

CONFERENCE PROCEEDING ICITSBE 2012

1st INTERNATIONAL CONFERENCE ON INNOVATION AND TECHNOLOGY FOR SUSTAINABLE BUILT ENVIRONMENT

16 -17 April 2012

Organized by: Office of Research and Industrial Community And Alumni Networking Universiti Teknologi MARA (Perak) Malaysia www.perak.uitm.edu.my

PAPER CODE: FM 31

WORKSPACE MANAGEMENT IN CORPORATE REAL ESTATE OF FINANCIAL INSTITUTION OFFICE PREMISES AND ITS CORRELATION WITH PERFORMANCE

Nurul Sahida Fauzi^{1a}, Abdul Hadi Nawawi^{1b}and Yuhadi Sanuddin²

¹Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA (Perak), Malaysia ^anurul839@perak.uitm.edu, ^b myabdul274@salam.uitm.edu.my ²Valuation and Property Services Department, Ministry of Finance Malaysia vuhadi@jpph.gov.my

Abstract

Workspace management is an important element in Corporate Real Estate Management (CREM). It involves the process of strategic planning, managing and evaluating. Poor workspace management planning will affect the performance of the organization. However, studies on workspace management affecting financial institution office premises in the Malaysian banking industries have yet to be widely carried out in Malaysia. Furthermore, as financial institutions are unique and have their own characteristics, it is essential to create CREM for all financial institutions. The aim of this research described in this paper is to find the relationship between workspace management and performance. The research was based on interviews and survey on all CRE managers in financial institution office premises in Klang Valley area. The objectives of this study are (1) to analyse the most important factors in successful workspace management and (2) to investigate the correlation between the factors considered in workspace management and the performance of the financial institution office premises. Thirty five variables involving five factors, which are physical factors, non-physical factors, collaboration factors, work process factors, and health and safety factors. Computer screen (mean=4.62) is the most important variable in designing workspace in the office premises followed by the highest four among the ranking, which are mostly from physical factors and non-physical factors. The results show desktop layout (mean=4.57), keyboard placement (mean=4.52), cleanliness (mean=4.52), chairs (mean=4.48) and tables (mean=4.48). The results from the analysis show, office equipment such as chairs, tables, keyboard placement, computer screen placement, desk top layout, cleanliness, light control, workstation layout provide privacy, adequate meeting rooms, appropriate discussion rooms, and the work station layout suitable for employees work process are the most important factors that should be taken into consideration when designing workspace in the office premises and giving a big impact towards performance. All these variables are from four important factors which are physical factors, non-physical factors, collaboration factors and work process factors. However, health and safety factors show low importance in designing workspace management and influencing performance in financial institution office premises.

Keywords : Corporate Real Estate Management, Correlation, Performance, Workspace Management.

1. Introduction

Workspace management is also known as workspace planning has been used in particular connection with Corporate Real Estate (CRE). Workspace management is the planning of working environment or working condition. Where, it can be defined as the surrounding of an employee in a certain work area (Spreckelmayer,1993) and is divided into two categories which is physical and non-physical. Physical work environment is characterized as open office environments and traditional or closed office environments (Carlopio and Gardner,1992). While non-physical working environment includes privacy, noise, lighting, temperature and conversation. (Katzer, 1992). According to Lambert et al. (1995), Kaiser (1989), Eley and Marmot (1995) workspace planning is a method or tools of getting the most from the building that meets the organizational needs and the need of the building users or also known as an efficiency of workspace in the office building where the efficiency include productivity or performance and also cost reduction from the workspace provide. Performance measurement is an ongoing process of ascertaining how well, or how poorly, a planning is

being provided. It involves the continuous collection of data on progress made towards achieving the planning's pre-established objectives.

2. Problem Statement

Banking industry is important to the Malaysian economy where financial services constituting more than 30% of GDP for the service sector. To preserve its contribution to the economy, it is important to find out the best strategies that can be fixed and use in the financial institution through the workspace management in order to create a comfortable and healthy working environment to increase the performance of the organisation as well as the financial institution itself.

Furthermore, the globalization of business operations and other competitive pressure are forcing corporations to re-evaluate their real estate needs. The demand for more efficient utilization of space and higher workspace productivity has led to business adopting a range of strategies for managing their workspace. The emergence of corporate real estate management (CREM) as a distinct discipline has supported this drive and the search for strategies aimed at enhancing the value of real estate assets to the core business. Yet, the relationship between core and non-core business, in the context of real estate management is not well understood. The field lacks research that develops theoretical models of the relationship between corporate strategic management system and real estate decision and operations. The field also lacks empirical testing using well-defined models to quantify the value that real estate adds to the firm. In Malaysia the Corporate Real Estate is preoccupied with the day to day operation of managing a portfolio. Similarly to the facilities management literature that has tended to focus on maximizing the value obtained from the specific use of facilities, rather than adopting a strategic perspective on property occupation overall. Furthermore, most of the research has highlighted the CRE in the retail sectors and public sectors. However, there is an absence of CRE in the financial sectors.

Nevertheless, it was found from Malaysian Productivity Centre, the studies on the workspace management affect the financial institutions office premises in the Malaysian banking industry have yet to be widely carried out in Malaysia. Furthermore, as the financial institution are unique and have their own characteristics it is essential to create benchmarks for all financial institution. Therefore, this paper tries to propose a strategy on workspace management by identify the most significant factors on workspace management that influences the performance of the institution that soon, increase the performance of the institution as well as performance of the financial services. In addition, the findings from the study soon can assist the financial institution to evaluate their key strengths and capabilities.

Therefore, the purpose of this research is to identify the main factors that influence the performance as well as productivity through workspace management in their environment focusing in the financial office premises and followed by the analysis to identify the strengths and weaknesses as well as relationship between the workspace management and the performance measurement to create the suitable workspace design and strategies for all financial institution in Malaysia and maybe to other countries as well. This is due to until nowadays, they are no standard for the workspace planning and design not only to the financial institution office premises but also to other various types of offices.

3. Literature Review

Corporate Real Estate (CRE) refers to the land and buildings owned by companies not primarily in the real estate business (Liow, Ingrid, 2008). The term of CRE applies to properties that are either owned or leased by firms to achieve corporate objectives (Brown And Arnold, 1993). The objective of the CRE is to enhance the value and minimise risks.

The globalization of real estate markets has promoted growth in corporate real estate (CRE) research. Businesses have become increasingly aware of the importance of CRE structure and strategy on business corporations (Rutherford and Nourse, 1988; Rutherford and Stone, 1989; Nourse and Roulac, 1993; and Roulac, 2001) and the importance role of property in corporate activity. Many organizations continue to overlook the importance of property in their activity. (Gale and Case, 1989; Pitman and Parker, 1989; Veale, 1989; Edwards, 1991; Teoh, 1993).

