SPACE MANAGEMENT IN MALAYSIAN GOVERNMENT PROPERTY: A CASE STUDY

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ABSTRACT

Cost implications related to the physical resources such as land and building in organisation is significant. Management entity of government or private sectors has often ignored the importance and the contribution gained from the physical resources towards their organisation. This source is a precious asset that can generate income if properly managed. This paper aims to explore the current trends in space management internationally, both from the government and private sector perspectives. A case study is conducted to study the level of effectiveness of space management in one of the government institutions in Malaysia. The findings from the case study will be compared with the current international trend of space management. The study will enrich the current understanding of space management in government properties, as well as to compare the level of space management effectiveness of government properties in Malaysia with the international trends and proposed suggestions to improve current practices of space management of Malaysian government's properties.

1.0   INTRODUCTION

Space management is one of the elements within the asset management structures of either private or government buildings. In Malaysia, normally government's building asset management was conducted by the in-house team, in which a department was established within the main department with responsibility to manage asset management within the organisation. The purpose of government buildings is to cater for social welfare or to provide services to public compared to the private buildings which is more towards profit orientated.

Over the last 10 years, there are numerous incidents related to the government asset management weaknesses, and the Malaysian government is looking seriously towards a better asset management for government's property which include space management. Space management issues embedded Malaysian government's property includes failures of spaces to achieve functional optimisation and limited numbers of facilities to support space functionality (Prime Minister Department's, 2009).

Even though there are numerous issues reported in the mainstream media on the government's property space usage inefficiency, the problems are still increasing. The factors contributing to the failures are lack of space management planning and space demand evaluation. This results in the failure of the property spaces being used effectively. Utilisation of space is not being considered as an important element by users, building occupiers or stakeholders.

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Space management is significantly important towards space functional and customer satisfaction (Ahmadfauzi, 2000). Apart from reducing the cost of asset management, the implementation of space management planning will increase the monetary profit and the effectiveness of source usage, in this case, the government's property. Therefore, one of the tools to study the building effectiveness is by measuring the space provided since the space is precious and limited. It is important for the government agencies to manage their spaces to achieve the space usage effectiveness. It is internationally accepted that space planning leads to the space distribution, systematically and effectively. Space is a facility within the government building which constitutes other type of facilities and components. Demands for space is unpredictable, therefore the usage of space has to be maximised efficiently.

This paper is based on one of the government institutions in Malaysia, in which consist a number of buildings within one institution complex. There have been previous studies on the government's property based on customer satisfaction; however limited papers have discussed on the space management effectiveness internationally. To date, most government agencies in Malaysia have not measures the level of usage of their facilities. Lack of this measurement, results in improper planning of space usage optimisation.

The paper will discuss the following; a) International concept and implementation of space management, and b) The level of effectiveness of space usage in the Malaysian case study. The findings will stimulate the idea that can be replicated to other Malaysian government's property in measuring the level space usage and space management throughout the country.

2.0   SPACE MANAGEMENT: THE DEFINITION

Space management is a subset of facilities management. It is best to define facilities management before we proceed to the definition of space management. Internationally facilities management has been defined as the integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities (British Standards, 2010 and European Committee of Standardisation, 2007). Abdul Rahman (2004) has defined facilities management as a process of managing physical facilities and determines the needs towards further investment of business expansion. Elements within the facilities management includes, planning, design, workplace, construction, lease, occupancy, maintenance, professional consultancy, building conservation and space management.

Space management is the process of planning space requirement, identify weakness, allocations of current necessary space to the clients, monitoring usage, helping users identify space usage problems and solve space management issues. In other words, space management not only considers the quantity of the current space, but includes the quality of the space provided to the clients. Therefore, relationship between users and organisation (owner) is essential in space management (Ahmadfauzi, 2000).

3.0   SPACE MANAGEMENT: THEORY, THE NEEDS AND THE OBJECTIVES

The history of space management originated back to 1970s with the idea of *space norms* consideration (UGC, 1987). This means that allocation of one staff or the necessity of space facility is determined based on the normal needs of a person and the needs of the organisation.

