

A Comparative Study on Elements of Space Management in Facilities Management at Higher Education Institutions

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¹Abstract. There are many definitions given to describe facilities management, which each group and individual try to interpret means of facilities to their own understanding and professionalism. According to IFMA, facility management is a profession that includes the integration of activities from multiple disciplines to ensure functionality of the environment by integrating people, place, process and technology. One of the important key in facility management is the space management. Studies on the space management are essential because the expenses associated with the space are the second highest cost after staff salary in higher education institutions. This study focuses on the importance of space management within the meaning and understanding of facilities management, and recommends the best methods for space management to the higher education institutions. The purpose of this study was to identify the importance of space management in facility management, that underestimated by most people. The mechanism used to analyze the definition of facilities management from year 1990 until 2005. From the analysis of the facility management definition, space management aspects to be highlight as one of the essential aspects in the facilities management that should be given as a priority. However, awareness among people regarding to vital of space management are less. Waste of space is still applicable in any organization especially in higher education institutions. To overcome this problem, the space charging model should be considered as a one of space management tools. Noted that the space management for institute of higher education are very critical and therefore, space and facilities management have to be the main agenda and need to be managed efficiently.

Keywords: Space management, facilities management, higher education institutions, space wastage.

1. Introduction

British Institute of Facilities Management (BIFM) explains that facilities management is the integration processes between the organizations to maintain and develop the agreed services which support and increase efficiency is the main agendas. Facilities management is a multi-disciplinary activity in developing and managing the environment that affect the people and places of work. Facilities management is a new field that has a potential growth in Malaysia [1]. The field is important in ensuring the success of any organization whether profit oriented or not. Through this field, second source of organisation, facilities management can better manage, production and quality will be achieve with workers, users and organisation's customer. This will help the organisation to achieve their objectives. To achieve the objectives of the organization, the space must be managed effectively [2]. Space management are very important for all organisations especially for higher education institutions.

Efficient and effective space usage will be control an expenditure cost and level of productivity [3]. According [3] to their study, space management in higher education institutions is more critical compare to

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other institutions. In the 1980s, investment on the physical resources in higher education institutions in USA worth USD 300 billion. For 1987-88 the annual session of the maintenance costs and annual operating costs estimated to exceed USD 8 billions [4]. Similarly to public organizations such as in higher education institutions where Marsh and Griffith [5] states the cost of academic space for a student is about USD 2,000.00 per year. The information shows the cost similarly from the cost of space per employee in the corporate organization [6]. Waste of space will occur if the uses of space not manage systematically. Space management is considered important not only in terms of optimization but also the maintenance operations cost. Space management is very important not only for the optimisation but also related to maintenance cost of the respective property. Operation cost and maintenance cost will be higher if more space were used. As stated in Lawrence [7] and Williams [8] statements, the space is the catalyst for the cost of other operation.

2. Related Work

2.1. Facilities Management Concept

Facilities management include a multi-disciplinary activities in developing and managing the environment that affect the people and places of work. According to Bernard William Associate [9], facilities management is a process where an organization provides and maintains services in a great quality environment by using the appropriate cost to meet the needs of the organization. It means the costs incurred in the organization need to be adjusted to actual needs. According to IFMA [10], facilities management is a profession that includes the integration of activities of different disciplines to ensure functionality of the environment with the integration of people, places, processes and technology. However, such criticism is given by Lindholm [11] definition and scope of Facilities Management to date still remains debatable and it depends on local culture, the importance of organizational and personal interests. Although controversy has arisen because many different of definitions given but it is seen to be complementary and provide diversification to the characteristics of the discipline itself. In this case the definition is recognized internationally should be adopted. The table below shows the definitions of facility management since years 1990 to 2005.