Workspace is defined as an area within the organization that can be arranged to achieve a particular goal. Different organizational goals require different arrangements of the workspace. Peters and O'Conner (1980) named the physical aspects of the work environment as one of the critical situational factors that need to be considered to produce effective human performance. Duffy (1997) argues that workspace must be arranged based on two organizational variables which are autonomy and interaction. Autonomy is the degree of control, responsibility, and discretion that the organizational member has over the method, location, and content of the work process. The more autonomy the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work, the more discretion the organizational member has over the work process.

The definition "workspace management or also known as workspace planning" has been used in particular in connection with Corporate Real Estate (CRE). Workspace management is a continually updated resource allocation in relation to the working environment, its users and the organization's strategy (Horgen et al. 1999). In workspace management the production of spatial resources is integrated into the core business operations. The concept of the workspace as a functional environment contrasts with the idea of the building as just a structure. (Joroff 2001).

A spatial investment in an operation competes for the same recourses as the other investments in the operations (Pennanen, 1999). In general business administration workspaces tend to be seen as one of the components of production that will influence the performance of the business and organisation if it strategically or well manage and planning. Workspaces are treated as functions of the ongoing operational process. In the modern world the organization as a whole is often challenged to rethink its central mission, its assumptions and strategies, so the workspaces within which the organization operates and the manner in which those workspaces are created and used are equally subject to challenge in the business. The current situation can continuously be reviewed (Horgen et al., 1999). Drivers of change are new business strategies necessitated by the changing business environment. The most important contributions of workspace management to business objectives are access to qualified workforce, workspace efficiency and productivity and cost reduction (Lambert et al., 1995). Workspace planning can also be studied through production theories, which leads to the same goal. Production theories aim to improve the production process as well as the productivity and the value of the product to the customer (Koskela 2000).

The creation of an effective workspace requires collaboration between stakeholders with different interests, freedoms and powers. (Horgen et al. 1999). The basic premise is for workspace management to have an interactive effect on business strategy (Joroff, 2001). This perspective on workspace planning is understandable since a workspace affects productivity, whilst the working environment represents a large share of the use of resources. Space expenses (investment plus maintenance costs) vary from 5 to 30 % of all expenses of organizations (among offices) (Kuntien, 1997). Indeed, workspaces are a significant investment in an organization's strategy to increase the performance of the businesses.

Over the years, the importance of workspace management has been discussed by various scholars in the Science and Technology research community. For instance, Kanter summarizes an organization's attempts to foster face-to-face communications through physical arrangements as follows:

"One manager had a 'real' office enclosed by chest-high panels with opaque glass, but people dropped by casually, hung over the walls, talked about anything, and looked over his desk when he was not there. In general, people walk around freely and talk to each other, meetings and other work are easily interrupted, and it is hard to define 'private' space (Kanter, 1988)."

This shows that this kind of arrangement are no privacy and imposed the a big distraction problems for all of the staff when doing their job and this will give a negative impact to the staff attitude towards their job and soon will affect the work produce as well as productivity as individually and also organization performance. Workspace planning or workspace management is a method of getting the most from the building that meets the organisational needs and the needs of building users. Eley and Marmot (1995) put workspace management in terms of "space efficiency". They state:

Space efficiency involves choosing well designed space and making good use of it, not squeezing people into space that is too small. Space efficiency is about how well a building is suited to office use, both for the occupants and for the working patterns of a particular organisation (Eley and Marmot, 1995, p. 34).

This means, workspace management does not aim to squeeze as many people into a building as possible but it is about ensuring people have efficient space to do their job. On the other hand, Alexander (1997) found that the office has become less important in the organisation as people do not travel to work as much and there is more temporary and mobile staff. People have the option of working from home where working on the train between meetings or any location as long as they are connected to the office. "The old certainty of location is effectively replaced by the new certainty, where, your office at where you are" (Eley and Marmot, 1995). This form of workspace management is known as "telecommuting", "smart" or "flexible" workspace trend. In a flexible working office, workspace is empty at certain times and busy at other times. However, the problems in workspace planning for the office building nowadays are how workspace can be used efficiently.

According to Bjerrum and Bodker (2002), the new workspace management consists of shared open spaces for interaction and communication, shared offices for confidentiality and concentration, project rooms for teamwork, cafe' areas for informal meetings, external and internal meeting rooms and modular furniture as well

as wireless local area networks. Workspace management is provided for activities rather than individuals and workspace management are reflecting function rather than status (Bjerrum and Bodker, 2002).

A recent report by Helen Hamlyn Centre called "workspace planning" (Myerson, 2008) highlighted the need to prepare for the changing demographics in offices where it is likely that older age groups will dominate and people may continue working beyond the current retirement age (Myerson, 2008). How workers want to work is often individual and can be associated by their age. The report suggests that younger workers thrive in a more collaborative environment while older generations favour more privacy (Myerson, 2008). Myerson (2008) suggested is essential in workspace management to creating workspaces for different ways of working specifically workspaces to concentrate, workspaces to collaborate and workspaces to contemplate (Myerson, 2008).

According to McGregor (2000), workspace management is the adaptation of workspace layouts that all need to be achieved much more readily than in the past. The use of technologies like radio frequency identification (RFID) could assist in managing workspace to be more proactively than in the past. This particular solution will provide a continuous flow of data that will enable the corporate real estate managers to make decisions on workspace to meet the needs of building users as well as feed into the objective of creating conducive workspaces.

Workspace planning for new work patterns, particularly for knowledge-based organizations has been the concern of a number of designers and design researchers especially in 1990s. This work differs from more conventional office planning work and its explicit focus on maximizing productivity in a linear, clerical-based line of work (Duffy, 1997). Several of these authors claim that new work patterns need workspaces that do not conform to conventional workspace planning approaches such as cellular offices or open-plan offices with cubicles (Becker and Steele, 1995). It was found that, the importance of information for knowledge-based organizations and proposed that workspaces will support productivity in such organizations by simultaneously promoting interactive work and autonomous work. This line of work on knowledge-based organizations workspace management emphasizes the provision of a combination of work settings for the needs of different tasks that may be undertaken within the knowledge-based organization such as informal, ad hoc spaces to promote social interaction, information exchange and idea generation, private spaces to be used for concentrated work, and formal meeting spaces for discussions (Duffy, 1997 and Laing et al., 1998). In spite of this continuing interest, there is surprisingly little empirical research available to guide the design of these new work environments.

Workspace standardization, space allocation and utilisation, as well as space accounting, are workspace planning or workspace management variables (Kaiser, 1989). Hours of work inside and outside the office, unoccupied desks, probability of staff opting to work outside the office, space efficiency and space adjustment frequency, are also workspace management variables. Though desk and job sharing may be management control measures, they can also be workspace management actions. "An important parameter to determine the effectiveness of workspace management is the extent to which the implementation of each organisational goal and objective is planned and the success of planning actions are measured by the extent to which they maintain or achieve specific quality, schedules and specifications and costs" (Kaiser, 1989). Consequently, workspace management effectiveness, productivity and job satisfaction are considered appropriate to be examined. Job satisfaction can be traced to quality schedules.