In 1996, National Audit Office in Wales has published "Good Practice Guide" for higher education institution space management purposes (NAO, 1996). The space management study was conducted to higher education institutions in Wales, England and Scotland and selected organisations outside the higher education institutions. The findings from the study stress that the price quantification of space usage is based on the space development strategies, to enhance the space usage data system, and centralisation of space tabling and distributing system. This study also indicates that by exercising space management policy, the reduction in cost can achieve up to 50%.

Further studies by Griffith (1999), HEFCE (2000) and Biddison & Hier (1998) confirm the findings of NAO study in 1996 and the findings being used since then.

Ahmadfauzi (2000) has developed several issues for the needs of space management. He states that new facilities will only being develop if necessary, unwanted facilities will be closed and demolished to reduce the cost of maintenance, unauthorised usage of space will be prevented by using space and occupation registration system. His study also explores the idea that space will be well distributed depending on ranks and working space should be safe from fire risk when accommodated to the client.
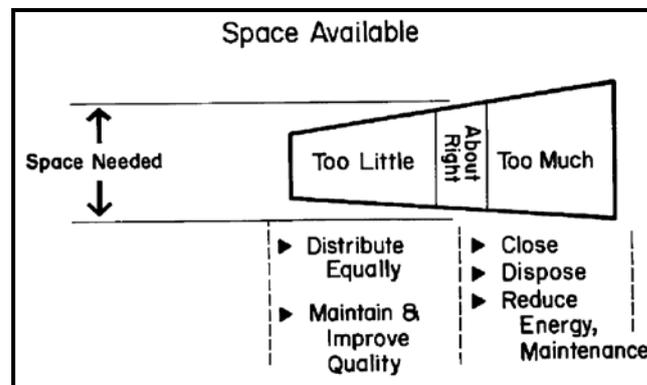
Source: Ahmadfauzi (2000)

Figure 1.0: The Needs for Space Management

Space management has to be implemented since organisations have to operate on the limited resources and reducing improper use of spaces (Alexander, 1993). This statement was agreed by Castells (1996) which mentions that space management is a tool to minimise unused or unnecessary spaces which can produce better monetary expenditure towards other critical areas.

Based on the studies by Middleton (1989), William (1994), Lee (1996), and Ahmadfauzi (2000), the space management objectives can be summarised as follow:

Table 1.0: Summarisation of Space Management Objectives

Objective	Explanation
Functionality	To ensure organisation functionality is suitable with optimisation of building space.
Consistency	To ensure space management is carried out consistently and systematically in achieving organisation objectives.
Efficiency	To ensure space being used efficiently, in good control and bring maximum profits to the organisation.
Flexibility	Even though space management required control over space usage, the element of flexibility is not ignored such as when there is expansion of staff or staff reduction.
Cost	The effective space management which have considered planning, execution and monitoring elements will result in overall cost reduction and maintenance cost decrease.

Source: Author (2011)

According to Ahmadfauzi (2000), in ensuring quality working environment, elements include in space management are productive use of space, space being distributed creatively, space management conducted by reliable and motivational staffs and the use of information technology in work. The implementation of space management elements will result in

reduction in workforce, organisation restructuring and increase the use of information technology in the organisation. This lead to the creation of positive image creation to the organisation, in which that particular organisation is more competent compared to others, with quality staffs, enjoyable working environment and increase the organisation's performance.

4.0   SPACE MANAGEMENT METHODS

Several types of space management methods are summarised as follows:

Table 2.0: Summarisation of Space Management Methods

Space Management Method	Explanation
Integrated Workplace	• A process of coordination and coalition various discipline combining real property with business strategic plan (Ahmadfauzi, 2000). • The method focus on workplace design which combine with business strategy, user's requirement and planning towards effective strategy. • Create structure for ideal workplace that fulfils current needs and future expansion. • Traditional method 'one size fit all' is outdated and focus more on specific group within the organisation.. • Consider 3 elements: Human – who use it; space – placing human; and equipments – supporting space usage.
Human Performance Model	• This method considers the effect of space management to human performance (Robertson, 2000). • Performance being evaluated based on introduction of privacy workspace, convenient workspace, staff working satisfaction in his workspace and the level of communication among the staffs. • The design of the workplace will effect the staff performance such as organisation design, workspace design, work flow design and technological design.
Flexible Working Model	• The flexible is based on the flexible working hour, which results in flexible space management, optimum space usage and cost reduction in long term (Gibson, 2003). • Flexible is in terms of working contract flexibility, time flexibility and location flexibility. • Working contract flexibility – workers are paid on contract basis and the organisation only prepares common workplace. • Time flexibility – Referring to the employees working time, used common workspace, the best example is working by shift system. • Location flexibility – The staff is allowed to work from home and only common workspace is required at the office. • 2 source of flexibility: 1) Organisation, 2) Property • Organisation – Considers hierarchy of work, multi tasking staffs, identified working behaviour, adaptation to economic changes and changes for competition. • Property – Contact flexibility: Property is leased earlier and surrendered as fast as possible, physical flexibility: Adaptation to changes such as from open office to cellular workstation, functional flexibility: Adaptation to different type of businesses. • Factors affecting includes space integration, technology innovation and others.

Space Planning Model	- Various authors have discussed on the space planning model such as Duffy (1997), Hotham and Ward (2000) and Hotham et al (2001).
	- The most method being applied internationally.
	- Emphasize on the layout of furniture and workstation.
	- Generally there are 4 different criteria that distinguished one to another:
	o Hive – Individual ownership of the workstation such as government office workstation (Duffy, 1997).
	o Cell – Concept similar to hive, except more autonomy given. Such example is prison cell (Duffy, 1997).
	o Den – Open concept where group work conducted. Interaction increased and discussions were in small group. Example: Site office or satellite office (Duffy, 1997).
	o Club – An open concept whereby it is an area of knowledge transfer transition area. Example: Meeting room, coffee shop and stairs. Open interaction in this area (Duffy, 1997).
	Source: Duffy (1997) Figure 2.0: Space Planning Model
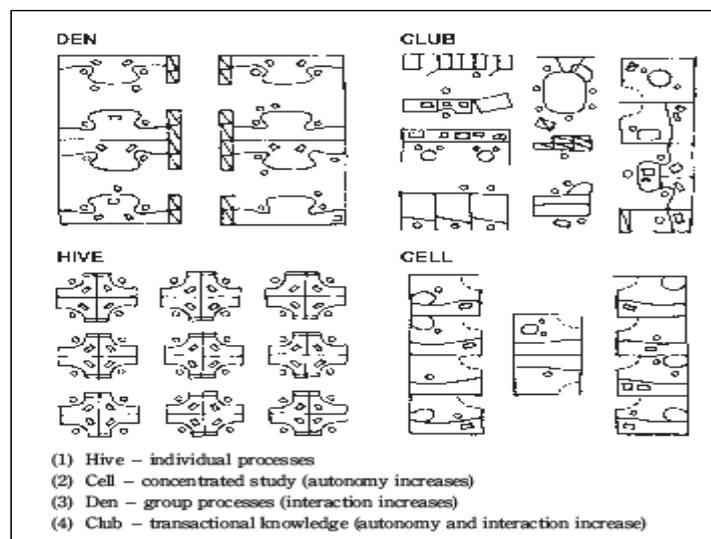
5.0   SPACE MANAGEMENT MEASUREMENT

In discussing space management measurement, it can be segmented into two types of measure as follows:- 1) Users perceptions, and 2) Physical performance. Most scholars has discussed the space management performance measurement from the users perception perspective, and the idea surrounding from this perspective concerns on the users comfort, response towards space requirement, ventilation and human interaction (Leaman, 1993; Parasuraman, 1990; and Barret, 1995).

Studies on the physical performance are mostly related to the higher learning institutions. Ahmadfauzi (2000) conducted research on Malaysian universities and found that traditionally the expenses of higher learning institutions are the government's expenses. Therefore, this will create a norm complacent situation whereby the institution is weak in terms of adopting changes and no space within the universities is supposedly for free use. There are also comments on the lack of spaces for learning within the universities in Malaysia.

