group of occupiers was categorised into four specific groups consisting of all the PBOs in the research area namely golden triangle, central business district, within city centre and suburban. The objective of the survey was to identify these tenants' perception on the importance of the building and locational characteristics of PBO between each other.

The questionnaires are set based on AHP procedure for the occupier's perception of the relative importance characteristics between each other. This it because it involved the gathering of information on the occupier's perception at a more detail level using the AHP. AHP method is done to access the weightage for each applied characteristics for the evaluation of the PBO. All of the weightages have been evaluated via the comparison between two characteristics of PBO to determine the absolute importance of each characteristic. Table 5 demonstrates on how the weightage for each characteristics is compared and obtained via scale 1-9 like is been shown in the previous Table 3.

Table 5: Pairwise Comparison for the Weightage among the Characteristics

Characteristic	Weightage																Characteristics	
C1	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	C2
C2	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	C3
C3	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	C1

This survey therefore has been conducted to explain the weightage of these characteristics of PBO that responded by occupiers. Accordingly, for measuring the importance of the PBOs are based on the weightage of each characteristic that the occupiers assess more or equal important than others. Table 6 shows the findings for the weightage of PBO's characteristics based on 1110 respondents based on their perception on the relative importance of the characteristics of PBO. Using the pairwise comparison, the relative importance of one characteristic over another can be expressed.

Table 6: The Weightage of Occupier's Perception on the Importance of Building and Locational Characteristics of Purpose-built Office

Characteristics of Purpose-built Office		Weightage Importance			
		Golden Triangle	Central Business District	Within City Centre	Suburban
	n	340	270	280	220
Presentation		0.1025	0.1865	0.1240	0.1426
• External design		0.2355	0.1988	0.1245	0.1025
• Finishing		0.1850	0.1660	0.1441	0.1413
• Lobby design		0.1564	0.1486	0.1241	0.2232
• Number of storey		0.1685	0.1775	0.2344	0.4318
• Age of building		0.2546	0.3091	0.2829	0.1012
Management		0.0531	0.1248	0.0897	0.1325
• Security		0.1245	0.1855	0.1741	0.3081
• Maintenance		0.1566	0.1552	0.1121	0.2964
• Cleaning services		0.2568	0.1498	0.3104	0.1914
• Energy services/ recycle policy		0.1475	0.1997	0.2019	0.0801
• Computerise Building Management System (CBMS)		0.3146	0.3098	0.2015	0.1240
Functionality		0.0940	0.0854	0.0965	0.1024
• Floor size		0.1652	0.1987	0.2911	0.0729
• Floor ceiling height		0.1462	0.1999	0.1455	0.2811
• Space efficiency		0.1970	0.1744	0.1827	0.2186
• Column layout		0.2660	0.1789	0.1933	0.3870
• Floor loading		0.2256	0.2481	0.1874	0.0404
Services		0.1218	0.2586	0.1750	0.1541
• Toilet facilities		0.2850	0.2451	0.2897	0.3504
• Electrical & IT services		0.2471	0.1782	0.2511	0.2036
• Work environment		0.1558	0.1880	0.1784	0.1411

• Heating, ventilation & air-conditioning (HVAC)	0.1635	0.2599	0.1355	0.1559
• Ease of services upgrading & maintenance	0.1486	0.1288	0.1453	0.1490
Access & Circulation	0.1701	0.0532	0.1923	0.1022
• Lift performance	0.2864	0.2584	0.2751	0.1918
• Lift design	0.1752	0.2698	0.1244	0.0685
• Number of car park	0.2854	0.2951	0.3110	0.4354
• Car park distance from building	0.1423	0.1220	0.1967	0.1233
• Building way finding	0.1107	0.0547	0.0928	0.1811
Location	0.2541	0.1750	0.1890	0.1984
• Location of commercial features	0.2580	0.3968	0.2538	0.3130
• Availability of transport options	0.1853	0.2588	0.2144	0.2179
• Transportation distance	0.1541	0.2584	0.2410	0.2180
• Vehicle flow	0.1968	0.0411	0.0584	0.0478
• Efficiency of property market	0.2058	0.0449	0.2324	0.2033
Green Building	0.0587	0.0235	0.0084	0.0120
• Indoor environment quality	0.1620	0.4875	0.2280	0.3271
• Sustainable Site Planning	0.1010	0.1248	0.0874	0.0512
• Material & Resources	0.1896	0.0568	0.0998	0.1573
• Water Efficiency	0.1255	0.0487	0.1694	0.1866
• Innovation	0.4219	0.2822	0.4154	0.2778
Amenities	0.1458	0.0930	0.1251	0.1558
• Landscape	0.1523	0.2222	0.2971	0.0736
• Bank, postal & other retails	0.1965	0.2897	0.2144	0.3924
• Gym & sport club	0.1324	0.1140	0.0587	0.0879
• Restaurant/ cafe	0.2514	0.1758	0.2977	0.3202
• Pantry, Prayer Room & Children Nursery	0.2674	0.1983	0.1321	0.1259