To add value through the workspace management, the focus should be on achieving effectiveness, not efficiency (Earl and Feeny, 1994). Cost and efficiency objectives of workspace management were criticized on the basis of the resultant reduction in flexibility, productivity, creativity and higher personnel costs (Lack and Kleiner, 1993). Cost cutting will not make organisations more competitive it comes from using organisations' available resources such as time, people, space, money, information and technology, to their fullest potential (Becker, 1993). Higher productivity can therefore be said to be the result of greater effectiveness.

It was found that, various definition were constructed as Peters and O'conner (1980), Horgen et al. (1999), Joroff (2001), Pennanen (1999), Kuntien (1997), Duffy (1997) and Laing et al. (1998), Kaiser (1989) and Bjerrum and Bodker (2002) define workspace planning as one of the resources in business strategy that is very significant to strategically allocate to have an interactive effect on business strategy and smooth the operation in the organisation due to the workspace is believe as a supporting and stimulus medium to productivity in order to achieve a particular goal in the organisation.

However, Peters and O'Conner (1980), Sutton and Rafaeli (1987), (Becker & Kelley (2004), Preiser and Vischer (2005), Kanter (1988), Myerson (2008), McGregor (2000), Duffy, 1997 and Laing et al. (1998) define workspace planning as a physical and non-physical arrangement of characteristics on workspace or working environments by diversifying the workspace to the various way and layout depending on the ways of working in that office building. In the easy word, they have emphasize the provision of a combination of work settings for the needs of different tasks that may be undertaken in the organisation or office building.

According to Lambert et al. (1995), Kaiser (1989), Eley and Marmot (1995) workspace planning is a method or tools of getting the most from the building that meets the organisational needs and the need of the

building users or also known as an efficiency of workspace in the office building. The efficiency include the workforce in the workspace, productivity and cost reduction from the workspace provide. However, Earl and Feeny (1994) argue the workspace planning to provide the efficiency workspace. It is because the workspace planning should be focus to achieve the effectiveness of the workspace as well as the organisation or the building not the efficiency. Fischer (1997) and Peters (1992) comprehended the workspace management as a vector of social interactions where the workspace planning is the most powerful tool for inducing culture change, speeding up innovation projects, and enhancing the learning process in far-flung organisations. Thus, it was found that, workspace planning can be identifying as:

A physical and non-physical workspace arrangement in the building especially office building to create an efficiency and effectiveness of workspace environments to support the organization and business performance in terms of productivity, cost reduction and satisfaction of the occupants and employees today, tomorrow and in the future in order to achieve the particular of goals.

It shows, the meaning of the workspace management in the organization not only as an essential requirement to fulfill the needs to doing work activity but it comprises of A physical and non-physical workspace arrangement in the building especially office building to create an efficiency and effectiveness of workspace environments to support the organization and business performance in terms of productivity, cost reduction and satisfaction of the occupants and employees today, tomorrow and in the future in order to achieve the particular of goals.

4. Research Objectives

The objectives of this research are as follows:-

- a. To analyze the most important factors in managing the successful workspace management in the financial institution office premises.
- b. To investigate the relationship between the factors considered in workspace management and the performance in the financial institution office premises.

5. Scope of Study

The study examined of workspace management by five factors. There are (1) Physical Working Condition; (2) Non-physical Working Condition; (3) Collaboration and Privacy; (4) Working Process; (5) Health and Safety in the Office. Each factor comprises of variables as per the following:-

a.	Physical Working Condition:-	i) ii) iii) iv) v)	Chairs Tables Work Surface Height Keyboard Placement Computer Screen Placement
		vi)	Desktop Layout
1		x)	Cubicle Setting
b.	Non-physical working Condition:-	1)	I emperature
		11)	Humidity
		III)	Flesh All
		IV)	Vielan Control
		V)	Noise Control
		V1)	Class and Deflection Control
		X)	Glare and Reflection Control
	Callaboration and Drive ave	X1)	ventilation
C.	Conaboration and Privacy	1)	Layout Provide Collaboration
		11)	Layout Provide Privacy
		111) · · ·	A dequate meeting room
		1V)	Appropriate Discussion Room (Staff)
1	W 1' D	v)	Appropriate Discussion Room (Staff)
a.	Working Process:-	1)	Layout Suitable for Work Process
		11)	Layout Reduce Stress Pressure
e.	Health and Safety in the Office:-	1)	Physical Safe
		11)	Office Accidents

iii) Health

6. Survey Methodology

Census Method is used in this research where it is selected all the banks and financial institutions which are located in the Klang Valley area. This is due to the small numbers of existing nowadays. It is decided to limit the geographical area in the research due to the time constraints and most of the headquarters of banks and financial institutions are located at the selected area. However, the analysis done is based on the numbers of the feedback collected from the respondents.

Based on the five factors of workplace, a structured questionnaire was developed. In the structure interviews, questions are presented in the same order and with the same wording to all interviewees. For this study, the survey was conducted through a direct questionnaire. The research was based on a survey among CRE managers/ bank managers in financial institution office premises in Malaysia.

A questionnaire was developed to:-

- To identify most preferred factors in workspace management in the financial institution office premises
- To analyze the most important factors in managing the successful workspace management in the financial institution office premises

The questionnaires were divided into three parts. Part 1 consists of respondent particulars focusing on the particulars of each financial institution. Part 2 consists of five questions according to factors of workspace. Each factor consists of questions for the group of characteristic. Likert scale of 1 to 5, where 1 represent strongly disagree while 5 represent strongly agree. This scale allowed respondents to show the relative preference of each characteristic and also helped to identify the most prefer and importance factor.

7. **Results and Discussion**

The most important factors in managing the successful of the workspace management in the financial institutions office premise are analyze through three different methods of analysis such as frequencies analysis to look the most agree strongly factors that influence the performance measurement in the office premises. Secondly, is by using the mean analysis to find the higher mean score on the factors influence the workspace management in the office and lastly by using the correlation analysis. Results of the three analysis methods are shown in Table 1.

