



**Islamic University of Gaza
High Studies Deanery
Faculty of Commerce
Master of Business Administration**

**The impact of workplace design on employees'
performance
(An Empirical study of the Administration Building of
Islamic University of Gaza)**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

(قِيلَ لَهَا ادْخُلِي الصَّرْحَ فَلَمَّا رَأَتْهُ حَسِبَتْهُ لُجَّةً وَكَشَفَتْ عَنْ سَاقِهَا قَالَتْ إِنَّهُ صَرْحٌ مُّمَرَّدٌ مِنْ قَوَارِيرَ قَالَتْ رَبِّ إِنِّي ظَلَمْتُ نَفْسِي وَأَسْلَمْتُ مَعَ سُلَيْمَانَ لِلَّهِ رَبِّ الْعَالَمِينَ)

صدق الله العظيم

سورة النمل - آية (44)

Dedication

To my Lovely Mother

To my beautiful son Ameer

To my Sister and my Brother

To all my beloved family

Abeer Aqeel

Acknowledgment

First, all praises and glory are due to GOD for all the bounty and support granted to me to complete this MBA research. This work not been done without God's endless guidance and support

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ABSTRACT

The most pressing social and economic challenge now is to raise productivity among employees , To attract and retain high caliber employees and to improve the performance of existing employees, an organization must be able to offer a safe, comfortable, and stimulating workplace. This study explores the impact of workplace design on employees performance , the study is applied to the administration building of Islamic University of Gaza. The research is causal with employees performance as dependent variable, and workplace design factors as independent variables. The primary data have been collected through verified questionnaire from IUG employees working in the administration building.

Research findings show that there is a direct relationship between workplace design and employees performance. And there is a correlation exists between each factor of workplace design (spaces, interior design, lighting, temperature & ventilation, noise) and employees performance. research findings also show that the design of the administration building did not reach the required level of employees needs and expectations, where their evaluation of each factor of workplace design is considered low which affects employees performance and morale negatively and the proportional mean of all the five factors which represent workplace design is 66.1% which is considered low, but the proportional mean of employees performance is 75.9% which is good, this is because of the loyalty of IUG employees where they work under pressure and jump their workplace design problems and constraints to work efficiently , but the percentage of their performance level doesn't reach the innovation and creativity level.

Therefore, the researcher derived several recommendations to board of Islamic university of Gaza, administrative & human resources professionals and designers & architects

- **To the board of IUG:** the necessity to solve workplace design problems and provide employees with a comfortable and motivated workplace to support employees performance and increase competitiveness among other universities.
- **To administrative & HR professionals:** the necessity to strengthen the interest in workplace design as it is very vital in terms of increasing employees' performance to optimize the full value of human capital to raise efficiency , increase productivity and achieve desired objectives.
- **To designers & architects :** the necessity to join forces to close the growing gap between sophistication of management especially regarding human resource issues, new technology and the factors of the indoor and outdoor environment.

ملخص البحث :

يتمثل التحدي الاقتصادي والاجتماعي الأكثر إلحاحا في وقتنا الحاضر في زيادة الإنتاجية من خلال الموظفين ، لذلك فانه لاجتذاب واستبقاء الموظفين ذوي الكفاءات العالية وتحسين أداء الموظفين الحاليين يجب على المنظمة أن تكون قادرة على توفير بيئة عمل آمنة ومريحة ومحفزة للموظفين ، تبحث هذه الدراسة اثر تصميم مكان العمل على أداء الموظفين ، و قد طبقت هذه الدراسة على مبنى الإدارة في الجامعة الإسلامية في غزة ، و في هذا البحث يمثل الأداء الوظيفي المتغير التابع بينما يمثل عناصر تصميم مكان العمل المتغير المستقل ، و قد تم جمع البيانات الأولية من الموظفين العاملين في مبنى الإدارة من خلال استبيان محكم

و تبين نتائج البحث انه توجد علاقة مباشرة بين تصميم مكان العمل و أداء الموظفين ، و يوجد ارتباط بين كل عنصر من عناصر تصميم مكان العمل (الفراغات الداخلية ، التصميم الداخلي ، الإضاءة ، درجة الحرارة و التهوية ، الضوضاء) و أداء الموظفين . كما و تبين نتائج البحث أيضا أن تصميم مبنى الإدارة لم يصل الى المستوى المطلوب لتلبية احتياجات الموظفين حيث أن تقييمهم لكل عنصر من عناصر التصميم يعتبر منخفض مما يؤثر على أداءهم سلبيا ، وقيمة المتوسط النسبي للعناصر الخمسة التي تمثل تصميم مكان العمل هي 66.1% و تعتبر هذه النسبة منخفضة ، بينما قيمة المتوسط النسبي لأداء الموظفين هي 75.9% وهي نسبة جيدة ، و ذلك يعود إلى ولاء موظفين الجامعة الإسلامية ، حيث أنهم يعملون بكفاءة علي الرغم من ضغط العمل ، و يقفزون عن مشاكل تصميم مكان العمل التي تواجههم لتنفيذ أعمالهم بكفاءة ، و لكن نسبة مستوى أداءهم الوظيفي لا تصل إلى مستوى الإبداع و الابتكار.

و قد خرجت الباحثة بالعديد من التوصيات لكل من إدارة الجامعة الإسلامية و اختصاصي الإدارة و إدارة الموارد البشرية و كذلك للمعماريين و المصممين:

- **لإدارة الجامعة الإسلامية :** ضرورة حل مشاكل تصميم مكان العمل وتوفير مكان عمل مريح ومحفز لتعزيز أداء الموظفين وزيادة المنافسة بين الجامعات.

- **الإداريين و اختصاصي إدارة الموارد البشرية :** ضرورة تعزيز الاهتمام بتصميم مكان العمل لأنه مهم جدا من حيث زيادة أداء الموظفين لاستغلال الطاقة الكلية للموارد البشرية ، لرفع الكفاءة ، و زيادة الانتاجية و تحقيق الاهداف المرجوة

- **المصممين و المعماريين :** ضرورة توحيد القوى من اجل سد الفجوة المتزايدة بين تطور الإدارة وخاصة فيما يتعلق بقضايا الموارد البشرية و التكنولوجيا الحديثة و عوامل البيئة الداخلية والخارجية .

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CHAPTER 1

GENERAL INTRODUCTION

1.1 Introduction

1.2 Research problem

1.3 Research variables

1.4 Research hypotheses

1.5 Research importance

1.6 Research Objectives

1.7 Previous Studies

1.1 Introduction:

Most people spend fifty percent of their lives within indoor environments, which greatly influence their mental status, actions, abilities and performance. Better outcomes and increased productivity is assumed to be the result of better workplace environment. Better physical environment of office will boost the employees and ultimately improve their productivity. Various literature pertain to the study of multiple offices and office buildings indicated that the factors such as dissatisfaction, cluttered workplaces and the physical environment are playing a major role in the loss of employees' productivity. (Hameed, 2009)

Today, business success flows from intangible assets such as ideas, information, and expertise, Now Businesses are waking up to the fact that the workplace is much more than just real estate and a means to house their people,. (Gensler, 2006)

Over the last decade, the changing in information technology, organizational work patterns and expectation of employees give rise to the development of new working practices. The changing nature of work results in the increasing demand of workplace as an attractive physical asset that responds to the requirement of creative knowledge workers. (Andrews, 1971; Thompson & Strickland, 1990).

The importance of a high quality workplace has never been more evident than in today's climate of rising real estate costs and increasing business competition. To attract and retain high caliber employees and to improve the performance of existing employees, an organization must be able to offer a safe, comfortable, and stimulating work environment. To support those employees in executing their responsibilities and to maximize their contribution to the organization, the office must also be efficient, functional and flexible. Meeting these objectives requires that an organization plan strategically and design facilities to meet the needs of organization both now and in the future. (Wiley & Sons, 1994)

Hughes (2007) surveyed 2000 employees pertain to various organizations and industries in multiple levels. The reported results of these survey showed that nine out of ten believed that a workspace quality affects the attitude of employees and increases their productivity. Employees in different organizations have different office designs. Every office has unique furniture and spatial arrangements, lighting and heating arrangements, different levels of noise and if it is open or closed which affect collaboration, teamwork, decision making, monitoring, motivation, communications and social relationships. (Hameed,2009)

In higher education sector where most of the occupants are knowledge workers, the idea of creating a high performance workplace is very important, and it has been developed in many universities. (Riratanaphong,2009)

The purpose of this study is to analyze the impact of the workplace design on employees' performance.

1.2 Research Problem:

An attractive physical workplace that responds to the requirement of creative knowledge workers plays a crucial role in increasing employees productivity and improving their performance. The problem of this research can be summarized in the following question: what is the impact of workplace design factors on employees' performance?

1.3 Research variables:

Dependent variable: employees' performance

Independent variables: the independent variables are the factors of workplace design

- 1- Open spaces
- 2- Interior office design
- 3- Lightening
- 4- Temperature and ventilation
- 5- Noise

1.4 Research hypotheses:

There are two main hypotheses for this research:

1. There is a statistical relation between organization workplace design and employees performance

From this main hypothesis the following sub hypotheses result:

- a) There is a statistical relation between open spaces and employees performance.
 - b) There is a statistical relation between Interior design and employees performance.
 - c) There is a statistical relation between lighting and employees performance .
 - d) There is a statistical relation between temperature and ventilation and employees performance.
 - e) There is a statistical relation between noise and employees performance.
2. There is no difference of the respondents' answers about the impact of workplace design on employees performance at significant level $\alpha= 0.5$ due to personal traits (Gender, Age, job type).

1.5 Research importance:

Many organizations search for the best ways to improve employees' performance and increase their productivity to achieve the targeted goals and objectives, but there are new ways used in big companies gave very good results, through better office design and better working environment, so :

- It is important for Human resource professionals and interested people in the organizations to be aware of the importance of workplace design to improve employees' performance and to know the difficulties that face employees' performance through their working environment and office design and then they can prepare themselves to act with.
- It is important for architecture engineers and interested people to ensure that The workplace design factors which affects employees performance are convenient for the work nature and controlled to achieve the required level of comfort for employees to be productive

- It is also important for architecture engineers and interior designers to take the benefit from research results and recommendations to create new designs and ideas and to find solutions for the other designs

1.6 Research Objectives:

The objectives of this research are the following specific points:

- To know the importance of better working environment and better office design for increasing employees' productivity and improving their performance
- To know the effect of workplace design on employees performance in terms of lightening, temperature, interior office design, quiet spaces and open spaces.
- To know the advantages and disadvantages of open space design
- To know the importance of workplace design for many factors critical to business performance, including: staff attraction, motivation and retention
- To know the importance of workplace design for work process such collaboration, teamwork, decision making, monitoring, communications , creativity and social relationships.

1.7 Previous Studies

1.7.1 Arabic Studies

1.7.1.1 (Mohsen, 2008): Open and close design for arch. plan and their effects on the social dimension in administrative buildings , Case study "The administration building of the Islamic University, which is known as Bahrain Building"

This research deals with the open architectural design and its effects on the social dimension in administrative buildings. The research is based on the hypothesis that social relationships are unfavorably affected in administrative buildings with closed plans. For this purpose, Primary data was collected from the employees of the administration

building include academic employees and administrators through a structured questionnaire which consists of two groups of questions first to evaluate the closed spaces of the administration building and the second to know the advantages of the open spaces. The findings show that social relationships are unfavorably affected in administrative buildings with closed spaces, this unfavorable influence extends to negatively affect personnel performance and productivity.