Table 6 shows the final eigenvector for pairwise comparison analysis using AHP method. Pairwise comparison is use to determine the relative importance of one characteristic over another. Generally, the results show location is the most importance characteristic and green building is the least importance characteristics otherwise functionality and management nearly having a same relative importance between each other. Amenities, services, access and circulation, as well as presentation have an average from the characteristics based on the occupier's feedback.

5.0 Conclusion

The analysis carried out illustrates the relative importance of each characteristic of PBO in determine the occupier's perception of the building and locational characteristics of PBO specifically, and the Malaysian PBOs generally. In times of economic uncertainty and rapid technological changes especially in the capital city of Kuala Lumpur, influence the

development of PBOs in the research area. Therefore, based on the occupiers perception and preference are useful in determine the quality level of PBOs especially for the development of the building performance tools in the country.

Analyses on the occupier's perception on building and locational characteristics of PBO provide insights to the characteristics as well as possible factors that can severely impact its overall performance of the PBOs. There is a significant amount of pressure for the owners, tenants and investors to be more involved in a proper and more efficient in enhance the quality level of PBOs.

This paper revealed that the importance of PBO's characteristics created by decisions of perception as reflected in changes made within the level of quality each of the PBO's characteristic do has impacts on changes in the property market performance. Question arises whether the changes are unique to the Malaysian context. To provide the answer to this question, further research on these issues are needed in order to provide ideas to the property market participants in improving PBO's market by developing building performance tools in the country.

References

- Adnan, M. Y. & Daud, M. N. (2008). Identifying the potential criteria and sub-criteria for classification of office buildings in Malaysia. *International Real Estate Research Symposium*.
- Adnan, Y. M., Daud, M. N. & Razali, M. N. (2012). Property specific criteria for office occupation by tenants of purpose built office buildings in Kuala Lumpur, Malaysia. *Property Management*, 30(2), 114-128.
- Ahmad A. E. & Isa, Z. M. (2008). Performance of Kuala Lumpur office market after the 1997 Asian Market crisis. *Proceedings of the International Real Estate Research Symposium*.
- Alexander. (1979). *Office location and public policy*. London: Longman.
- Arkin, H. & Paciuk, M. (1997). Evaluating intelligent building according to level of service system integration automation. *Construction*, 6(5/6), 471-479.
- Aygun, M. (2000). Comparative performance appraisal by multiple criteria for design alternatives. The University of Sydney. *Architectural Science Review*, 4(1), 31-36.
- BOMA, Chicago (2007). *Market summary update - end 2006*.
- Colliers International (2012). *Asia Pacific office market overview*. Research Report.
- Daud, M. N., Adnan, Y. M., Ahmad, I. & Aziz, A.A. (2010). Constructing the model for Malaysia's office classification. In the *Pacific Rim Real Estate Society Conference*. Wellington, New Zealand.
- Ho, D., Newell, G. & Walker, A. (2005). The importance of property-specific attributes in assessing CBD office building quality. *Journal of Property Investment & Finance*, 23(5), 424-444.
- Hom, C. (2006). *How experience affects perception in expert decision-making*.
- Josephson Institute of Ethics (2005). Retrieved May 20, 2012 from <http://www.josephsoninstitute.org/>

Retno, R., Khamidi, M.F. & Idrus, A. (2010). The level of importance of criteria and sub criteria in green building index Malaysia. *International Conference on Sustainable Building and Infrastructure*.

Sivitanidou, R. (1995). Urban spatial variations in office-commercial rents: The role of spatial amenities and commercial zoning. *Journal of Urban Economics*, 38, 23 - 49.

Wilson, A. (2006). *Your green home: A guide to planning a healthy, environmentally friendly new home*. New Society Publishers.

Zainordin, N., Abdullah, S. M. & Baharum, Z. A. (2012). Light and space: Users perception towards energy efficient buildings. *Procedia-Social and Behavioral Sciences*, 36, 51 - 60.