Methods of Analysis	_		Correlation Analysis	
Factors	Frequencies Analysis	Mean Analysis		
PHYSICAL WORKING CONDITION				
Physical Size	Agree Moderately	3.81		
Office Equipment				
Chairs	Agree Somewhat	4.48	Significant	
Tables	Agree Somewhat	4.48	Significant	
Work Surface Height	Agree Somewhat	4.33		
Keyboard Placement	Agree Somewhat	4.52	Significant	
Computer Screen Placement	Agree Somewhat	4.62	Significant	
Methods of Analysis Factors	Frequencies Analysis	Mean Analysis	Correlation Analysis	
Cubicle Layout	Agree Somewhat	4.29		
, ,				
NON- PHYSICAL CONDITION				
Temperature	Agree Somewhat	4.24		
Humidity	Agree Moderately	3.95		
Ventilation	Agree Moderately	3.90		
Fresh Air	Agree Somewhat	4.33		
Clean	Agree Somewhat	4.52	Significant	
Noise Control	Agree Somewhat	4.24		
Light Control	Agree Somewhat	3.92	Significant	
Glare Control	Agree Somewhat	4.10		
COLLABORATION AND PRIVACY				
Workstation layout Allows a good collaboration	Agree Somewhat	4.29		
Workstation layout	Agree Moderately	3.76	Significant	

Table 1: Smmary Analysis

provide privacy			
Adequate Meeting room	Agree Somewhat	4.00	Significant
Appropriate Discussion room (Staff)	Agree Somewhat	4.10	Significant
Appropriate Discussion room(Clients)	Agree Somewhat	4.38	Significant
WORKING PROCESS			
Work station layout	Agree Somewhat	4.14	Significant
Suitable for employees work process			
Work station layout	Agree Moderately	3.71	
Reduce stress and pressure			
HEALTH AND SAFETY IN THE			
<u>OFFICE</u>			
Physically Safe	Agree Somewhat	4.14	
Office Accidents	Disagree Strongly		
-Slips			
-Trips			
-Falls			
Health	Disagree Strongly		
-Sore Eye			
-Dry Skin			
-Dizziness			
-Nausea			
Health	Disagree Somewhat		
-Running Nose			
-Headache			

From the analysis that have been done, it can be summarized that, the factors that involved in designing workspace management in the financial institution office premises shows a different significance level. It is decided to present the difference significance level of all the variables in the form of ranking. Where, the first rank is the most significant variables. The results of mean analysis are shown in Graph 1 and the ranking are shown in Table 2.

Table 2: Ranking of Mean Analysis

RANKING	FACTORS	MEAN
1	Computer Screen	4.62
2	Desktop Layout	4.57
3	Keyboard Placement	4.52
4	Cleanliness	4.52
5	Chairs	4.48
6	Tables	4.48
7	Adequate Discussion Room for Clients	4.38
8	Work Surface Height	4.33
9	Fresh Air	4.33
10	Workstation Layout Allows Collaboration	4.29
11	Cubicle Layout	4.29
12	Noise Control	4.24
13	Temperature	4.24
14	Physical Safe	4.14
RANKING	FACTORS	MEAN
15	Layout Suitable for Work Process	4.14
16	Light Control (Routine Office Work)	4.10
17	Adequate Discussion Room for Staff	4.10
18	Glare and Reflection Control	4.10
19	Light Control (General Background)	4.05
20	Adequate Meeting Room	4.00
21	Humidity	3.95
22	Ventilation	3.90
23	Physical Size	3.81
24	Workstation Layout Provide Privacy	3.76
25	Layout Reduce Stress and Pressure	3.71
26	Light Control (Contrast)	3.62
27	SBS- Running Nose Syndrome	2.29
28	SBS- Headaches Syndrome	2.14
29	Office Accidents-Slips	1.90
30	Office Accidents-Trips	1.90
31	SBS- Dry Skin Syndrome	1.75
32	SBS- Sore Eye Syndrome	1.71

1st International Conference on Innovation and Technology for Sustainable Built Environment 2012 (ICITSBE 2012) 16-17April2012, Perak, MALAYSIA

33	SBS- Dizziness Syndrome	1.67
34	Office Accidents-Falls	1.57
35	SBS- Nausea Syndrome	1.52



8. Findings

From the correlation analysis that have been done in Table 1. The correlation between the physical condition factors with the performance of the financial institutions office premises in the Klang Valley area shows the significant to take into consideration on the *placement of the office equipment in the workspace* management such as keyboard placement, computer screen placement and desk top layout. This is because from the analysis it shows these variables will give a big impact and influence the performance of the organisation by increasing the *total output per year of each staff in the premise and at the same time reduce the numbers of the absenteeism in the organisation*. Furthermore, this analysis also shows, with an appropriately provide chairs and tables in the workspace will reduce the numbers of complaints by the employees. When exploring the relationship between the non-physical conditions factors with the performance of the institutions. They are several variables are strongly correlated. The factors are *strongly related to the performance are cleanliness, ventilations and the lights control in the office*. This shows when the office is *adequately clean, it will increase the numbers of output per year of each employees*. Other than that *all of those variable significantly affect the attitude of the employees whether towards their job, colleague and also towards the activity held in the office*.

Thus, these factors can be summarising as one of the really important factors to take into consideration when planning the workspace in the office premise. This is because, besides give a positive impact to the staff attitude, it also helps the organisation to reduce the numbers of modification in the office and also increase the numbers of the employees that willing to work over time. When look to the relationship between the collaboration factors with the performance of the institutions. They are several variables are strongly correlated to the performance of the financial institutions especially on the staff attitudes, total output provides and also on the numbers of modifications. This analysis shows, with the *increase in privacy of the workspace in the office premises are recorded will increase the numbers of output per year by each staff and increase attitude towards their jobs*. This is because, the staff can focus on their work without any distraction from the other staff. However *increase in privacy will increase the modification in the office premises*, this is due to the modification are normally will involve the major modification works.

Whilst for the increase in adequate provides of the discussion room will give a positive impact to the attitude of the staff towards the activity held in the office. This is because an increase in discussion rooms provide will increase the interaction between staff and this will encourage them to participate in the office programmes. Besides that, an increase in the discussion room for the clients shows a positive relationship with the performance of the organisation, where the increasing will cause an *increasing of employees' attitudes towards their job and at the same time will increase the output.* Where, the discussion between staff and clients can be easily been make within the office. By comparing the health and safety in the office premises with the performance of the institutions, only one variable shows a significant impact to the performance of the staff towards the activity held in the office. Where, an increasing of this symptoms with the attitude of the staff towards the activity held in the office. Where, an increasing of this symptom will reduce the numbers of

participation of the staff toward the activity held in the office. The dry skin syndrome, normally cause by the low temperature in the premise.

For the working process factors, *space per workstation shows a significant correlation with the staff attitude toward the activity held in the office and also staff attitude towards the colleague.* Where the analysis shows, increasing in space per workstation will decrease the attitude the staff towards the activity held in the office and colleague. It is because the bigger the workspace, the bigger the gap between other staff and, it will reduce numbers of interaction with other staff and indirectly will reduce the involvement in the office activity.