Results for the first group of questions related to the evaluation of the administration building show:

- 74% of respondents agreed that closed spaces decrease and weaken the social relationships between employees
- 56% said that the flexibility and ease of movement were achieved through the spaces of the administration building
- 68% said the design of the administration building as closed spaces makes everything is unclear which affects employees' psychologies
- 58% said that the natural lighting and fresh air were achieved
- 62% said the academic staff can reach the private services easily
- 70 % said that closed spaces decrease spaces flexibility which affects interaction and connectivity
- 62% said the closed spaces decreased the trust and faith of employees performance

Results for the second group of questions related to the advantages of the open spaces show:

- 73% of respondents said that the open spaces are convenient with the common social culture
- 77.6% said that the open spaces decrease employees' privacy and concentration
- 69% said that the open spaces facilitate the connection between responsible people and students
- 69% agreed that the open spaces affects employees' productivity and efficiency positively

- 73% agreed that open spaces can help employees to stay in their offices for a long time
- 72% agreed that open spaces affect employees psychologies positively
- 70% agreed that open spaces facilitate positive social relationships

The researcher recommendations were:

- the researcher suggest semi closed spaces or semi open spaces to include the advantages of open spaces and the advantages of closed spaces through decrease the number of solid walls and decrease its height to provide natural lighting and fresh air
- increase the connectivity between employees through visual expansiveness and by using systems furniture
- Provide employees of the administrative buildings with friendly environment that affects positively their productivity and performance.

1.7.1.2 (Space city & The office, 2009): Workplace design affects employees' productivity

The aim of this study is to know the impact of workplace design on employees' productivity in general. The findings show that:

- 90% of employees agreed that the workplace design affects their productivity
- 52% of employees said that the suitable workplace design increase their desire to work
- 64% suffering from back pain because of setting on uncomfortable chair
- 50% said that there isn't any evaluation for their chairs or computers, office design and temperature

According to these results they noticed that most employees agreed that workplace design affects their productivity while there is no importance given to workplace design in their companies or evaluation to make sure that it's convenient for employees' needs and well-being. So the space city company and the office exhibit which conducted in Dubai,2009

prepared a list with the main factors which affect positively the work environment and motivate employees to increase their productivity:

- Lighting : make sure its sufficient and controlled
- Air ventilation and temperature should be suitable and controlled
- Noise control and treatments
- Furniture: sufficient and flexible
- Space allocation for each employee
- Office interior design should be motivated

1.7.2 International Studies

1.7.2.1 (Hameed, 2009): The Impact of Office Design on Employees' Productivity

The main objective of this study is to find out the relationship between office design and productivity. For this purpose, Out of 31 bank branches, 21 bank branches in Abbottabad, Pakistan were taken as sample. A total of 105 employees from these 21 branches were taken as the sample size. Primary data was collected through a structured questionnaire. Observation was also used to collect information about the office design.

Five indicators of office design such as furniture, noise, temperature, lighting and spatial arrangement are considered for the study. Data was analyzed to identify the factor that the relatively high tendency towards decreasing productivity.

Research findings show that there is a direct relationship between office design and productivity. The Relationship between Office design and Productivity was determined by using the Pearson's Correlation in SPSS. A strong correlation exists between elements of office design and productivity. The prime factor which affects the productivity of employees is lighting in the office. Next to the factor lighting, it is spatial arrangement. Then the importance sequence is noise, furniture and temperature. The regression analysis of the data shows that the coefficient of determination R. square = 0.576, so, it

can be concluded that 58 percent of the variability in employees' productivity is accounted for by the variables in this model.

The findings of this study show that office design is very vital in terms of increasing employees' productivity. Comfortable and ergonomic office design motivates the employees and increases their performance substantially. Lighting was found to be the major factor, which is affecting the daily and overall productivity of employees in offices. Therefore, it is recommended to have proper and adequate artificial as well as natural light to improve the office design for better performance.

1.7.2.2 (Newsham, Brand & others 2009) : Linking indoor environment conditions to organizational productivity: a field study

Physical and questionnaire data were collected from 95 workstations at an open-plan office building in Michigan, USA. The physical measurements encompassed thermal, lighting, and acoustic variables, furniture dimensions, and an assessment of potential exterior view. Occupants answered a detailed questionnaire concerning their environmental and job satisfaction, and aspects of well-being. These data were used to test, via mediated regression, a model linking the physical environment, through environmental satisfaction, to job satisfaction and other, related, measures. In particular, we demonstrated a significant link between overall environmental satisfaction and job satisfaction, mediated by satisfaction with management and with compensation. Analysis of physical data was limited to the lighting domain. Results confirmed the important role of window access at the desk in satisfaction with lighting, particularly through its effect on satisfaction with outside view.

1.7.2.3 (Doman, 2008): The impact of the indoor environment on the productivity of call centers employees

This study uses data from the author's thesis to explore the interrelation between indoor conditions, employee satisfaction as a mediator variable and low productivity.

The cross sectional primary data with sample size of 106 have been collected through verified questionnaire from call centre employees and interviews with the managerial staff and managers. Five indices (thermal comfort, lighting, acoustics, ergonomics and internal design) are used to represent the impact of the indoor environmental parameters (IEP) on employee well-being in general and productivity in particular

The findings explicitly demonstrate:

- low level of employee satisfaction with the indoor environment contributing to the chronic maladies of high attrition, absence and turnover rates
- The vast majority of decision makers are unaware of the linkage between loyal customers and employees, employee retention policy, high turnover and attrition rates, productivity and better physical indoor conditions;
- Factors, such as the life cycle cost, added value and the occupants' well-being are scarcely considered;
- Statistical analysis provides an interesting correlation between the ability to predict satisfaction (as a mediator variable) and indoor conditions. 10% of overall employees' satisfaction is attributed to indoor environmental parameters. The rest may be attributed to non-physical determinants, such as organizational behavior and culture, remuneration, etc.
- Satisfaction with the acoustic conditions is found to have the greatest contribution. The other mediating variables (such as satisfaction with luminance, thermal comfort and ergonomics – space allocation) have a further but lesser contribution.

The researcher Recommendations were:

- An enhanced indoor environment is imperative for satisfied employees (who directly and indirectly bias their approach towards sometimes patience-less customers...) and

overall organizational performance. To reap potential benefits the stakeholders should revitalize design and construction approaches

- There is an urgent need for architects, town planners and building services engineers to join forces to close the growing gap between sophistication of management especially regarding human resource issues, the digital platform and the physical properties of the indoor and outdoor environment.

The underlying assumption of this study is the **service-profit chain** concept. This approach links healthy workplace conditions to better employee satisfaction and increased productivity and consequently low rates and costs of attrition, turnover, recruitment and retention initiatives.

1.7.2.4 (Amir & Sahibzada, 2008) : Measuring the impact of office environment on performance level of employees in the private sector of Pakistan

The purpose of this research is to identify the element of the office environment which can affect the performance level of employees in the private sector companies of Pakistan. The main objective of this research is to investigate the effects of office environment on its occupant's perceived productivity. The research is causal with work output of the employees as dependent variable, and physical and behavioral components of the environment as independent variables. The cross sectional primary data with sample size of 94 have been collected through verified questionnaire from employees of different private organizations of Pakistan. Correlation and regression analyses have been used to analyze data.

Findings of the research show that there is a strong positive significant relationship between performance of the private sector office employees and the environmental elements; for example office layout, level of interaction and the comfort level of office. These results indicates that the behavioral component of the office environment have the strongest affect on the performance level of employees. In addition the element of level of interaction from the behavioral component has the strongest significant impact on the

output level of the office employees, in terms of social, work, creativity physical environment, position relative to colleagues, position relative to equipment and quality of refreshments. Since behavior components can enhance the performance level of office employees, organizations must take appropriate steps for providing better level of interactions. This will contribute towards increase in output and exceptional improvement in employees' performance.

1.7.2.5 (Cullen, 2008): How Workspace Design Drives Workplace Productivity and Employee Engagement

The objectives of this study are to determine the features of employee work environments – specifically workspace design and Functionality that have an impact on employee productivity and retention, the workplace factors that were most conducive to efficiency, productivity, and employee wellbeing.

Over 10,000 respondents, providing baseline information on 70 buildings, have completed the Workspace Surveys and post-occupancy assessment data on 12 newly designed or renovated buildings, the results of the survey were proving highly effective in evaluating new building and workspace designs and surfacing other issues affecting productivity and physical well-being. For example, in one newly designed space, 75% of respondents saw a 10% or more improvement in group productivity compared to their original workspace, which was related to significant improvements in 11 of 23 workspace factors in the new space.

The survey was able to capture both successes and failures of current workplace redesign efforts as well. When employees compared their new workspace with their old workspace, we found a number of significant improvements on a number of factors:

- 91% of respondents reported that the functionality of conference and meeting rooms in the new space had a positive impact on their work effectiveness, compared to only 9% of respondents rating the functionality of conference and meeting rooms in their prior location.

- 100% of respondents reported effective office/workspace lighting, compared with 30% of respondents in the prior location.
- 90% of respondents rated the ability to work with others in their new workspaces as high, compared to only 18% of respondents in the previous workspace.

The results of the Workspace Survey have informed the ongoing workplace design process: the prioritizing of which buildings need more detailed assessments; which workplace issues are general and which are specific to certain buildings or systems; and which building redesigns have worked and which require further thinking. They are also being used to evaluate the functionality of a new telephone technology, to surface issues with prevailing design assumptions and building materials, and to meet documentation requirements for Green Building Design Certification

1.7.2.6 (Roberts, 2008) : How to Increase Productivity with Office Design

Business leaders are being urged to take more account of the links between good workplace design and improved business performance. That's according to the findings of this new research, *Impact of Office Design on Business Performance*, recognizes the revolution now taking place in the office environment, as the traditional work space becomes a space for social and interactive engagement. The report points to evidence that office design influences a range of factors critical to business performance, including: staff attraction, motivation and retention , staff satisfaction , knowledge and skills of staff , innovation and creativity , responsiveness to business and technological change , customer attraction and retention.

The research provides a range of evidence showing the links between poor workplace design, lower business performance and higher level of stress experienced by employees. With differences in productivity of 25 per cent reported between comfortable and uncomfortable staff, due to basics, such as, air quality, temperature, overall comfort, noise and lighting. Both good lighting design and adequate daylight have been linked to a 15 per cent reduction in absenteeism and increases of between 2.8 per cent and 20 per

cent in productivity. Moreover, the research identifies the issue of staff satisfaction as a primary driver to enhancing knowledge worker productivity. The workplace is responsible for 24 per cent of job satisfaction and this can affect staff performance by 5 per cent for individuals and 11 per cent for teams. In one major UK Company staff turnover at a call centre reduced by 11per cent after a move to new well-designed offices and output doubled during the same period.

The conclusion is that the research is a call to arms for all employers striving for improvements in staff satisfaction and the performance of their workforce. This provides both a checklist and a positive way forward for those facing the challenges and opportunities of addressing their business changing accommodation needs. As the pressures of competition place new demands on differentiation through quality of knowledge management and creative thought, new environments are needed to encourage interaction and teamwork.

1.7.2.7 (Knoll, 2008): Open Plan and Enclosed Private Offices

In this paper, there is a review of relevant research on open plan and enclosed private offices related to a variety of behavioral and technical issues. As part of this review they examined the following topics:

- **Work Style Influences Workspace Preference**

Knoll research examined workspace type preferences of high technology workers and found that their preference for open or enclosed work environments was based on work style and the type of work the individual performs

- **Workspace and Job Satisfaction**

Yildirim, et. al. (2007) examined the impact of proximity to a window and open plan workstation partition height on employee satisfaction. The results indicated that visual access to a window from the workspace positively affected employee satisfaction. Satisfaction was even more enhanced for employees with 60”(1.5 m) panel height

workstations and a view to a window, presumably because that height partition optimizes visual privacy and minimizes distractions and interruptions.