However, studies by Warner and Leonard (1992) explained that most higher learning institutions do not implement optimisations of the physical resources in certain time, such as low teaching usage during peak hours, vacancy during evening, night, weekends and semester holidays. These physical resources can be manipulated to be used by external users by letting the premises for research purposes or teaching and learning to outside organisations.

Data management system is one of the tools suggested by previous studies is to manage the space within the organisations. Study by Massachusetts Institute of Technology in 1960s has developed 'Institutional Space Inventory techniques' (INSITE). Like most current databases, inventory information can be found easily by the users. Data related to spaces, their users, space classifications, space identifications, numbers of users and space information can be developed. Another study in United Kingdom (PCFC, 1992) entitled 'Capital Funding and Estate Management in Higher Education' reports on space usage and management and provides suggestion to the higher leaning institutions on the effective way of space management. Based on the above examples, it is clear that even international university and organisation accept the importance of space management. Thus, space management can be adopted as one of the tools to improve organisation standards and moving to the world class.

Apart from space optimisation, space management is important to reduce cost of building maintenance. In simple words, maintenance cost increased as the usage of spaces increased. Lawrence (1989) and Williams (1994) claimed that space is the catalyst for other type of costs such as cost of cleaning, men power and reinstatement needed. Effective management is essential to overcome this. Space management is also important in helping other external organisation such as the usage of laboratory for research and development and discussions. Good relationship between universities-industries can optimise the laboratory usage, as well as increases the level of cooperation.

Ahmadfauzi (2000) has conducted study on the 154 laboratories of 6 Malaysian higher learning institutions with the purpose to measure the level of space usage and the quality of the physical facilities based on the internal and external usage. The first segment of his study discussed on the user's perception on the physical facilities using the Standardised Users Satisfactory Survey. The second segment involved with the analysis of the physical usage based on the following formulas:

Formula 1: Level of Usage per Week

Percentage of weekly usage = $\dfrac{\text{Weekly hours usage}}{\text{Hours time weekly (40 hours)}}$

Source: Ahmadfauzi (2000)

Formula 2: Level of Usage Annually

Percentage of annual usage = $\dfrac{\text{Annual hours usage}}{\text{Hours time annually (40 hours X 52 weeks} = 1{,}680 \text{ hours)}}$

Source: Ahmadfauzi (2000)

These formulas were the improvement and adaptation from the Newcastle University Space Management Project (2001), NAO (1996) and Rawlison (1988). The formulas will be used in determining the level of space usage is the Malaysian case study.

6.0 MALAYSIAN CASE STUDY: THE METHODOLOGY

This paper is based on two approaches, mainly qualitative (content analysis) and quantitative (analysis of space usage). The content analysis is to gather depth understanding of space management definition, the concept, the needs, the objectives, the methodology and the measurement involved. This is to set the parameters of this paper. The analysis of space usage is based on the formulas adopted by Ahmadfauzi (2000) which has been discussed earlier in item 5.0 based on the weekly and annual usage of space.

The data for the Malaysian case study is based on one of the leading Malaysian government institutions in training, research and education. The institution was managed by an in-house team, and the team is lead by a property manager with sufficient property management background. The data is from the learning environment only. It is a secondary data on the information of space usage for 3 year period from 2007 to 2009 supplied by the property management department. Descriptive analysis was conducted on the data to answer the question whether the optimisation was used in the institution space management. The analysis findings will develop the outcome of this paper and provide the suggestion for further perusal.

7.0   ANALYSIS AND FINDINGS

Based on the data supplied and by using the formulas from Ahmadfauzi (2000), the analysis of the space usage of the case study are as Table 3.0 below:

Table 3.0 Analysis of Space Usage from 2006-2009

Nos.	Facilities/Space	2007		2008		2009	
		Usage Days Annually	Percentage of Usage Annually	Usage Days Annually	Percentage of Usage Annually	Usage Days Annually	Percentage of Usage Annually
1	Hall 1	38	18%	163	77%	115	55%
2	Hall 2	165	78%	92	44%	77	37%
3	Hall 3	107	51%	65	31%	111	53%
4	Hall 4	36	17%	41	19%	19	9%
5	Hall 5	23	11%	65	31%	56	27%
6	Lecture Room 1	41	20%	134	64%	111	53%
7	Lecture Room 2	41	20%	30	14%	113	54%
8	Lecture Room 3	79	37%	112	53%	87	41%
9	Lecture Room 4	32	15%	29	14%	69	33%
10	Lecture Room 5	31	15%	66	31%	65	31%
11	Computer Room 1	Unknown	Unknown	7	3%	13	6%
12	Computer Room 2	Unknown	Unknown	19	9%	14	6%
13	Computer Room 3	Unknown	Unknown	12	5%	17	8%

Source: Author (2011)

Based on the data provided, it is found that the first formula for weekly usage analysis that is implemented by Ahmadfauzi (2000) is not applicable since the data can only capture the annual usage and not the daily or weekly usage. The analysis found that the highest usage rate of space was recorded by Hall 2 with 78% in 2007 with number of days is 165 whilst the lowest usage rate is Computer Room 1 (3% and only 7 days) in 2008. The entire computer room (Computer Room 1, 2 and 3) share the lowest yearly usage during the period of study compared to other type of spaces with only 3% to 9% yearly usage. In 2007, the most used space is Hall 2 (78%), followed by Hall 3 (51%).

Ahmadfauzi (2000) has indicated that the acceptable usage rate is a minimum of 50% annually. Based on this understanding, only Hall 2 and Hall 3 have achieved this target and 11 other spaces do not exceed the minimum 50% rate. It can be concluded that the level of space usage is very low for the year 2007 based on the recorded information provided. In 2008, there are increased number of spaces usage that exceeded 50% that is Hall 1, Lecture Room 1 and Lecture Room 3. However, the trend of Hall 2 and Hall 3 shown decreasing usage rate compared to 2007 figure. Apart from that, there are no other spaces that exceed 50% minimum usage to show the optimisation usage achieved. Further inquiries with the property management department of the institute indicate that the figure is based on what have been recorded manually in the registration book, and there is possibility for unrecorded usage.

However, the trend of space usage in 2009 shows an increasing trend in which the usage of Hall 1, Hall 3, Lecture Room 1 and Lecture Room 2 indicates figure more than 50% minimum acceptable usage compared to the last 2 previous years. There is also a fluctuation trends for Hall 1. There is a drastic increased from 18% in 2007 to 77% in 2008, and decreased to 55% usage in 2009. Hall 2 shows decreasing trends as the number of usage days are 155 in 2007, reduced to 92 days in 2008 and only 77 days in 2009. Lecture Room 1 and Lecture Room 3 enjoy a better annual usage compared to other spaces. This has been shown through the number of usage days that surpassed 100 days.

Overall, there are no spaces or facilities within the samples data that exceed 80% which is recognised internationally as the optimised usage of spaces. Critically, the usage of spaces for the institution is very low, and the most critical area is the computer rooms that has not reached acceptable usage rate during the period of studies. Further investigation revealed that the void element is high due to the fact that the spaces belong to the government, not generating revenues and was used solely for specific type of training or teaching. The management should implement immediate changes to optimise the space usage.

The findings of this paper will be forwarded to the respective stakeholders for their attention. The suggestions includes a) the use or database information system for registration, monitoring and data information for space management purposes, b) training the property management staffs to use the database management information system, c) increased the level of usage by conducting marketing to other government's department and d) provide information about the facilities that can be shared with external users.

8.0   Conclusion

Space management have not been considered as an important agenda while conducting asset management. The issue has been internationally recognised as one of the factors contributes to the organisations standards improvements. With limited building spaces, the needs for a better space management system is essential to cater for the needs of customer, as well as to optimise the usage of the property. Space usage should be an indicator to measure the level of space usage by the owners and the stakeholders. The database information system is the best tool to register, monitor and capture all the spaces and users information for future use. The implementation of space management practices will reduce the overall cost in long run. This paper has highlighted several deficiencies in the way spaces are being used and managed. The implementation of space management measurement on the government's asset in Malaysia should be conducted as to improve the assets usage and for the monitoring tool by the stakeholders.

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