Variables	Staff Attitude on Job	Total Output	Numbers of Complaints	Increase of Absenteeism	Work Over Time	Staff Attitude on Activity	Staff Attitude on Colleague	Modification
Physical Size	0.120	-0.173	-0.161	0.086	0.016	0.164	0.014	0.000
Work surface Height	0.362	0.233	-0.262	0.000	0.145	-0.465	0.060	0.567**
Cubicle Layout	0.296	0.288	0.110	-0.050	0.405	0.422	0.335	0.198
Chairs	0.298	0.306	-0.438*	-0.088	0.180	0.390	0.000	0.365
Tables	0.298	0.306	-0.438*	-0.088	0.180	0.390	0.000	0.365
Keyboard Placement	0.431*	0.569**	-0.133	-0.348	0.337	0.541**	0.297	0.197
Computer Screen Placement	0.169	0.675**	-0.080	-0.515*	0.287	0.280	0.340	0.071
Desk Top Layout	0.268	0.742**	-0.920	-0.602**	0.349	0.383	0.441*	0.034
Ventilation	0.467*	0.075	-0.200	0.070	-0.159	0.495*	0.000	0.437*
Cleanliness	0.586**	0.457*	00 0.229 29	0.447	0.237	0.541**	0.417*	0.197
Light Control- GB	0.353	0.110	0.054	-0.057	0.597**	0.383	0.453*	0.007
Light Control- Row	0.417*	0.168	-0.014	-0.116	0.584**	0.439*	0.493*	0.031
Light Control- Contrast	0.380	0.217	0.020	-0.032	0.172	0.448*	0.152	0.525**
Privacy and Layout	0.423*	0.453*	-0.026	-0.032	0.468*	0.459*	0.148	0.255
Adequate Meeting Room	0.209	0.132	-0.119	0.048	0.405*	0.354	0.014	0.588**
Discussion Room for Staff	0.321	0.102	-0.181	0.089	0.395*	0.452*	0.044	0.363
Discussion Room for Clients	0.422*	0.454*	0.104	-0.387	0.494*	0.404	0.204	0.377
Physical Safe	0.107	0.061	-0.283	0.129	-0.190	0.273	0.102	0.173
Slips	-0.152	-0.296	0.033	-0.247	-0.041	-0.221	-0.170	0.262
Trips	-0.072	-0.160	0.000	-0.042	0.054	-0.162	-0.100	-0.083
Running Nose Syndrome	0.048	0.209	-0.144	-0.149	0.169	-0.046	-0.337	-0.058
Variables	Staff Attitude on Job	Total Output	Numbers of Complaints	Increase of Absenteeism	Work Over Time	Staff Attitude on Activity	Staff Attitude on Colleague	Modification
Headache Syndrome	-0.080	0.120	-0.186	-0.024	0.099	-0.146	-0.412	-0.033
Dry Skin Syndrome	-0.007	-0.097	-0.210	-0.135	0.050	-0.288	-0.335	0.015
Layout follows Employees Work Process	-0.24	-0.417	-0.071	-0.026	-0.32	-0.579**	-0.529*	-0.3036
Layout Reduce Stress and Pressure	-0.056	0.233	-0.086	0.078	-0.169	-0.176	-0.284	0.061

Table 3: Correlation Analysis Summary

** Correlation is significant at the 0.01 level (2-tailed) * Correlation is significant at the 0.05 level (2-tailed)

9. Conclusion

The results of the present study provide some insight into how management of financial institutions can enhance their performance through strategic workspace management in the office. To improve the performance of the institutions, financial institutions in Malaysia need to be analyzed and well planning, or in the easy words are improve the strategic workspace management in their office premises.

First at the individual level, institutions need to improve the physical conditions of the workspace in their office premises. From the quantitative findings, it was revealed that physical conditions of the working environments such as placement of the equipment were most significant factors to take into consideration when designing the workspace management compared to other criterion variables. The findings revealed, with appropriately provide the equipment in the office premises, it can increase the total output per year of each staff and at the same time reduce the number of absenteeism. This is supported by Peters and O'Conner (1980) named the physical aspects of the work environment as one of the critical situational factors that need to be considered to produce effective human performance.

Second, for the non-physical conditions, institutions should aware on the cleanliness and light control in the office premises. This is because the cleanliness and lights control in the office not only can increase the output per year of each staff but also give a positive impact to the attitude of the staff towards their job and also towards the activity held in the office. A more pleasant working environment is created where the office has good natural light (Steaner, 2005). Concerning non-physical working environment, Katzev (1992) believes that lighting influences an individual's perception of work-related tasks, as well as affects one's emotional and motivational state. The relationship between lighting and task performance depends on the interaction of several lighting variables, such as reflection, and glare and task variables such as contrast, size, and complexity of the visual stimuli.

For the collaboration factors, three variables from four suggested were significant influence the performance of the organizations. Institutions must take into consideration on the privacy in the workstation. It is because, from the quantitative analysis that have been done, the increase in the privacy of the workspace in the office premises not only increase numbers of output per year but it also give a positive impacts towards the attitude of the staff on their job. Duffy, (1997), said that the privacy is very important especially for the work requires a high degree of concentrated study and also involves a complex variety of tasks. This is due to the low distraction. Other than that, adequate meeting room and discussion rooms provide in the office premises also shows a positive significant with the performance of each institution.

This is approved by the quantitative analysis that shows the increasing an appropriate meeting rooms and discussion rooms in the office not only increase the numbers of output per staff every year but it also create a positive impact on the staff attitudes towards their job, colleague as well as the activity held in the office. The last factors that should be taken into consideration when designing the workspace management is ensure the suitability of the layout with the work process in the office premises. This is because, with the workspace layout that suitable for the work process, will increase the output and at the same time create a positive attitude of staff towards their job, colleague and the activity held in the office. In this study, effects on the health and safety conditions not show very significant impact to the performance of the financial institutions in the Klang Valley area. However, it is shall to be taken into consideration as well in order to ensure the health and safety environment conditions in the office premise. However, whatever the decisions made by the institutions is depends to the institutions itself. The real life situation sometimes is a lot of different with the academician study and maybe the analysis have been done have some weakened data.

Acknowledgement

In the preparation of this research, I wish to acknowledge the encouragement and assistance to my supervisor, Prof. Dr. Abdul Hadi bin Hj Nawawi whose set me on the path of investigation, and Prof. Dr Zainal Mat Saat, for provided me with detailed feedback and advice on the statistical sections of the research.

References

Alexander, I. (1979). Office location and public policy. Oxford University Press, Oxford.

Alexander, K. (1997). Facilities management: theory and practice. E and FN SPON, London.

Al-Hammad, A., Assaf, S. and Al-Shihah, M. (1997). *The effect of faulty design on building maintenance*. Journal of Quality in Maintenance Engineering, Vol. 3 No. 1, pp. 29-39.

Allen, T., Bell, A., Graham, R., Hardy, B. and Swaffer, F. (2004). Working without walls -an insight into the transforming government workplace. Office of Government Commerce and DEGW, Norwich.

Allen, T., Bell, A., Graham, R., Hardy, B. and Swaffer, F. (2005). Working without walls: an insight into the transforming government workplace. Office of Government Commerce, London.

Anderson, A. B., Basilvsky, A., and Hum, D.P.J. (1983). *Missing data: a review of the literature in P.H. Rossi and J.D Wright and A. B. Anderson (Eds.)*, Handbook of Survey Research (pp.415-494). London: Academic Press.

Appel-Meulenbroek, R. (2005). Corporate real estate that stimulates cooperative innovation. Proceedings of the ERES Conference 2005, Dublin.

Aronoff, S. and Kaplan, A. (1995). Total workplace performance. WDL Publications, Ottawa.

Avis, M. and Gibson, V. (1995). real estate resource management: a study of major occupiers in the UK. Reading University/GTI Specialist Publishers, Reading.