- **Workspace as a Status Indicator**

More than half of the participants in another Knoll study reported that private offices communicate higher status than open plan workspaces. However, the emphasis on office type as a primary status marker is being eroded as highly mobile work styles become more common (thus de-emphasizing the importance of the individual office) and technology “toys” such as the Blackberry, iPhone and other devices rival or even replace the individual workspace as a status indicator

- **Workspace Type and Collaboration**

A research project conducted by UCLA revealed that companies who had modified their business processes to encourage collaboration and supported new work processes by moving from private spaces to open, collaborative environments realized performance increases (speed and accuracy of work)

- **Workspace Type and Noise Issues**

The researchers found that dry wall offices, even with the door closed, only achieve 75% acoustical privacy compared to (8'x 8') = (2.4x 2.4 m) open plan offices with 60”(1.5m) high acoustical panels, acoustical ceiling tiles and sound masking which achieve 93% acoustical privacy.

- **Workspace: Learning and Mentoring**

The workspace should be designed to support learning and encourage mentoring opportunities. The current practice of locating more experienced staff in enclosed private offices, while increasing their comfort level, could reduce learning and development opportunities for younger employees

- **Cost and Strategic Implications**

Through the years, many organizations have demonstrated the business value of investing in open plan systems products because they greatly reduce the cost of change. Now, open plan offices can positively impact organizations in a broader manner by

aiding strategic business issues such as attraction and retention, support for mobility and other needs related to high performing workers.

The results of Knoll's research suggest that employee expectations and preferences related to workspace type are complex and continue to evolve. The recommendations are on how to manage the change process and how to most successfully leverage the use of both open and enclosed spaces

- Create Dedicated Collaboration Areas
- Promote Spontaneous Interaction
- Reduce Distractions
- Balance Communication and Privacy
- Support Learning and Mentoring

1.7.2.8 (Coward, 2007): The Motivational Workplace, A synthesis of interior design principles and psychological research

The article present the importance of workplace design and the ways to motivate employees through their workplaces, While the literature on work motivation is vast, little attention has been given to the potential of the physical environment to increase staff engagement, morale and, ultimately, productivity. the author offers a psychological perspective on three ways in which the workplace can be used to motivate staff: fostering a sense of obligation via perceived organizational support, offering the user control over their environment, and using internal branding to encourage desired behaviors.

1.7.2.9 (Gensler, 2006): Well-Designed Office Key to Improving Employee Performance

The main purposes of this study are To determine and measure the impact of workplace design on American businesses and employees performance to achieve that they use a randomly and representative sample of 2,013 office workers in all staff and management strata in the U.S. National in scope and representing six major geographic regions, the

sample represents workers in eight industries and Job types include all levels within the organization including staff workers, middle managers, and senior managers, including C-Suite executives. The sample matches U.S. Census data with respect to average worker age and gender. The Gensler 2006 U.S. Workplace Survey reveals that workplace design has a very real impact on companies' bottom lines. In fact, the effect of office design on worker productivity in the U.S. is estimated to be at least \$330 billion annually for the eight industry groups sampled in the survey according to the analysis. These survey findings suggest businesses that ignore the design and layout of their workplaces are failing to optimize the full value of their human capital. According to the survey:

- Office workers believe they would be 21% more productive if given a better working environment.
- 48% say they would log an extra hour per day under such improved circumstances.
- Nine in ten workers believe that better office design leads to better overall employee performance, and also makes a company more competitive.
- Nearly 90% of respondents feel that a better physical working environment would result in better overall employees performance
- Companies can perform an average of 22% more work if their companies had better designed physical working environments.

About their workplaces :

- Forty-six percent of workers do not believe creating a productive workplace is a priority at their companies
- 40% say that minimizing costs is the main reason behind their workplace's current layout.

The survey demonstrates a link between the physical office and work processes such as innovation, collaboration, and creativity.

- Two thirds of workers believe they are more efficient when they work closely with co-workers.

- 30% of workers don't think their current workspace promotes spontaneous interaction, collaboration, or cooperation and teamwork.
- Only 50% believe that their current workplace design encourages innovation and creativity.

Survey results overwhelmingly pointed to the importance of good workplace design for employee satisfaction.

- Over 90% say the quality of their working environment affects their mood and attitude about their work.
- 89% believe that the quality of their working environment is very important to their sense of job satisfaction.

1.7.2.10 (Knoll, 2005): Workplace Preferences: The Employee Perspective

The main objective of this study is to learn more about workplace preferences from the employee perspective and how it affects the productivity. The research explored preferences for various work styles, including time, space and tone, workplace characteristics that are perceived to impact worker productivity and satisfaction, and environments where employees say they do their best work. The following analysis is based upon responses from 850 full-time employees working in companies or divisions of companies with total employment of 100 or more. Workers were drawn from a range of diverse industries such as banking, finance and insurance to technology, healthcare and manufacturing. To determine the impact of workplace on employees' productivity, the research was designed to assess the perceived impact of fifteen workplace characteristics on worker productivity.

The findings show that there were four characteristics that 70% or more employees said would have ***high impact on productivity***. In order of importance these were:

- Climate control (HVAC)
- Storage space for work related items
- The ability to organize and store technology

- Quiet space

In the second tier, categorized as *moderate impact on productivity*, 60 to 69% of employees identified the following workplace characteristics:

- Space that can be personalized to support individual work style
- Visually appealing space
- Access to natural light
- Privacy
- Lighting control
- Spaces for collaborative meetings

The third tier, classified as having *some impact on productivity*, showed 50 to 59% of respondents citing the following three characteristics:

- A large workspace
- An ergonomically designed chair
- Personal space for small meetings

The fact that ergonomic seating fell into the third tier of impact on productivity is surprising. It is important to note, however, that the importance of ergonomics is strongly influenced by an employee's level of education

Only two factors fell into the fourth tier or *low impact on productivity*. These were:

- Having a workplace designed with environmental responsibility in mind
- Space for personal items

The findings show that companies have opportunities to motivate and inspire workers by creating environments that underscore inspiration, innovation, creativity and attributes which are highly valued by all workers, no matter what their age or educational background.

1.7.2.11 (Robertson and Huang, 2005): Effect of a workplace design and training intervention on individual performance, group effectiveness and collaboration: The role of environmental control

The effects of a workplace design and training intervention and the relationships between perceived satisfaction of office workplace design factors (layout and storage) and work performance measures (individual performance, group collaboration and effectiveness) were studied with 120 office workers using the Workplace Environment Questionnaire. Further, we examined whether environmental control had a direct effect on work performance, and then explored whether environmental control mediated or moderated the relationship between workplace design factors and work performance. Results showed a significant, positive impact of the intervention on environmental satisfaction for workstation layout. Satisfaction with workstation layout had a significant relationship with individual performance, group collaboration and effectiveness; and satisfaction with workstation storage had a significant relationship with individual performance and group collaboration. Environmental control had a direct impact on individual performance and group collaboration; whereas, the mediating and moderating effects of environmental control on the relationship between workplace design factors and outcome variables were not significant. These results suggest that when an office work environment is ergonomically designed and coupled with training, it provides employees with a high degree of environmental control and knowledge, which may positively influence individual performance, group collaboration and effectiveness.

Future prospective office ergonomics intervention workplace studies should focus on long-term health and productivity measures, including workplace observational evaluations of postural musculoskeletal risk factors and computing behaviors.

1.7.2.12 (Corporate Interiors, 2005): Does your office design compliment the working style of your workforce?

It would thus be appropriate to classify office design as a hygiene factor since its impact on workforce productivity is still to be proved. Hygiene factors unlike motivating factors play a dormant role in enhancing employee productivity. For instance, workplace crèche is definitely an added attraction for employees and it might enhance their productivity levels. The absence of the facility though would have no negative impact on employee productivity. Motivating factors on the other hand, have a definite positive impact on employee productivity. So their withdrawal too adversely affects workforce productivity. A study conducted to identify the factors that impacted knowledge worker productivity revealed that office design was one of the most critical determinants of knowledge worker productivity.

The research validates the following assumptions about the impact of office design on employee productivity:

- Open offices foster collaboration and social bonding
- Functional congregations enhance workforce productivity
- Mobility –an imperative for knowledge workers
- The need to collaborate overrides the need to concentrate
- Physical proximity is critical
- Cosmetic makeovers do little good

Office design as a motivation tool may sound too faddish and superfluous. However, seeing its impact on the productivity of knowledge workers compels one to take a serious look at it.

1.7.2.13(The Commission for Architecture & the Built Environment and the British Council for Offices, 2005): The impact of office design on business performance

This report investigates the existing literature that addresses the relationship between the design of the workplace and business performance. Businesses exist to return measurable value to stakeholders and the aim has been to identify, where possible, those design factors that might make office environments more productive, serving strategic purposes of the business. Claims have been made that the workplace is responsible for 24 per cent of job satisfaction and that this can affect staff performance by 5 per cent for individuals and (because of the benefits of improved interaction) by 11 per cent for teams.

Differences in productivity as high as 25 per cent have been reported between comfortable and uncomfortable staff. The most important factors in achieving health and comfort are air quality, temperature, overall comfort, noise and lighting

- **Air quality** : In one study 3 per cent of workers surveyed left early or stayed at home, and 8 per cent had reduced ability to work, due to symptoms attributable to insufficient fresh air in the workplace, and it was estimated that this lost time could be reduced by 20 per cent by improving the delivery of outdoor air
- **Temperature**: Decreases in productivity of the order of 30 per cent have been found in offices experiencing extreme temperature conditions. In a research study, 23.5 oC was reported as the preferred temperature, but 30 per cent of individuals prefer spaces warmer or cooler than this level.
- **Overall comfort**: Increases in output, a reduction of repetitive strain injuries and a consequent reduction in insurance costs have all been reported as a consequence of proper attention to ergonomics
- **Noise**: significant improvements have been reported in the performance of both simple and complex tasks (38 per cent and 27 per cent respectively) when acoustic conditions have been optimized

- **Lighting:** Good lighting design and adequate daylight in particular have been linked to 15 per cent reductions in absenteeism and increases of between 3 per cent and 20 per cent in productivity.
- **Spatial arrangement:** a variety of work settings should be available, based on the activity undertaken by each individual and team, balancing the need for concentration and communication

In the rapidly changing world of work, the implications of linking office design with business performance are so profound that innovation is as important in the conduct of research as in the ways that offices are developed, designed and managed.

1.7.2.14 (Microsystems, 2005): BP Blue Chalk program of office design

A field study to test the BP Blue Chalk program of office design used questionnaire analysis to assess three different types of work space: enclosed (high ownership of cellular space), restack (open plan) and ‘Blue Chalk’.

The questionnaire analysis revealed perceived improvement in communication, collaboration, creativity and performance in the third type of layout. Statistically significant benefits were achieved in all four areas: approximately 13 per cent greater performance, 15 per cent greater communication, 18 per cent greater collaboration, and 10 per cent increased creativity. Sun Microsystems’ director of workplace effectiveness reports that the introduction of a variety of settings designed to enhance the informal spread of ideas contributed to a perceived 10 per cent gain in individual productivity and 7 per cent in team productivity; and added that ‘even if the amounts are half that, it results in millions of dollars in productivity gains’.

1.7.2.15 (American Society of Interior Designers, 1997): ASID productive solutions: The Impact of Interior Design on the Bottom Line

The American Society of Interior Designers (ASID) asked 200 business decision makers -- 100 at fast-growing small and mid-size companies and 100 at the largest 1,000 U.S. companies -- their opinions about productivity issues to know the relationship between

office design and productivity using an independent research survey. Respondents, including CEOs, presidents, COOs, CFOs and facility managers, say improved office design increases employee productivity. The survey findings were clear:

- 90 percent of the “ASID 200” respondents say that improving interior design can boost productivity
- Business decision makers ranked improving office design and incorporating new technology at the top of their lists of the top ways to boost productivity
- 97 percent of respondents say it is worth the investment to redesign offices if a correlation can be made to increased employee productivity
- 68 percent of survey respondents say that office design needs to be reviewed at least once every five years to help their companies remain competitive.
- 36 percent say that office design should be reviewed at least once a year.