Table 1: Definition of facilities management by years

Researcher	Definition of Facilities Management (FM)
Becker (1990)	FM role is to coordinate all efforts related to planning, designing and managing the building and all services inside, including equipment and furniture to enhance organizational capabilities to compete successfully in a world rapidly changing.
Nourse (1990)	FM units are often neglected strategic planning and to emphasize the important factor.
Cotts (1992)	Practical FM is coordinating the physical work space with human capital development and the profession itself in an organization to integrate principles of business management, architectural, behavioral and engineering sciences.
Park (1994)	FM is the structuring of plant building and its contents to create the final product. It includes the systems and activities that generate profits for business.
Barnett (1995)	FM as a strategically integrated approach to maintaining, improving and adapting the buildings and supporting services of an organization in order to create an environment that strongly supports the primary objectives of that organization.
Alexander (1996)	FM is the process by which an organization ensures that its buildings, systems, and services support core operations and processes as well as contribute to achieving its strategic objectives in changing conditions.
Then (1999)	Practical FM is concerned with the delivery of enabling to work environment and space to function optimally to support business processes and human capital development.
Grimshaw (1999)	The core of facilities management relates to managing the changes that are taking place in the relationship between organizations, their employees and their facilities, all of which are being fundamentally altered by external forces.
Hinks and McNay (1999)	FM is a maintenance management, space management, standards of accommodation, management of new construction and renovation projects, management of building stocks in general, and administrative support services.
Grimshaw and Cairns (2000)	Radical movement in demand side organizational structures were bringing about fundamental change in the relationship between business and their supporting infrastructure that, if facilities management were to generate an ability to enhance business performance via the effective application of infrastructure resources.
Varcoe (2000)	FM is a focus on the management and delivery of the full two entities (real estate and construction industry) that the use of productive building assets and working place.
Nutt (2000)	The basic functions of FM are resource management at the strategic level and operational support. The generic resource management of the FM function as a management of financial resources, physical resources, human capital development, and knowledge information resources.
IFMA (2003)	FM is the practice of physical coordination of work between human capital development and profession in the organization. It integrates principles of business administration, architectural, behavioral and engineering sciences.
IFMA (2003)	FM goal is to create, maintain and develop real estate and support services for the strategic and core business of the organization.
BIFM (2003)	As a practical coordinate physical work place between workers and profession in an organization.
Nordic (2003)	FM is seen as an integrated approach to operations, maintenance, improve and adapt buildings and infrastructure of an organization to aim and creating a strong supportive environment with basic objectives of an organization.
Norsila (2004)	FM is a multidisciplinary services that enable the core processes work well, smoothly and meet the business needs of an organization. Facility management to focus on the achievement of organizational goals and objectives to meet customer needs strives to continue the improvement in the quality, reduce risk and ensure profitability.
IFMA (2005)	FM is a profession that includes the integration of activities of different disciplines to ensure functionality of the environment with the integration of people, places, processes and technology.

(Source: Adapted from Wan Zahari, 2008)

2.2. Space Management Concept

For big organizations such as higher education industry, space management plays an important role to control space effectively without wasting space. This is to prevent indirectly resulting in an adverse impact on the cost of that organization. The space management is a proactive management of the research and best practice initiatives to support the strategic planning goals and also respond to legal requirements [12]. Space management include alternative officing, free addressing, group addressing, virtual office, space sharing and management. National Audit Office [3] states that there are four factors of the effectiveness of the space management are a leader, objectives, information, communication and practical tools. According Archibus [13], space management is to manage space effectively to reduce the cost of wasted space and optimize use of space. The efficiency of space management can return the benefit as increased occupancy of space and reduce costs, ensure proper information for space planning and can be used with existing facilities and infrastructure data.

2.3. Space Management Concept in Facilities Management

Space management is one of important aspect in facility management. According to the Space Management Project (2006), there are some constraints in the effective management of space. Among these constraints are a targets or objective which difficult to quantified. This is because the relationship between space management and academic planning and financial is a separate and inconsistent. For the effectiveness of space management, organizations need to connect the whole resources. The second constraint is the lack of data, such as room capacity, functionality, user space, and other uses. Lack of data made it difficult for individual institutions and other sectors to see the effects of space management practices on aspects of space use, the third is the different norm and indicator in each institution, the fourth data collected from utilization survey does not apply to the space management policy and the fifth is the relationship between guidelines and space management area is a separate and users are not involved in the policy of space management.