Avis, M., Gibson, V. And Watts, J. (1989). Managing operational property assets, department of land management. University of Reading, Reading.

Becker, F. (2004). Offices at work. Jossey-Bass, San Francisco, CA.

Becker, F. and Pearce, A. (2003). Considering corporate real estate and human resource factors in an integrated cost model. Journal of Corporate Real Estate, Vol. 5 No. 3, pp. 221-41.

Becker, F.D. (1981). Workspace: creating environments in organizations. New York: Praeger.

Becker, F.D. and Joroff, M., (1995). Re-inventing the workplace. IDRC.

Becker, F.D., (1985). The changing paradigm for workspace. Building, p.2 (unpublished data).

Berg, B. L. (1989). Qualitative research method for the social science. Boston: Allyn and Bacon

Bjerrum, E. and Bodker, S. (2002). *Knowledge Sharing in the 'New Office' – Possibility or Problem*. Proceedings from Computer Supported Cooperative Work Conference, Helsinki, Finland.

BOSTI. (1981). *The impact of office environment on productivity and quality of working life*. Comprehensive findings: Buffalo, NY: Buffalo Organization for Social and Technological Innovation

Brill, M. (1985). Using office design to increase productivity. Workplace design and productivity Inc., New York, NY.

Brill, M. (1992). Workspace design and productivity. Journal of Healthcare Forum, Vol. 35 No. 5, pp. 51-3.

Brown, R. (1993). Antecedents and Consequences of Salesperson job satisfaction: Meta-analysis and assessment of causal effects. Journal of marketing research, 30, 63-77 Bryman, A. (1988). Quantity and quality in social research. London: Unwin Hyman

Burges, R. (1982). Field Research: A source book and field manual. London: Allen and Unwin, (2nd ed.).

CABE (2005). *The impact of office design on business performance*. The Commission for Architecture and the Built Environment and the British Council for Offices, London.

Campbell, D. T. (1974). *Quantitative knowing in Action research*. Paper presented at the Annual meeting of American Psychological Association, New Orleans.

Carlopio, J. R., and Gardner, D. (1992). Direct and interactive effects of the physical work environment on attitudes. Environment and Behavior, 24, 579-601.

Carlopio, J. R., and Gardner, D. (1992). Direct and interactive effects of the physical work environment on attitudes. Environment and Behavior, 24(5), 579-601.

Charles, K. E., and Veitch, J. A. (2002). Environmental satisfaction in open-plan environments: 2. Effects of workstation size, partition height and windows (IRC-IR-845).

CIBSE (1999). Environmental factors affecting office worker performance: a review of evidence. CIBSE Technical Memoranda TM24, Chartered Institution of Building Services Engineers – CIBSE, London.

Clements-Croome, D. (Ed.) (2000). Creating the productive workplace. London: E and FN Spoon.

Cohen, A.J., Campanella, A., Marshall, L. and Grant, C. (1987). *Perspective on acoustics in environmental design*. Journal of Architectural and Planning Research, Vol. 4 No. 2, pp. 162-79.

Cooper, D. R., and Schindler, P.S. (1998). Business Research Methods (6th ed). Boston: Erwin Mcgraw-Hill.

Cooper, I. (2001). *Post-occupancy evaluation – where are you*? Building Research and Information, Vol. 29 No. 2, pp. 158-63.

Crano, W. D. (1981). Triangulation and cross cultural research. In M. B. Brewer (Ed.) Scientific inquiry and the social science. San Fracisco: Jossey-bass.

Davis T. R.V. (1984). The influence of physical environment in offices. Academy of management review, 9(No. 2), 271-283.

Denzin, N. K. and Lincoln, Y. S. (1994). Handbook of qualitative research. CA: Sage

Denzin, N. K. (1978). The research act. NJ: Prentice Hall.

DTZ (2004a). 7th Annual Global Office Occupancy Costs Survey. Available at: www.dtzresearch.com

DTZ (2004b). Paper presented at 7th annual global office occupancy costs survey. Available at: www.dtzresearch.com

Duffy F. (1990). Measuring building performance. Facilities 8(5) 17-21

Duffy, F. (1997). The new office. Conron octopus, London, p.10

Duffy, F. (2000). *New ways of working: a vision for the future*. In Clements-Croome, D. (Ed.), Creating the Productive Workplace, Spon, London.

Edwards, V. and Ellison, L. (2004). Corporate Property Management: Aligning Real Estate with Business Strategy. Blackwell Science Limited, Oxford.

El-Haram, M. and Horner, M.W. (2002). Factors affecting housing maintenance costs. Journal of Quality in Maintenance Engineering, Vol. 8 No. 2, pp. 115-23.

ElleyJ. And Marmot, A. (1995). Understanding offices. London, penguin books

Fielding, N.G., and Fielding, J. L. (1987). Linking data. Beverly Hills: Sage Publications.

Finch, E. (2004). *Facilities management*. Clements-Croome, D. (Ed.), Intelligent Buildings: Design, Management and Operation, Thomas Telford, London, pp. 289-301.

Fischer, G.N., and Vischer, J.C. (1998). L'Évaluation des environnements de travail: la méthode diagnostique (The evaluation of work environments: diagnostic method). Montréal: Les Presses de l'Université de Montréal and Brussels: De Boek.

Fischer, M. and Tatum, C.B. (1997). *Characteristics of design-relevant constructability knowledge*, Journal of Construction Engineering and Management, Vol. 123 No. 3, pp. 253-60.

Fisk, W.J. and Rosenfeld, H. (1997). Estimates of improved productivity and health from better indoor environments. Indoor Air, Vol. 7 No. 3, pp. 158-72.

Fitch, E. (2004). Creating and Effective Office Environment within A Managed Work Space. MSc dissertation, Sheffield Hallam University, Sheffield.

Gale, J., and Case, F. (1989). A Study of Corporate Real Estate Resource Management. Journal of Real Estate Research. Vol.4 No. 3, Fall 1989, 23-34.

Gherardi, S., and Turner, B. A. (1987). Real Men Don't Collect Soft Data. Toronto: University of Toronto.

Hadi, M. (1999), Productivity in the workplace. Facilities Management World, No. 17, pp. 19-21.

Haynes, B. (2008). The Impact of Office Comfort on Productivity. Journal of Facilities Management, Vol. 6 No. 1, pp. 37-51.

Haynes, B., Matzdorf, F., Nunnington, N., Ogunmakin, C., Pinder, J. and Price, I. (2000). Does Property Benefit Occupiers? An Evaluation of the Literature, Report 1. Available at: www. occupier.org

Heerwagen, J.H., Kampschroer, K., Powell, K.M. and Loftness, V. (2004). *Collaborative Knowledge Work Environments*. Building Research and Information, Vol. 32 No. 6, pp. 510-28.

Hillier Parker (1994). Property in the Boardroom: A New Perspective. Produced by Graham Bannock and partners ltd

Hillier, B. (1996). Space Is the Machine: A Configurationally Theory of Architecture. Cambridge University Press, Cambridge.