The “ASID 200” respondents identified the following four primary areas in which interior design impacts productivity:

- Improving accessibility: 68 percent of the “ASID 200” respondents say they increased productivity by making resources -- including people, information and equipment -- more accessible to employees
- Increasing employee comfort: 42 percent say they improved productivity by changing their office design to improve employee comfort.
- Increasing privacy, including limiting noise and distractions: Limiting noise and distraction, while increasing privacy, was cited by 28 percent of the “ASID 200” respondents as helping improve employee productivity
- Providing flexibility and customization: Nearly one quarter of the “ASID 200” survey respondents say they improved productivity by improving flexibility

This shows that business decision makers recognize that effective interior design contributes to corporate competitiveness, as well as helping companies adapt to changing business conditions.

1.7.3 Conclusion

All previous studies indicated the importance of workplace design and its impact on employees' performance and productivity, and indicated the workplace design factors which play an important role in employees satisfaction and well-being , Some of the studies shows the role that workplace design play to enhance interaction, collaboration, teamwork, workflow efficiency, flexibility, learning and the balance between interaction , distraction and privacy. Some studies put valuable recommendations that shed more light on the importance of workplace design to enhance employees' performance through their working environment.

Based on the previous studies we can conclude that the impact of workplace design on employees' performance and productivity have been researched from different aspects in various industries and organizations, But on the other hand there was no research that examined the impact of workplace design factors on employees performance in the Palestinian organizations except one research study conducted by Mohsen (2008) applied on the administration building of the Islamic University of Gaza and it only examined the impact of one factor of workplace design which is open spaces, therefore this research examined all factors of workplace design , the research focuses and analyses two variables, independent variable which is workplace design factors (open space, interior design, lighting, temperature & ventilation and noise) and the dependant variable which is employees' performance.

CHAPTER 2

WORKPLACE DESIGN

- 2.1 Defining workplace Design
- 2.2 Design definition
- 2.3 The new direction of design in the modern architecture
- 2.4 Open plan concept
- 2.5 Planning components of the office environment
- 2.6 Types of open plan workplaces
- 2.7 Types of spaces in open plan workplaces
- 2.8 Workplace Interior design
- 2.9 Lighting
- 2.10 Heating, ventilating, and air conditioning (HVAC) systems
- 2.11 Acoustics
- 2.12 Case studies

2.1 Defining workplace Design

Workplace is made up of various elements of an organization. In a simple form, it is a place where work is produced. Work is a purposeful productive activity and may involve making material goods, creating or transforming information, and/or offering a service. Differing from the meaning of space, the connotation of place is being specific that one place is not the same as another (Alexander et al., 2004). The concept of workplace in the 21st century is the place that is designed and arranged with the aim to create a productive environment for people who perform activities in an organization.(Riratanaphong, 2009)

Office design is defined by BNet Business Dictionary (2008) as, “the arrangement of workspace so that work can be performed in the most efficient way”. Office design incorporates both ergonomics and work flow, which examine the way in which work is performed in order to optimize layout. (Hameed, 2009)

Different organizational goals require different arrangements of the workspace. If the future function of work continues to require the combination of both collaboration and individual concentration at work, then the new form will have to combine private workspace with collaboration workspace. If this does not happen, organizations will be both less effective and less efficient. (Amir& Sahibzada, 2008)

Office environment can be divided between the two components; physical and behavioral. The physical environment consists of elements that relate to the office occupiers’ ability to physically connect with their office environment. The behavioral environment consists of components that relate to how well the office occupiers connect with each other, and the impact the office environment can have on the behavior of the individual. the physical environment with the productivity of its occupants falls into two main categories office layout (open-plan verses cellular offices) and office comfort (lighting, temperature, air quality, interior design and noise), and the behavioral

environment represents the two main components namely interaction and distraction. (Amir& Sahibzada, 2008)

Through the previous, the researcher can elicit the following points that shed more light on the definition of workplace design:

- **Workplace design is the arrangement of workspace so that work can be performed in the most efficient way.**
- **Workplace design incorporates both ergonomics and work flow.**
- **Workplace design is the physical environment which support employees' well-being and performance through office layout (open-plan verses cellular offices) and office comfort (lighting, temperature, air quality, interior design and noise**

2.2 Design definition

Design is the means by which we order our surroundings, re-shaping natural materials to suit our needs and purposes. It arises at the interface between human-kind and raw environment and expresses human intentions, desires and hopes. (Smithies,1981)

The evolution of the human race depended on our developing successful ways of relating to our environment. Our brain evolved a special intelligence that enables us to plan and apply techniques for dealing with specific challenges posed by the natural world. In early times we learned to make tools and other equipment to hunt, to cook, to protect ourselves, and to make possible increasingly sophisticated ways of living. All of our artifacts, from flint implements to temples, bridges, and cities and in our own time, to computers and spacecraft, reflect that special kind of constructive Intelligence we call design.

All design has four aspects: **materials**, real objects which we choose, change, and combine by **processes**, giving them new **forms** that we conceive to fulfill our **purposes**.(Rawson, 1988)

2.3 The new direction of design in the modern architecture

New architectural style that emerged in many Western countries in the decade after World War was based on the "rational" use of modern materials, the principles of functionalist planning, and the rejection of historical precedent and ornament.(Infoplease- modern Architecture, 2007)

A functionalist approach eventually replaced the formerly eclectic approach to design. Technical progress in the use of iron and glass enabled architects and engineers to enclose the vast interior spaces of train sheds, department stores, and market halls, but often the structural forms were clothed with irrelevant ornament (Wikipedia- architecture,2009).

They said it was not accepted for the gentile man to use iron in building design and construction. But a lot of famous buildings and skyscrapers was constructed after the discovery of the fact of the insurance company building that was designed by William Lee Baron Gani in 1883. The height of this building was 16 floors and the structural fact of this building wasn't discovered until it was demolished in 1931. (Mohsen, 2008)

The great 19th century architect of skyscrapers, Louis Sullivan, promoted an overriding precept to architectural design: "Form follows function" and first articulated the theory of functionalism, which he demonstrated in his numerous commercial designs. By the 1920s the most important figures in Modern architecture had established their reputations. The big three are commonly recognized as Le Corbusier in France, and Mies van der Rohe and Walter Gropius in Germany. (Wikipedia- Architecture, 2009)

As a result of these advances, the formal conception of architecture was also undergoing a profound transformation. Frank Lloyd Wright, a pupil of Sullivan, experimented with the interpenetration of interior and exterior spaces in his designs. .(Infoplease- modern Architecture, 2007)

Modern architecture is usually characterized by:

- An adoption of the principle that the materials and functional requirements determine the result
- An adoption of the machine aesthetic
- A creation of ornament using the structure and theme of the building. Not rejection of ornamentation.
- A simplification of form and elimination of "unnecessary detail"
- An adoption of expressed structure
- Form follows function. (Wikipedia-Architecture,2009).

2.4 Open plan concept

As a result of the use of the new construction structure, the spans and heights are increased, the interior walls transformed into curtain walls, and the spaces became free from walls, the number of columns decreased, the area of windows is increased and the spaces getting more flexible. (Mohsen, 2008)

The American architecture Frank Lloyd Wright was cancelled the interior walls which separate the rooms that don't need privacy such as entrance, halls, setting rooms, and offices to appear as a one large area to give the sense of wideness, flexibility of use and to reduce the costs. And the French architecture Le Corbusier used the concrete structure and applied the free and open plan in his designs, to give the visual expansiveness and natural lighting for the interior spaces.(Benton,1975)

Open plan is the generic term used in architectural and interior design for any floor plan which makes use of large, open spaces and minimizes the use of small, enclosed rooms such as private offices . (Wikipedia- open plan, 2009)

The open plan is the free plan from interior solid walls which extend from floor to ceiling or using partitions instead which don't prevent visual expansiveness, natural lighting and aeration to the interior spaces. (Mohsen, 2008)



Figure (2.1) open plan concept

2.5 Planning components of the office environment

The first step in developing a design concept is to address the planning requirements of the project. These requirements relate to the organization of the space components of the program into a functional, efficient space plan.

In approaching a solution, the design team works with the three primary space components of the office environment: general office areas, circulation, and support areas. (Rayfield , 1997)

From a planning perspective, the interior architect works to achieve a number of different objectives in creating a space that fosters a high-quality work environment. Flexibility is also a key consideration in the contemporary office environment. As businesses must be capable of changing rapidly to capture market opportunities, so must the office environment be capable of responding easily and rapidly to those changes. The space plan should also reflect the priorities and culture of the organization. The organization's attitude its clients and employees is reflected in how its spaces are planned and designed. For example, does the space have a sense of openness, light, and warmth? How are public spaces or employee support areas treated? (Gibbs, 1995)

2.5.1 General office areas

General office areas are the spaces that accommodate workstations. There are three basic approaches to planning general office areas: closed plan, open plan, and modified open plan. The primary considerations in identifying the most appropriate approach to planning general office areas are:

- The amount of planning flexibility required
- The amount of visual and acoustical privacy required for personnel
- Initial and life-cycle construction and furniture costs. (Rayfield , 1997)

In a closed plan, figure (2.1) full height walls or partitions divide the space into offices and support space by floor to ceiling partitions (walls) with doors.

Private offices typically are located along the window wall. Administrative support is housed in workstations along corridors or in shared rooms. (Rayfield , 1994)

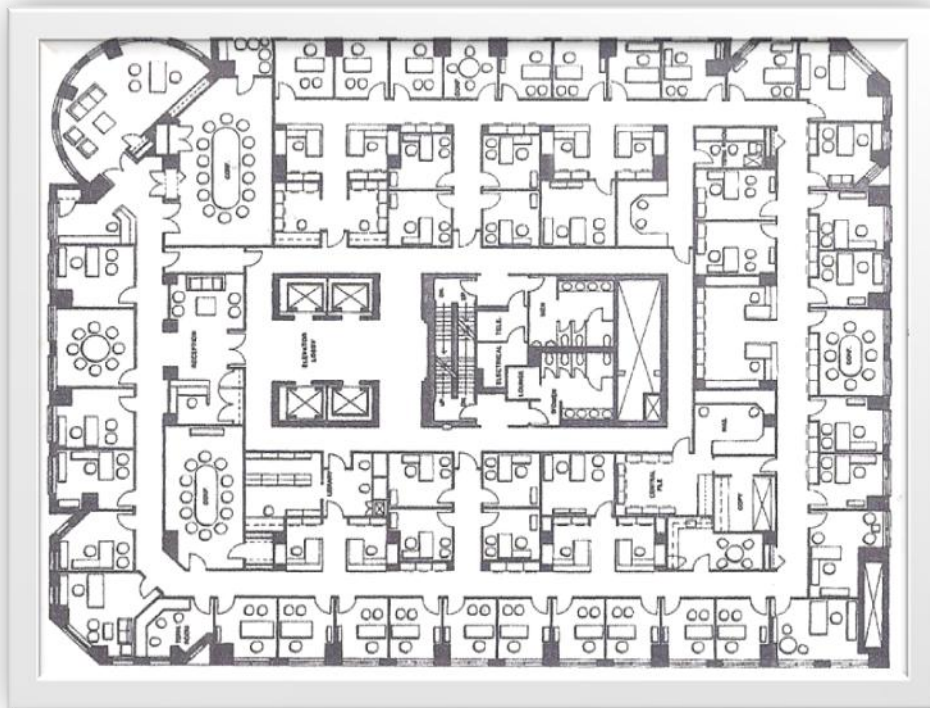


Figure (2.1) closed plan which provides high level of privacy and less planning flexibility and interaction (Rayfield , 1994)

An open plan concept figure (2.2) locates all workstations in open space with no division by floor to ceiling partitions. Support spaces are located in floor to ceiling partitioned rooms with doors. **(Rayfield , 1994)**