3. Analysis

Table 2: Element of space management in facilities management

No	Element of Space Management in Facilities Management	Researchers
1.	Coordinate all efforts related to planning, designing and managing the building and all services inside, including equipment and furniture to enhance organizational capabilities to compete successfully in a world rapidly changing.	Becker (1990)
2.	Coordinating the physical work space with human capital development and the profession itself in an organization.	Cotts (1992), Nutt (2000), IFMA (2003), BIFM (2003).
3.	Structuring of plant buildings and contents.	Park (1994).
4.	An integrated approach to operations, maintenance, improves and adapts the buildings and infrastructure in an organization.	Barret (1995), Hinks and Mcnay (1999), IFMA (2003), Nordic (2003).
5.	Delivery of enabling to work environment and space to function optimally to support business processes and human capital development.	Then (1999)
6.	Focus on the management and delivery of the full two entities (real estate and construction industry) that the use of productive building assets and working place .	Varcoe (2000)
7.	Profession that includes the integration of activities of different disciplines to ensure functionality of the environment with the integration of people, places , processes and technology.	IFMA (2005)

The table 2 above showed an analysis of the importance of space management in facility management. Based on this analysis the most common elements specified in the facility management with respect to the space management, where the definition of facility management is the coordination of the physical work space with human capital development and the work itself in an organization. There are four parties that give a same opinion about the definition of facilities management are Cotts, Nuts, IFMA and BIFM. In addition, the definition of facilities management is an integrated approach to operations, maintenance, improve and adapt the buildings and infrastructure in an organization is the most frequently used elements by Barrett, Hinks and Mcnay, IFMA and the Nordic. However, the definition of facility management show that space management is an important component in facility management because since year 1990 until 2005, components of space always available in each definition of facilities management, except definition by Grimshaw (1999), Grimshaw and Cairns (2000) and also Norsila (2004). Although the space management is important in the facilities management, but there are still many people not concern on space management. But until now, most of the administrative institutions of higher learning and public sector organizations, particularly from other Asian countries have yet to understand the role and contribution of these physical resources to their organizations. Physical resources are valuable assets and an organization can generate revenue if it is managed effectively [14]. Similarly, the implementation of space management in higher education institutions is very weak. Lack of management execution has indirectly resulted in wastage of space occurs. Wasted space that could happen can increase the cost of maintenance and operations. Space wastage happened in all higher educational institutions including University Tun Hussein Onn Malaysia (UTHM). In average, monthly electricity cost for UTHM is RM700, 000.00 or RM8.5 million a year. According to a case study in Universiti Teknologi Malaysia (UTM) Skudai, buildings operational cost accounted for a staggering RM56 million a year for the whole of UTM. [14]. Presently, there are now more than 20 public institutions of higher learning (universities, colleges universities, polytechnics) in Malaysia, with an estimated annual operating expenditure incurred by the Ministry of Higher Education reaching RM1 billion. The amount incurred very costly for institutions, especially for institutions that are developing such as UTHM and others institutions. Therefore no space in the university and other organisation should be treated as free. To overcome this problem, the Space Charging Model should be considered as a one of space management tools. Space Charging Model is a method in which the costs will be imposed on the space in a building that is not fully utilized. Some institutions believe that effective methods of space charging can minimize the demand for the use of space and can be used in the best way without a valid waste [15]. Cock and French identified two charges based on operational asset and financial asset [16]. Many institutions believe that the effectiveness of a Space Charging Model can minimise the requirement of space usage and many spaces will be fully utilised without any wastage [14]. Many facilities experts say that this method is the best management tool. This method was supported by NAO and has been certified as the best method in 1996 [3]. The Space Charging Model requires an appropriate element in creating an effective space management tool.

4. Conclusion

In conclusion, space management is one of essential component in facility management. Physical resources are a valuable asset and an organization can generate revenue if managed effectively. However we must realized that institutions of higher education such as universities, polytechnics and colleges are the main source of economic activity. If the physical resource is not managed properly, efficiently and effectively, it will create problems and added expense to continue and meet the organization's mission and objectives of the organization. Space charging model is necessarily the most effective method of overcoming the problem of wasted space. Therefore, in view of the use of learning space is not used optimally, the higher education will increase efforts so that these facilities can take advantage of various parties including the organisation itself and the country.

5. Research Significant

This research is conducted in the interest of various parties such as the facility manager of higher education to help overcome the problem of space waste management. In addition, it can be of interest to the student as a guide and reference material related to this model to solve the space problem.

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