Hinkin, T. R., and Schriesheim, C. A. (1989). Development and application of new scales of measure the French and Raven (1959) bases of social power. Journal of Applied Pshycology, 74(4), 561-567.

Horgen T. H., joroff, M. L., Porter, W.L., and Schon, D. A. (1999). *Excellent Design: Transforming Workplace and Work Practice*. 1-304 New York, John Wiley and sons Inc.

John, N., and Lee-Ross, D. (1998). Research Methods in Service Industry Management. London: Casell.

Jones, S. (1985). The Analysis of Depth Interviews. in R. Walker (Ed.), Applied Qualitative Reserch. Aldershot: Gower.

Joroff, M., Louargand, M. And Lambert, S. (1993). Strategic Management of the Fifth Resource of Corporate Real Estate. Industrial development research council.

Joroff, M.L., Louargand, M., Lambert, S. and Becker, F. (1993). *Strategic Management of the Fifth Resource*. Corporate Real Estate, Report No. 49, Industrial Development Research Foundation – IDRF, Norcross, GA.

Kaleva, H and Olkkonen O. (2001) .Corporate real estate – international overview. KTI Finland – the Institute for Real Estate Economics.

Kaplan, A. and Aronoff, S. (1994). Productivity paradox: workplace settings for knowledge work. Facilities, Vol. 14 Nos 3/4, pp. 6-14.

Karasek, R., and Theorell, T. (1990). *Healthy work: Stress, productivity and the reconstruction of working life.* New York: Basic Books.

Kerlinger, F. (1964). Foundations of Behavioral Research (3rd Ed). NY: Holt, Rinehart and Winston.

Kooymans, R. Kupke, V.E., Pacharavanich, P., Aw Tuan Kee, D., and Sallis, P. (1999). *The take-up of information technology in offices: A comparative study of three asia- pacific cities.* Paper presented at the sixth international real estate society conference, Kuala Lumpur, Malaysia.

Kooymans, R. (2000). The Outsourcing of Corporate Real Estate Management-How Do Corporate Real Estate Units and Outsource Service Providers View Each Other and the Management Issues? Conference Proceeding in the Sixth Annual Pacific Rim Real Estate Society Conference. Sydney, New South Wales, Australia, January 24–27.

Kumar, R. (1997). Research Methodology. Melbourne: Longman.

Laing, A., Duffy, F., Jaunzens, D. and Willis, S. (1998), New environments for working: the redesign of offices and the environmental systems for new ways of working. E. and F.N. Spon, London.

Lake, A. and Crichton, B. (2001). The complete guide to flexible working. HOP Associates and Toshiba, Cambridge.

Lambert, S., J. Poteete and A. Waltch (1995). *Generating High-Performance Corporate Real Estate Service*. International Development Research Foundation.

Leaman, A. and Bordass, B. (1999). *Productivity in buildings: the 'killer' variables*. Building Research and Information, Vol. 27 No. 1, pp. 4-19.

Leaman, A. and Bordass, W. (2000). *Productivity in buildings: the 'killer' variables*. In Clements-Croome, D. (Ed.), creating the productive workplace, E and FN Spon, London.

Leedy, D., and Ormrod. E. (2001). Practical Research. New Jersey. Prentice Hall.

Leifer, D. (1998). Evaluating user satisfaction: case studies in Australia. Facilities, Vol. 16 Nos 5/6, pp. 138-42.

Lindholm, A-L. and Leva" inen, K. (2006). A framework for identifying and measuring value added by corporate real estate. *Journal of Corporate Real Estate, Vol. 8 No. 1, pp. 38-46.*

Loewen, L. J., and Suedfeld, P. (1992). Cognitive and arousal effects of masking office noise. Environment and Behavior, 24, 381-395.

Martin, P. Y., and Turner, B. A. (1986). *Grounded theory and organisational research*. The Journal of Applied Behavioural Science, 33, 505-528.

Mawson, A. (2002). *The Workplace and its Impact on Productivity*. Advanced Workplace Associates, London, available at: www.occupier.org

McGregor, W. (2000). *The Future of Workspace Management*. In Nutt, B. and McLennan, P. (Eds), Facilities Management: Risks and Opportunities, Blackwell Science, Oxford, pp. 80-5.

Mills, E.D. (1994). Building Maintenance and Preservation. Butterworth-Heinemann Ltd, Oxford.

Myerson, J. (2008). Welcoming Workplace: Designing Office Space for an Aging Workforce in the 21st Century Knowledge Economy. Royal College of Art, Helen Hamlyn Centre, London.

Nenonen, S. (2004). *Tangible Workspace for Intangible Work*. Nordic Journal of Surveying and Real Estate Research, Vol. 1 No. 2, pp. 175-89.

Newman, W. L. (1994). Social Reserch Methods. Boston: Allyn and Bacon.

Nourse, H. and Roulac, E. (1993). Linking Real Estate Decisions to Corporate Strategy. Journal of Real Estate Research, Vol. 8 No. 4, pp. 475-94.

Office of Real Property. (1999). *The Integrated Workplace*. 1-167 Washington DC, US Government Office of Government wide policy. http://policyworks.gov/org/main/mp/library/policydocs/completeiwrpt.pdf

Oldham, G. R., and Rotchford, N. L. (1983). Relationship between office characteristics and employee reactions: A study of the physical environment. Administrative Science Quarterly, 28, 542-556.

Oseland, N. (1999). Environmental Factors Affecting Office Worker Performance: A Review of Evidence. Technical Memoranda TM24, CIBSE, London.

Oseland, N. (2004). Occupant feedback tools of the office productivity network. Available at: www.officeproductivity.co.uk

Palonen, J., Seppa"nen, O. and Jaakkola, J.J.K. (1993), *The effects of air temperature and relative humidity on thermal comfort in the office environment*. Indoor Air, Vol. 3 No. 4, pp. 391-7.

Penn, A., Desyllas, J. and Vaughan, L. (1999). *The space of innovation: interaction and communication in the work environment*. Environment and Planning B, Vol. 26, pp. 193-218.

Peponis, J., Wineman, J., Rashid, M., Hong Kim, S. and Bafna, S. (1997). On The Description of Shape and Spatial Configuration Inside Buildings: Convex Partitions and Their Local Properties. Environment and Planning B, Vol. 24, pp. 761-81.

Peters, L.H., O'Connor, E.J. (1980). Situational Constraints and Work Outcomes: The Influence of A Frequently Overlooked Construct. Academy of Management Review, 5 (3), pp. 391-7.

Peters, Tom. (1992). Liberation Management. Necessary Disorganization for the Nanosecond Nineties. London: Macmillan.

Peterson, T.O. and Beard, J.W. (2004). Workplace Technology's Impact on Individual Privacy and Team Interaction. Team Performance Management, Vol. 10 Nos 7/8, pp. 163-72.