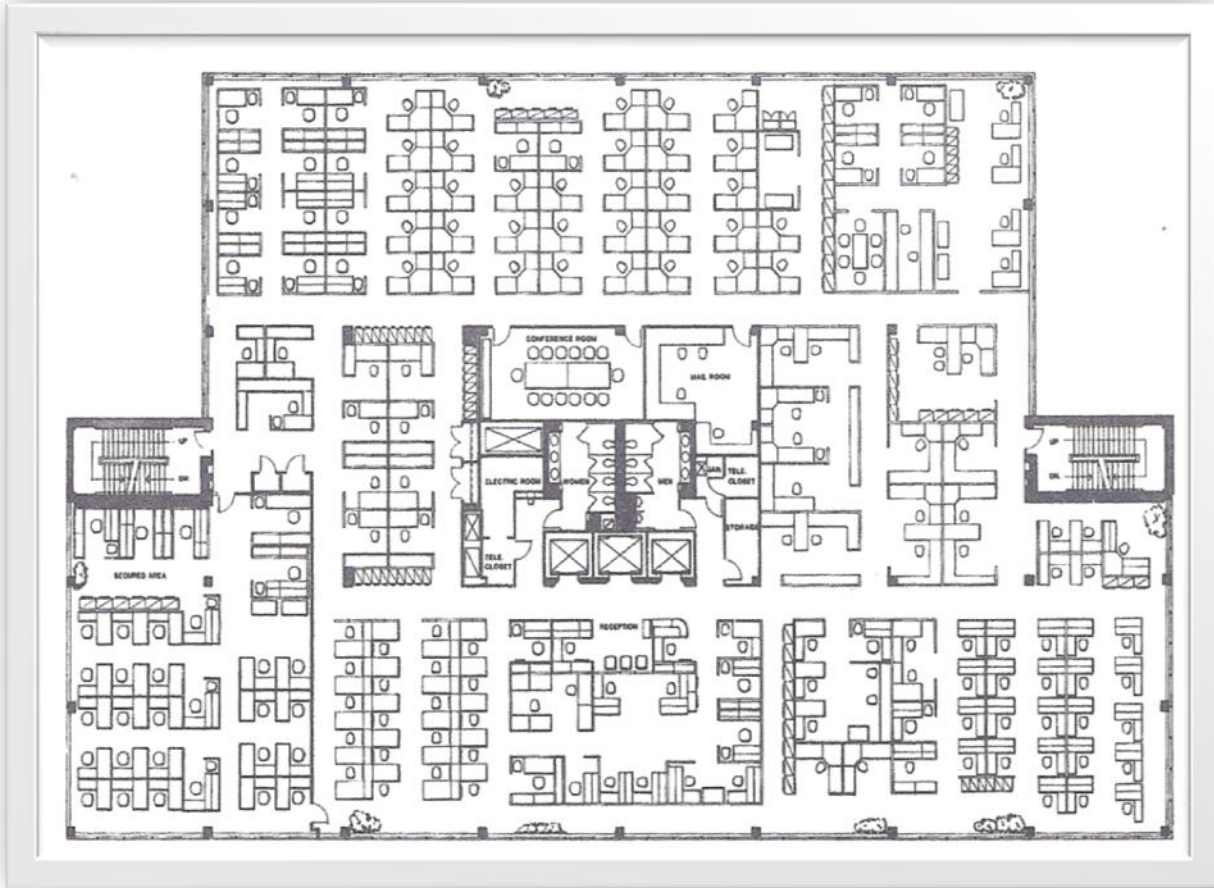


Figure (2.2) open plan provides significant planning flexibility (Rayfield , 1994)

Modified open plan figure (2.3) combines elements of both open plan and closed plan by locating certain workstations in open plan with systems furniture and others in private. In a modified plan, support spaces are also located in enclosed rooms. **(Rayfield , 1994)**

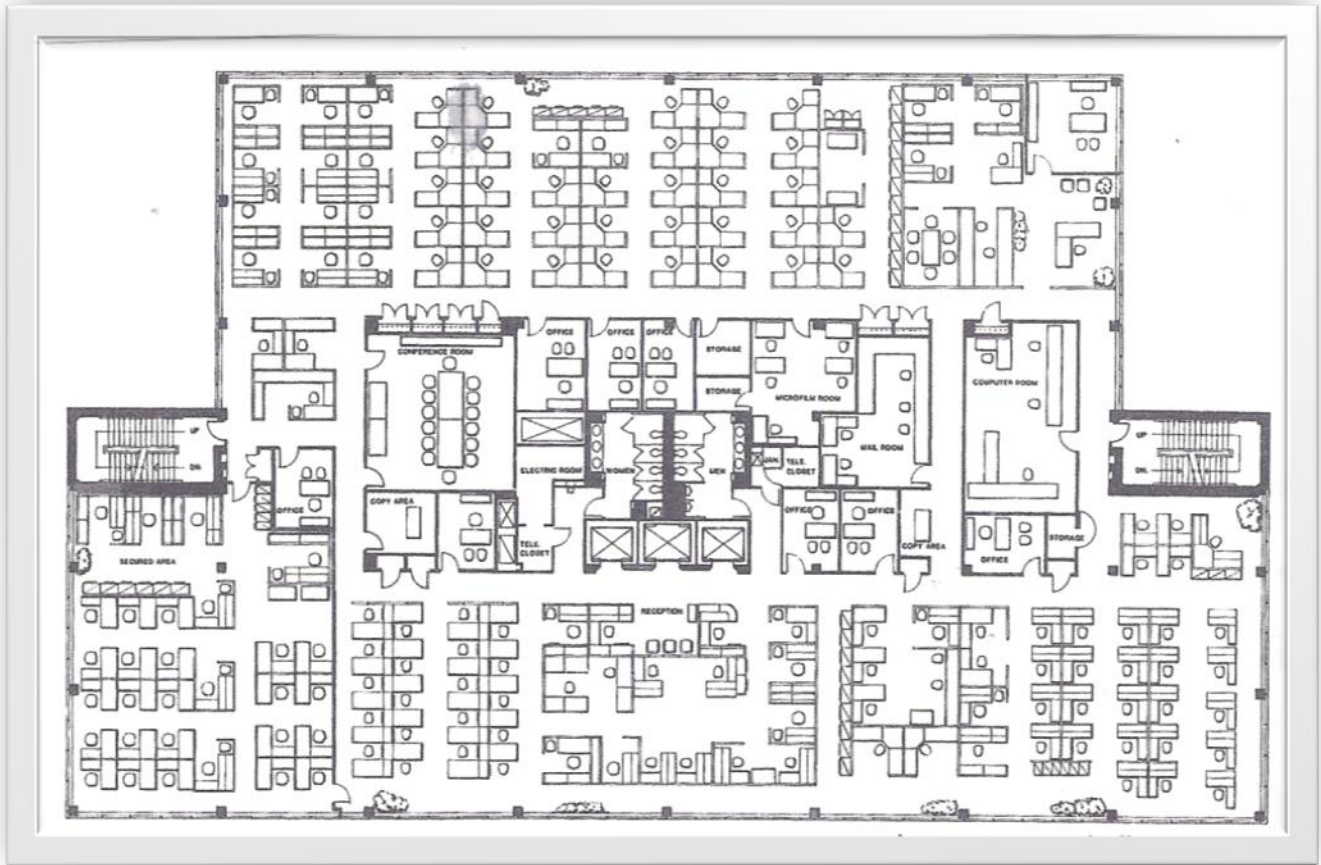


Figure (2.3) the modified space planning concept integrates open planning for general office areas with closed planning for conferencing and other support areas (Rayfield , 1994)

2.5.1.1 Evaluating open versus closed plan

Through the years, interior architectural profession has been a proponent of each of the planning concepts, working almost exclusively with a total closed-plan concept and then gradually evolving to the other extreme, the total open plan. The changes have always reflected the trends in organizational management investigating variations on culture, openness of communication, and reporting structure within the organization. Basically, the changes have resulted from continuing attempts to find the best office environment formula for providing flexibility, efficiency, and a better, more productive work environment. The following criteria provide the foundation of evaluating the two planning approaches: (Eley & Marmot, 2000)

2.5.1.1.1 Space utilization

Closed plan is less efficient than open plan. Because the mullions and column locations create a rigid office size, these offices are rectilinear, creating rigid modules that cannot be manipulated to maximize the density of a specific building floor plate. Open plan provides greater opportunity to maximize the utilization of the space than does closed plan and minimizes the circulation space required because workstations can be modified slightly to fit the available space. The use of systems furniture in open plan can also improve space utilization, because a job function can normally be accommodated in less space in a systems furniture workstation than in a closed plan office.

2.5.1.1.2 Planning flexibility

Closed plan concepts provide less planning flexibility than open plan concepts. The modification of constructed areas is much more difficult and disruptive than the reconfiguration of systems furniture. With the use of open plan in conjunction with systems furniture, furniture can be configured with relative ease. Mechanical, electrical, lighting and floor finishes are designed to accommodate a large open area.

2.5.1.1.3 Cost

Closed plan is the less expensive plan to implement initially. This initial cost difference is due to the lower cost of constructing dry wall partitions required for closed plan versus the higher cost of purchasing systems or modular furniture.

2.5.1.1.4 Communication among personnel

The presence of physical barriers in closed plan makes personnel less accessible. This can be advantage or disadvantage, depending on the level of interaction that is necessary for people to perform their job functions. In open plan, communication and interaction are highly valued for sharing information, discussions, collaboration, teamwork and motivation and the level of communication can be affected by varying the systems furniture panel heights.

2.5.1.1.5 Office technology flexibility

Closed plan provides more limited flexibility in responding to changes in office technology, primarily because of the difficulty in changing wire distribution for electrical and data cabling and outlets.

2.5.1.1.6 Visual expansiveness

In an open plan, windows are open to the interior spaces rather than only to private offices as in the closed plan. Sunshine, open air feeling and vistas to the perimeter are preserved, and visual space is borrowed from surrounding areas, making the area appear larger than it is and lending an overall expansive feel to the entire space.

2.5.1.1.7 Visual privacy

Closed plan offers the greater potential for visual privacy. In open plan, visual privacy is provided to a workstation only as is necessary to perform a job function. In this case, visual privacy is achieved with floor standing panels that screen in the workstation from other people in the space.

2.5.1.1.8 Acoustical privacy

Acoustical privacy is achievable in both open and closed plan environments if the spaces are designed correctly. Acoustical privacy is achieved in open plan through the use of acoustical panels, sound absorbing finishes, and the use of a sound masking system that makes normal speech unintelligible.

2.5.1.1.9 Security

Closed plan provides the opportunity to secure materials more easily than does open plan. This is achieved by limiting access to specific areas in the space. (Eley & Marmot, 2000)

2.5.2 Circulation

Circulation is the area required to connect functional spaces in the office. In closed plan, circulation comprises the corridors through the space; in open plan, it is the paths through the workstations. The three basic types of circulation are primary, secondary and tertiary.

- **Primary circulation:** is the circulation area around the building core used to access and interconnect the core spaces and the general office areas. It is the main corridor looping the core. This circulation path is required by fire safety and local codes for access to and egress from the space.
- **Secondary circulation:** The main circulation through general office areas
- **Tertiary circulation:** is the additional circulation in general office areas required to access open plan workstations that are not located directly on secondary circulation.
(Rayfield , 1997)

2.5.3 Support areas

Support areas are the spaces that are used by a group within the organization or the entire organization to accommodate shared needs. Common support areas include:

(Reception, Conference rooms, training rooms, Computer rooms, Equipment rooms, File rooms, Copy rooms, Supply rooms, Mail rooms, Libraries, Pantries and Special support.)