Pittman, R.H. and Parker, J.R., (1989). A Survey of Corporate Real Estate Executives on Factors Influencing Corporate Real Estate Performance. Journal of Real Estate Research, Volume 4, No 3, pp 107-119.

Preiser, W.F.E., and Vischer, J.C. (Eds.) (2005). Assessing Building Performance. Oxford, England: Elsevier.

Reichardt, C. S., and Cook. T. D. (1979). Beyond qualitative versus quantitative methods. In D. C. Thomas and C. S. Reichardt (Eds.), Qualitative and Quantitative methods in education research.

Reinharz, s. (1993). Empty explainations for empty wombs: An illustration of a secondary analysis of qualitative data. Qualitative voices in educational research. London: Falmer.

Roelofsen, P. (2002). The Impact of Office Environments on Employee Performance: The Design of The Workplace As A Strategy For Productivity Enhancement. Journal of Facilities Management, Vol. 1 No. 3, pp. 247-64.

Roethlisberger, F.J. and Dickson, W.J. (1939), Management and the Worker. Harvard University Press, Cambridge, MA.

Rostron, J. and Moores, J. (1997). Sick Building Syndrome: Concepts, Issues and Practice. Spon, London.

Roulac, S.E. (2001). Corporate property strategy is integral to corporate business strategy. Journal of Real Estate Research, Vol. 22 No. 1, pp. 129-52.

Rowntree, D. (1981). Statistics without tears. NY: Penguin Books.

Rutherford, R., and Nourse, H.O. (1988). *The Impact of Corporate Real Estate Unit Formation on the Parent Firm's Value*. Journal of Real Estate Research Vol.3 No. 3, fall 1988, 73-84.

Sailer, Kerstin and Alan Penn. (2007). *The Performance of Space – Exploring Social and Spatial Phenomena of Interaction Patterns in an Organisation*. Paper presented at the International Architecture + Phenomenology Conference, 13-17 May 2007, in Haifa, Israel.

Sailer, Kerstin. (2007). Movement in Workplace Environments - Configurational or Programmed. In 6th International Space Syntax Symposium, eds Kubat, Ayse Sema, Ertekin, Özhan, Güney, Yasemin Ince and Eyüboglu, Engin. Istanbul: ITÜ Faculty of Architecture.

Salomon, G. 91991). Transcending the Qualitative – Quantitative Debate: The Analytic and Systematic Approaches to Educational Research. Educational Researcher, 20 (6), 10-18.

Sheth, V.J. (1995). Facilities Planning and Material Handling – Methods and Requirements. Marcel Dekker, New York, NY.

Sink, D. S., (1985). Productivity Management: Planning, Measurement and Evaluation, Control and Improvement. John Wiley and Sons, New York.

Smith, J. K. (1983). *Quantitative Vs. Qualitative Research: An Attempt to Clarify the Issue.* Educational Researcher, 12 (3), 6-30.

Smith, J. K., and Heshusius, L. (1986). Closing Down the Conversation: The End of The Quantitative – Qualitative Debate Among Educational Inquiries. Educational Resecher, 15, 4-12.

Smith, M., Thorpe, R., and Lowe, A. (2002). Management research: An Introduction. London Sage.

Spreckelmeyer, K. (1993). Office relocation and environmental change, a case study. Environment and Behavior, Vol. 25 No. 2, pp. 181-204.

Stallworth, O.E. and Ward, L.M. (1996). Recent Developments in Office Design. Facilities, Vol. 14 Nos 1/2, pp. 34-42.

Steen, J., Blombergsson, M. and Wiklander, J. (2005). Useful Buildings for Office Activities. Facilities, Vol. 23 Nos 3/4, pp. 176-86.

Sundstrom, E., Herbert, R.K., and Brown, D.W. (1982). *Privacy and Communication in an Open Plan Office*. Environment and Behavior, 14(3), 379–392.

Sundstrom, E., Town, J., Rice, R., Osborn, D. and Brill, M. (1994). Office Noise, Satisfaction, and Performance. Environment and Behavior, Vol. 26 No. 2, pp. 195-222.

Teoh, W.K. (1993). Corporate Real Estate Asset Management: The New Zealand Evidence. Journal of Real Estate Research, Vol. 8 No. 4, pp. 607-23.

Thyer, B. (2001). The Handbook of Social Work Research Methods, California. Sage Publications.

Ticehurst, G. W., and Veal, A. J. (2000). Business Research Methods. NSW: Longman.

Todesco, G. (1996). Super-Efficient Buildings: How Low Can You Go? ASHRAE Journal, Vol. 38 No. 12, pp. 35-40.

Todesco, G. (1998). Efficiency Through Design Integration. ASHRAE Journal, Vol. 40 No. 6, pp. 52-6.

Toker, Umut and Denis O. Gray (2008). Innovation Spaces: Workspace Planning and Innovation in U.S. University Research Centers. Research Policy 37: 309-29.

Turner, B. A. (1981). Some Practical Aspects of Qualitative Data Analysis: One Way of Organizing The Cognitive Processes Associated With The Generation Of Grounded Theory. Quality and Quantity, 15,225-247.

Van, M. (1983). Qualitative methodology. London: Sage.

Veale, P. R. (1989). Managing Corporate Real Estate Assets: Current Executive Attitudes And Prospects For An Emergent Management Discipline. Journal of real estate research, vol.4 No.3, pp. 1-22.

Veale, P.R. (1987) *Managing Corporate Real Estate Assets: A Survey of US Real Estate Executives*. The laboratory of Architecture and Planning, Massachusetts Institute of Technology. Boston, Massachusetts US.

Vischer, J. (2005). Measuring the Impact of Moving on Building Users. EcoLibrium, pp. 22-7.

Vischer, J.C. (1989). Environmental Quality in Offices. New York: Van Nostrand Reinhold.

Vischer, J.C. (1996). Workspace strategies: Environment as a tool for work. New York: Chapman and Hall.

Weisbord, M.R. (1987). *Productive Workplaces: Organizing and Managing for Dignity, Meaning and Community*. Jossey Bass, San Francisco, CA.

Whitley, T.D.R., Makin, P.J. and Dickson, D.J. (1996). *Job satisfaction and locus of control: impact on sick building syndrome and self-reported productivity*. Paper presented at the 7th International Conference on Indoor Air Quality and Climate, Nagoya, Japan.

Wilson, H. S., and Hutchinson, S. A. (1991). Triangulation of Qualitative methods, heideggerian, hermeneutics and grounded theory. Qualitative Health Research, 1, 263-276.

Wineman, J. (Ed.) (1986). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.

Wineman, Jean, Felichism Kabo and Gerald F. Davis. 2008. Spatial and Social Networks in Organizational Innovation. Environment and Behavior Forthcoming

Wyon, D.P. (2004). The Effects of Indoor Air Quality on Performance and Productivity. Indoor Air, Vol. 14 No. 7, pp. 92-101.

Zeckhauser, S. and Silverman, R. (1983). *Rediscover Your Companies Real Estate*. Harvard business review, January/ February, pp. 111-117