The sizing and location of these support areas are based on the number of people who used the space, frequency of that use, and the adjacency requirements to internal groups or visitors to the space. (Eley & Marmot, 2000)

2.6 Types of open plan workplaces

These are just a few popular types of open plan workplaces in use around the world today:

- **Team-oriented ‘bullpen’** :employees can see and hear each other freely, but desks are grouped into teams
- **High-panelled cubicles** : employees can’t see other employees when seated
- **Low-panelled cubicles** : employees can see over the panels when seated
- **Clusters or ‘pods’**: a group of low-panelled work stations, separated by high panels from other pods. (Wikipedia- open plan, 2009)

2.7 Types of spaces in open plan workplaces: (NSW government workplace guidelines- space types, 2009)

The types of space in the open work environment are:

- Individual Workspaces
- Workstation Configurations

2.7.1 Individual Workspaces

Individuals have traditionally been accommodated in offices or workstations. Today we see a blurring of boundaries between the definition of a traditional office and a standard workstation. We also see the identification of new space types (or standards) which may in some situations more directly reflect specific agency requirements. For example, smaller offices, referred to as "cockpit offices", for individuals who need some form of privacy but who may not necessarily want to be in a separate office.



figure (2.4) Individual Workspaces (NSW government workplace guidelines- space types, 2009)

2.7.2 Workstation Configurations

New trends in workstation configurations are described below: (NSW government workplace guidelines, 2009)

2.7.2.1 The Cluster Arrangement:

The 'Cluster' concept is widely used particularly for team based activities. It is often based on either four or six person workstations arranged in a grouping.

People who collaborate require proximity to each other and to the team spaces. An additional requirement is for a furniture system that will facilitate frequent reorganizing of teams. Hence, the logic of workspace collocation into teams of 2, 3, 4 or 6 work

points. The 'Cluster' arrangement allows personnel to work individually (or in teams) with minimal disruption or distraction



Figure (2.5) The Cluster Arrangement (NSW government workplace guidelines- space types, 2009)

2.7.2.2 The Star Configuration:

The 'Star' Configuration is often preferred when the team concept of work is dependent on members of the team having face-to-face contact, needing to frequently pass documents, or engage in frequent discussion, or where social interaction is important eg. high repetitive work such as telephone answering.

Notwithstanding, the 'Star' configuration is more open to traffic with greater potential for disruption or distraction and utilizes floor space less efficiently.



Figure (2.6) The Star Configuration (NSW government workplace guidelines- space types, 2009)

2.7.2.3 Organic Configurations:

Clusters of workstations which are based on 'organic' styled workstations - often arranged at angles - 120 degrees and which sometimes look like a 'meandering organic shape'. These can be particularly interesting when arranged in random shapes on a floor and can break up the rigidity of rectilinear workstations.



Figure (2.7) Organic Configurations (NSW government workplace guidelines- space types, 2009)

2.7.2.4 Mobile Furniture Freeform Components

Today's furniture provides a variety of options to "mix and match" workstation modules to create and customize individual workspaces. Mobile components can be wheeled and attached in a variety of ways, opening up options for rearrangement and flexibility



Figure (2.8) Mobile Furniture (NSW government workplace guidelines- space types, 2009)

2.8 Workplace Interior design

Offices are built for people to enjoy living and working together. So everything should be orientated towards people. That's why the main objective of good office architecture is to put people, functions, rooms and equipment in the right relationship with one another, bringing them into a shared context. It is particularly important to harmonize potentially polarizing elements. On the one hand, there are the rational considerations: people as performers, who have to carry out functions efficiently. On the other hand is the emotional factor: people

With all their senses, emotions, fears and pleasures. It is here that interior architecture and interior design can make an important contribution. If we get the emotional side right, this will have a direct, positive effect on the rational factors. (Elgner, 2006)



Figure (2.9) workplace interior design (Elgner, 2006)

Interior design was defined as items in which the design was simple of good proportions and without dust collecting features with stress in good construction. Interior designers are mainly responsible for selecting suitable textiles, floor and wall covering, furniture, lighting and colure schemes. (Rao, 1998)

2.8.1 Interior design elements

The interior design elements must integrate successfully to create a design solution for high quality work environments. These solutions must respond to functional and aesthetic program requirements as well as challenges presented by an increasingly complex workplace. These elements and interior furnishing are: Furniture, ceiling, flooring, walls, doors & window treatment, colours and decorative items. (Fabbrizzi, 2002)

2.8.1.1 Furniture

Furniture for the office environment is typically selected based on two sets of criteria. As a functional component, furniture is chosen for performance characteristics and cost. As a primary aesthetic element, furniture is chosen for its design and style. In addition to meeting the criteria identified above, other key issues which are normally considered in selecting furniture are: required maintenance, durability, inventory management and flexibility of use.

Office furniture can be categorized as either a furniture system or general use furniture. A furniture system is a generic term which refers to collection of components such as desks, bookshelves, and storage units that are meant to be used as an integrated group. General use furniture refers to individual. (Rayfield, 1997)

2.8.1.1.1 Furniture systems

The concept of furniture systems was introduced to the open plan environment to achieve greater planning flexibility and efficiency as well as increased communication among personnel. Initially, these systems were referred to as modular, that is, they were floor-standing components that could be assembled to create larger planning units such as ADP furniture, designed to accommodate computer equipment. separate free-standing panels and interior landscaping (plants) were used to enclose clusters of modular or free-standing furniture to provide some visual and acoustical privacy. (Fabbrizzi, 2002)



Figure (2.10) furniture systems (Elgner, 2006)

Panel hung systems, commonly called systems furniture were the next evolution in furniture systems. In a panel hung systems, most of the components including horizontal work surfaces, storage, and file elements, are hung from the panel. The use of Panel hung systems increased the flexibility to tailor workstations to meet the needs of the individual and it also increased the capability to accommodate the task in a smaller amount of space. (Myerson, 2003)

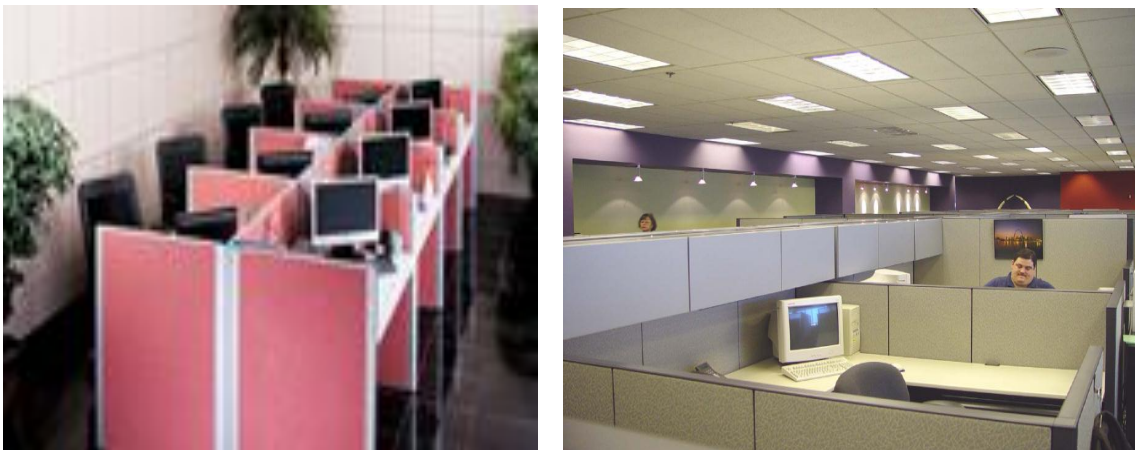


Figure (2.11) Panel hung systems (Ficosystems, 2009)

2.8.1.1.2 General use furniture

General use furniture is a term used to describe nonsystems, conventional use furniture consisting of work surfaces (desks, tables, computer support ...etc), Seating, File cabinets and Shelving (Rayfield , 1997)

2.8.1.2 Ceiling

Ceiling can be painted or treated with false or suspended ceiling. While painting it should be kept in mind that ceiling is the best light reflector. Light colors reflect more light than dark colors. Suspended ceiling is normally used for acoustics or decorative purposes. It is normally seen in cinema theaters, auditoriums, board rooms and radio & TV stations where sound control is needed. The finishing material to be used for the suspended ceiling depends on the acoustic properties of the material. They are normally used as panels or boards for easy casting and fixing. Also it is used for decorative purposes and if the height of the interior should be reduced. Suspended ceiling can conceal the air conditioning ducts and electrical wiring. (Rao, 1998)

2.8.1.3 Walls

Walls play very important role in interior designing. The treatment of walls can be divided into: (Rao, 1998)

- **Painting:** painting of wall should take care of the activities to be performed in an interior. Depending on the use of the interior space, light or dark shade paints can be used.
- **Wall paper:** wall paper is preferred because of wide variety of designs and colours creating an illusionary impression. The designs should not be too bold or pale. Scenic wall papers look good on long walls.
- **Paneling:** panelling is done for acoustics or decorative purposes. There are various types of materials used for panelling like wood, plywood, block board ...etc
- **Cladding:** Wall cladding is done for easy cleaning and maintenance. Cladding can be done with tiles or metals.
- **Glass:** Glass is used sometimes to cover an entire wall for strategic views and natural light. Mirrored glass is also used to give spacious look to small interiors.
- **Fabrics:** Fabrics may cover one or two walls of a room. They can be hung by nailing them at the ceiling level.

2.8.1.4 Flooring

There are various types of flooring; the following are some of the commonly used flooring surfaces.

- a. Stone flooring
- b. Tiled flooring
- c. Glass flooring
- d. Cork flooring
- e. Carpet flooring
- b. marble flooring
- d. timber flooring
- f. linoleum flooring
- h. plastic or PVC flooring

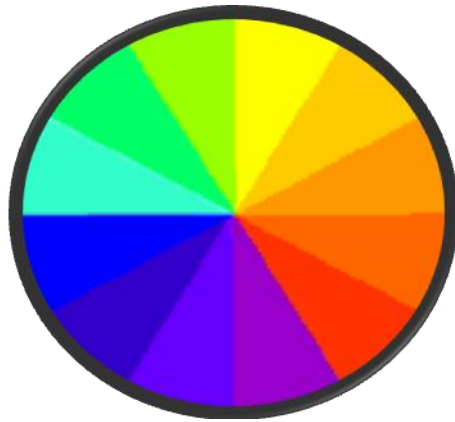
2.8.1.5 Doors & windows

Doors and windows in an interior should be treated with harmonious effect. They occupy a lot of wall area providing access, light and view. Curtains and blinds are normally used for doors and windows. Recently, glass is also intensively used. There are three main functions of curtains and blinds: appearance, privacy, heat and control. The color, style, pattern and texture of curtains and blinds should be related to the interior scheme as a whole. (Rao, 1998)

2.8.1.6 The interplay of colours

Colours play a very important part in trying to establish a good relationship between people and their working environment. They determine the “visual climate” of the office. (Elgner, 2006)

Color theory in interior design includes the color wheel. The color wheel are the colors of the rainbow arranged in a circular array. Color theory also involves the idea of how color affects human thought and emotions.(wikipedia , design elements and principles,2010)



Figure(2.12) the colour wheel

Colors that have red such as orange, reddish-brown and yellow are assumed to be warm colors because we associate these with sunlight and fire. Woody browns are considered as cozy colors. Colors that have blue are cool colors because we associate blue with cool water and ice. (Fin back design , design & color, 2009)

Color harmony is a pleasing combination of colors and the amount of these colors in a design; it could also be a visually pleasing color combination that enhances the style and character of a design. Color harmony is also using a limited number of colors in a color palette usually seven or less initially to help preserve design unity. A visually pleasing color combination may be chosen for the color palette of a room for a particular age group and gender. (Gibbs,1995)

The relationship of values, saturations and the warmth or coolness of respective hues can cause noticeable differences in our perception of color. (Color matters, color theory, 2009)

In the office design it is important to achieve a balanced tension, which supports either concentration or communication depending on the function of the room. Three simplified colour examples will help to put this point across:

- Blue and aqua tones promote concentration and have a calming influence, for example, as a cool balancing effect in lively office areas
- Yellow and orange have a stimulating effect and promote creativity. They are ideal in communication areas.

- With its earthy effect, brown is primarily suitable for use on the floor. Brown represents stability.

To ensure that colours have the desired beneficial effect, colour and space must be used in the right proportion. This is determined primarily by the functions and proportions of the room. In rooms, which are permanently occupied, colour should only be used as an accent; more colour is called for in communication areas or recreational area (Elgner, 2006)



Figure (2.13) the interplay of colours (Elgner, 2006)

2.9 Lighting

Lighting is a functional component of the office environment because it is necessary for vision. Yet it is also a design element, creating a sense of volume, form and shape. It is an art form, with the potential to create drama and response: to excite, to motivate, and to please. It affects office aesthetics and employee motivation and creates substantial energy demands. For these reasons, the effective design and installation of high quality, energy efficient lighting systems are a priority in the office environment today. (Rayfield , 1997)

2.9.1 The luminous environment

Design of the luminous environment is primarily concerned with two aspects of human sensory behavior:

- 1- The visual task of spatial orientation, which requires the designer to be concerned with the effect of light in defining the space, the structural enclosure, or the activity, without introducing irrelevant patterns or visual confusion.
- 2- Detailed central task vision, which requires the designer to be concerned with the effect of light in defining significant information centers and in assisting the accurate communication of visual detail required for acceptable performance of normal activities.

The balanced manipulation of these visual conditions should provide for the viewer's need to judge distances and recognize relevant objects, materials, colors and forms. At the same time, this environmental balance should reflect the occupant from glare and from meaningless visual cues that may confuse his sense of orientation and purpose. (Flynn, Segil & Steffy, 1988)

2.9. 2 Methods of lighting

Lighting in the office environment is achieved through a combination of methods and each of these methods has a specific purpose and is achieved through a variety of sources and fixtures. These methods are:

- Ambient lighting: is the general light in the space, it is categorized as direct or indirect.
- Accent lighting: is a focused light, directed to illuminate specific objects or small areas.
- Task lighting: illuminates a task area and is located relatively close to the task surface. A desk lamp is an example of a task light.

Task and ambient lighting: was developed as an energy efficient method of creating both task and ambient light utilizing only one light source. (Rayfield , 1997)

2.9.3 The functions of environmental lighting:

Light patterns structure our sense of space, our impressions and consequently our actions. Therefore the designer should become sensitive to the uses of sparkle, silhouette, focal emphasis, color tune and other forms of spatial light. (Flynn, Segil & Steffy, 1988). Lighting artwork in a building lobby is different from lighting work surfaces. In today's environment, a successful lighting design should support the function and desired atmosphere of each space, maximize the use of daylight, support employee productivity and morale, and maximize energy efficiency. (Gibbs, 1995)

2.10 Heating, ventilating, and air conditioning (HVAC) systems

HVAC systems condition outdoor and indoor air to create a desired indoor environment. In the office, the desired environment is one that provides a safe, healthy, comfortable climate and supports the productivity of employees. These systems work by taking in outdoor air, and combining it with indoor air. The mixed air then delivered to indoor spaces through a distribution system of ducts. (Gibbs, 1995)

2.10.1 Effective HVAC System

Effective conditioning of the air requires the manipulation of several variables:

Heating and cooling, Air motion and distribution, Humidification and dehumidification, Ventilation and Indoor air quality

2.10.1.1 Heating and cooling

The primary purpose for heating and cooling the indoor environment is to create a temperature range comfortable for the occupants of the space. Generally, that range is between 68 and 78 degrees Fahrenheit. Temperature control is also consideration for the proper operation of office equipment. To achieve this control, the HVAC system must provide heating and cooling to compensate for external and internal heat loads created in the space.

2.10.1.2 Air motion and distribution

As conditioned air is delivered to a space, it is delivered at a specific velocity. That velocity affects the level of comfort in the space by altering the temperature as perceived by the occupant. Generally, more air motion is more comfortable in higher temperatures with more humidity. The distribution of air throughout a space is also a consideration. If improperly distributed, the conditioned air is stratified and creates uneven temperatures throughout the space. Both the air velocity and distribution must be controlled to prevent unnecessary noise in the space.

2.10.1.3 Humidification and dehumidification

The acceptable humidification in the office environment is 20 to 50 percent, higher or lower humidification levels not only less comfortable for human beings but contribute to poor air quality by promoting microbial growth in the space.

2.10.1.4 Ventilation

Ventilation is fresh air delivered to the indoor environment. Ventilation was provided by bringing outdoor air into the system, heating or cooling the air, and delivering the conditioned air to the occupied office space.

2.10.1.5 Indoor air quality

The quality of indoor air in the office environment has become a major consideration because poor air quality has been identified as a threat to worker health and productivity. (Eley& Marmot, 2000)

2.11 Acoustics

Acoustics is the science of sound production, control, transmission, reception, and effects, has been a clearly recognized priority in specialized spaces such as theatres or auditoriums when excellent sound control and performance is of preeminent concern.

The need for acoustical excellence is certainly no less important where the acoustical objective is to support a comfortable and productive workplace. This objective is accomplished through the application of fundamental principles of natural acoustics as

well as the use of electronic sound systems. These methods are used to control noise and to enhance speech privacy and speech intelligibility. (Myerson,2006)

2.11.1 Sound transmission and absorption

Sound is transmitted through barriers such as floors, partitions, ceilings, and doors. As sound waves travel through a barrier, a portion of the sound is absorbed by the materials. The amount of sound absorption or reflection of the sound wave is a function of thickness, density, and porosity of the materials. Generally materials that are thick, porous, and soft absorb more sound. Sound is also reflected from surfaces much as light bounces off glass. The harder the surface, the greater the reflection. As sound is reflected, it behaves with certain characteristics, such as reverberation and echo. (Gibbs, 1995)

2.11.2 Materials and treatments for acoustical control

To control sound transmission from one room to another as well as the patterns of sound within a specific room, the acoustical designer treats the sound source, the path, and the receiver to enhance or diminish the sound. Examples of treatment of the sound source include the use of a microphone to enhance a speaker's voice, and the use of isolation techniques to reduce the sound generated by building mechanical equipment. To treat the path, the acoustical designer manipulates the air or building materials. For example, sound that leaks around a full height partition through a ceiling plenum into the next room can be reduced sealing the space between the partition and the slab. The receiver can be treated, for example by applying sound absorbing materials to the room surfaces. (Rayfield , 1994)

Essentially, the acoustical design must create the correct reflection patterns to enhance sound as required, while eliminating unwanted transmission or sound, such as reverberation and echo. To accomplish this, the acoustical designer uses the sizing, shape, and the angles of the room and room surfaces in conjunction with the selection and application of building materials and finishes to angle, direct, absorb, and reflect the sound. (Flynn, Segil &Steffy, 1988)

All building materials have specific acoustical characteristics; certain surfaces should be sound reflecting, to enhance the intelligibility of speech. Wood and glass are highly reflective surfaces. Sound absorbing materials should be applied to appropriate surfaces to eliminate reverberation and echoes, to control noise, and to assist in achieving speech privacy. Fibrous ceiling tile, carpet, and fabric such as curtains are sound absorbing materials. (Eley& Marmot, 2000)

Two standard rating systems evaluate the acoustical properties. To identify the absorptive properties of building materials, the acoustical industry has established a standard rating system, the noise reduction coefficient (NRC). The NRC rates materials on a scale of 0.1 to 1.0. The highest number indicates the greatest absorption. The sound transmission class (STC) identifies the ability of the surface or structure to reduce or attenuate sound. The highest STC rating, the more effective the construction will be in reducing sound transmission. (Rayfield , 1997)

2.11.3 Open plan acoustical considerations

The objective in acoustical design in the open plan environment is freedom from noise and distraction from intruding speech. Partial height panels should be located between workstations. Sound absorbing finishes should be applied to the ceiling, partitions, furniture panels, and other surfaces. In addition, an electronic background sound masking system should be utilized. (Gibbs, 1995)

2.11.3.1 Background Sound masking systems

Background sound masking is a means of achieving speech privacy; it becomes so important in an open office environment. The sound generated by HVAC systems and street traffic in downtown locations actually helped to mask office noises. In a relatively quiet space, low intensity sounds and irrelevant conversations may be easily heard; this becomes distracting. (Rayfield , 1997)

Essentially, the masking sound raises the sound level in the space to one that interferes with normal speech intelligibility without becoming intrusively audible. This function can be served by establishing an artificial threshold that will mask remote or low intensity distractions. (Rayfield , 1997)

2.11.4 Total system performance in the open office environment

The U.S. government's public buildings service (PBS) sponsored the development of acoustical performance criteria for open office systems (PBS 1972). A single number criterion, designated "SPP " for Speech Privacy Potential, was introduced to evaluate the combined effects of three components on open office acoustics- the space dividers, ceiling system, and the background sound masking system. A complete system with an SPP rating of 60 db or more is considered a good open office system capable of creating an environment where speech intelligibility from one workstation to the next will be difficult if not impossible. (Flynn, Segil & Steffy, 1988)

2.12 Case studies

2.12.1 Innovative workplace design - Faculty of Architecture, Delft University of Technology (Netherlands)

2.12.1.1 Introduction

At present, there are many organizations that introduce flexible workplace. Also in the university where majority of occupiers are knowledge workers, innovative workplace design offers possible advantages. Recently, the innovative workplace design concept has been introduced to a temporary building of the Faculty of Architecture, Delft University of Technology, which its faculty building burnt down on 13 May 2008. This paper aims to explore and analyze the effect of workplace innovation on a temporary faculty building .

2.12.1.2 Temporary Faculty Building

On 13 May 2008, the main building of the Faculty of Architecture, Delft University of Technology was destroyed by fire, which caused a great damage to the whole building. Since the fire, many studies took place in tents, which brought about the immediate search for a substitute building as a place for studying, teaching and working under one roof. Figure (2.14) illustrates the former main building on Julianalaan that was introduced as a temporary building for the Faculty of Architecture.



Figure (2.14)Temporary faculty building (Delft University of Technology, 2009)

In the old faculty building, there was a requirement for space that promotes interaction and discussion. With more than 800 members of staff, many part-time appointments within and

between departments that called for a restructuring of the work environment, the Faculty of Architecture had already presented plans for a more activity-related working environment in January 2008. The temporary faculty building has total floor area of 32,000 square meters. It is much less space than the old faculty building that has 45,000 square meters. With more than 800 members of staff, the flexible work- place concept has been introduced to a temporary faculty building not only to answer the limitation of space problem, but it also offers a more efficient and effective place to work. The idea of flexible workplace is to offer the state of adaptability to workers over their working environment. Instead of providing all personal space for everyone, this concept allows workers to have freedom to choose working environment that best suit their needs. In the temporary faculty building, the flexible working is also needed to avoid a low office occupation rate and freeing up space that can be used as workshops or studios. The faculty wanted to get away from the cubicle mentality, to create a more open organization in which everything is more visible and employees and students interact with each other. The study by Noelle Huijgen that conducted on flexible workplace in the old faculty building found that many square metres remained unused, because many people were not always at their workstations.

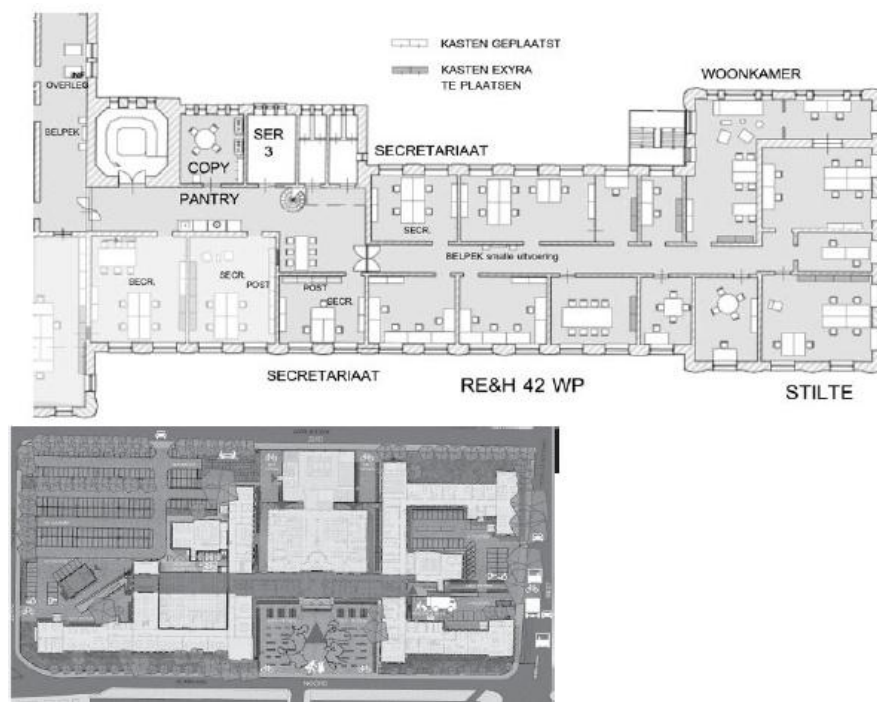


Figure (2.15) Layout of the temporary building (scribd, Innovative workplace design, 2009).

2.12.1.3 Working Spaces

Various types of workstations are provided to support different kind of activities ranging from quiet study areas that support individual work, the communal areas the offer place for students and academic staff to work together and the facilities are provided for large and small groups. A high ceiling makes the studio space even more spacious that can be easily adjusted for some particular activities. The studios are equipped with flat LCD screen. Free standing tools are provided for group work in some corners of the room. Reserved desk policy is also required for studying and teaching activities. There are spatial arrangements that group each department at the most adjacent area, which larger departments take up several floors, but located above each other in order to limit the walking distance with department as much as possible. Figure (2.16) illustrates floor plan with furniture layout of the Department of Real Estate & Housing. Each room is open to employees and faculty members that connected together along the corridor allowing for both individual and collaborative works.



Figure (2.16) floor plan with furniture layout of the Department of Real Estate & Housing (scribd, Innovative workplace design, 2009).

Figure (2.17) shows the general working spaces' characteristics in several departments which is required both for collaborative work and individual work



Figure (2.17) shows the general working spaces (scribd, Innovative workplace design, 2009).

Figure (2.18) shows furniture layout in silent area. According to limited working spaces, individual work is provided in a form of hot desking, which means that if the workstation is left more than two hours, it should be cleared for another person who needs to use it. Although there is a possibility for a person who wants to occupy a favorite workstation everyday, it must be understood that it is not a personal workstation.



Figure (2.18) shows furniture layout in silent area (scribd, Innovative workplace design, 2009).

For the ICT policy, most of the computers will be replaced by laptops with the exception for those in the secretariat office. All employees will receive mobile phones to substitute landlines. Employees will be contacted via their mobile phones except for the secretariats that remain to have landlines. Set by ‘a clean-desk policy,’ staff and visitors followed the faculty policy that are provided with personal storage with the access to lockers and shared book shelves. This way help archiving a more efficient space in less floor areas compared with the old faculty building.

Support work such as administration, secretaries and others has high occupancy, and needs to be approachable and accessible at all times. For all other employees, from interns to managers or research staff, a wide array of possibilities was designed: small meeting corners, open or closed, special ‘quiet cells,’ lounge spaces and coffee parlors. The secretariat office is provided staff with their own workstations that differ from other employees of the faculty. This can be interpreted from the nature of work that the staffs are more likely to operate in fixed workspaces. Since each department has a fixed space for secretariat office, supported facilities is surrounded the office to provide various kind of work activities needed during the day as shown in Figure (2.19) .

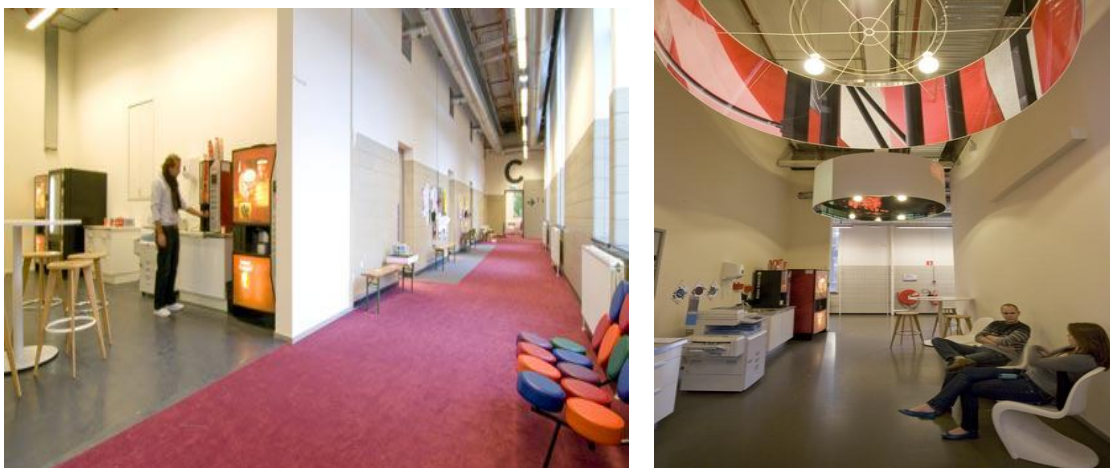


Figure (2.19) supported facilities (scribd, Innovative workplace design, 2009).

People are encouraged to work in various places other than in the office or studio. To meet the need for additional spaces to work, a number of workbenches have been installed in the BK City, the name of the temporary faculty building. The workbenches provide students a

space to plug in their laptops and prepare for class or check their e-mail. Equipped with stools at bar height, work- benches have been placed at 10 locations through- out the corridors of the BK City. Along the building wings street of the BK City offers opportunities for staff and students to communicate or work for a short time such as preparing for a lecture or checking their e-mail.

For the interior environment, the major concern is the possibility of noise. By outfitting the ceilings and the shelves that separate the smaller desks with noise absorbing materials, it can almost completely eliminate any hinder through noise. The architect managed to create a sense of protection, scale and privacy without making actual rooms using various sizes of cupboards, shelves and seats. All teaching rooms are fitted with curtains and acoustic wall or ceiling panels.

Meeting people with a coffee feeling is an atmosphere that is normally found in the BK City. Surrounded by more seating and reading materials, the espresso bar is the meeting place that students and staff can have conversations with a more relaxing manner. In many corners of the faculty building, coffee pantries are offered to those who want to take a break and meet with colleagues during the day as shown in Figure (2.20)

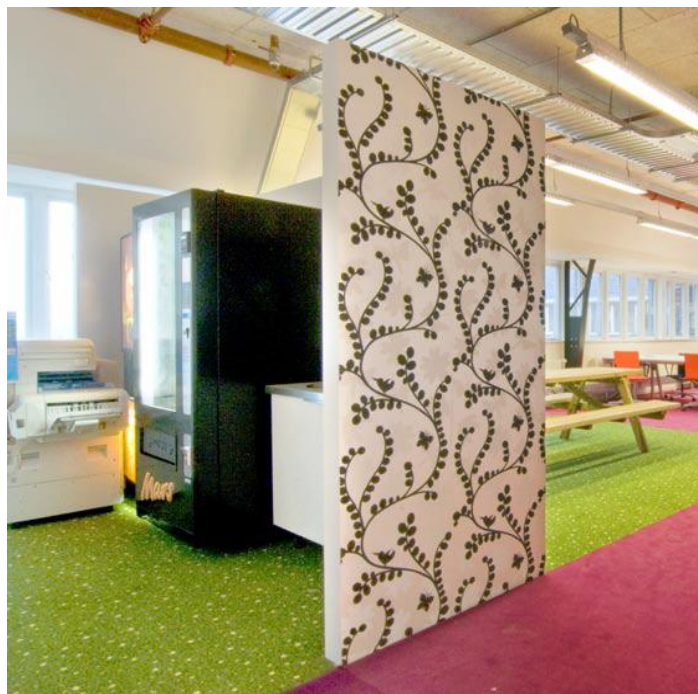


Figure (2.20) coffee pantries (scribd, Innovative workplace design, 2009).

Program	Old faculty building on Berlageweg	Temporary faculty building on Julianalaan	Temporary / Old faculty building (comparisons)
1. Educational workshops	5,680	7,840	+38% students present in the faculty
2. Office	6,300	6,340	+1% in different concept
3. Teaching rooms	1,090	1,100	+2% same capacity
4. Library	650	870	+34% more study areas
5. Teaching (hands-on practices)	3,580	3,250	-9%
6. Laboratory	860	660	-23% more space on TU Delft campus
7. Conference	1,100	770	-30% more space on TU Delft campus
8. Restaurant	380	690	+82% multifunctional use
9. Public space	1,220	2,050	+68% more space
10. Storage	3,300	1,240	-62% less necessary after the fire
Gross area (square meters)	42,000	32,000 + 4,000 (green house)	- 14%
Total useful area	24,160	24,820	+3% more useful

Workspaces	Storage
<ul style="list-style-type: none"> • Workstations are provided with high ergonomic concerns with furniture from Vitra. • Most of workstations belong to everyone except from the secretariat. • Clean desk policy is meant for the occupier that leaves workspace for more than two hours. The workspace has to be cleaned and clear for the next user. • A silent room is provided for concentrated work. Thus, it is not allow for talking. 	<ul style="list-style-type: none"> • Every staff has 1.2 metres of shelf space in a secure cabinet. Each cabinet has three keys: one for each shelf user. Replacement keys may be obtained from facility management personnel. • All equipment, materials and documents should be kept in the storage after leaving the office. • Extra storage space is provided for department uses. • The static (non-active) archives are to be housed in the basement. • Personal lockers are available by using campus card to activate. • BK City has been fully equipped with sprinklers, in compliance with all fire regulations. • Arbo (Dutch Office for Working Conditions) conditions have been fully met.

Table (2.1) Flexible workplace facts (scribd, Innovative workplace design, 2009).

2.12.1.4 Method and Results of the Evaluation

In February 2009, a research was conducted by the Rotterdam Institute for Social Scientific Research (RISBO) for the evaluation of occupancy and use of all spaces.

The survey received from 266 employees that completed a questionnaire on flexible workplace concept. Focus group discussions and capacity utilization measurement is also processed and analyzed. The employees feel the current environment is open and vibrant. The improved dynamic working environment has been recognized with the possibilities to meet other people and have informal face-to-face conversations. Furthermore, the environment is not very crowded; the preferred workplace is generally available. Most departments still have enough space for more people without substantial physical modification of the workplace. The employees indicate that the concept of flexible working sufficiently supports a number of tasks. Although the employees are overall satisfied with the new accommodations for the faculty, they are somewhat less satisfied with the concept of flexible office plan. (scribd, Innovative workplace design, 2009).

2.12.1.5 Discussions

However, of all the benefits that flexible workplace design offers in the new faculty building, there are some arguments from the research staff. The debate is about the requirement of workspaces that should depend on research activities. The work of academic staff which whom to give lectures, supervise student projects, carry out research requires a permanent workplace where they can pile up papers and keep their books and archives. There are some answers from the designers for the arguments. Firstly, a previous study from the old faculty building has shown that many square metres remained unused because many people were not always at their workstations. Flexible workplace can make more efficient use of space with the bundling of support functions in specific designated units, rooms and areas, for instance, desk islands, meeting rooms of various sizes, pantries with bar stools, mail boxes, cloak rooms, small cells for reading and writing and some privacy. Storage for papers and books are less required than the old situation. This is because people are less bound to the location where they work. As the fact that much

paperwork lost during the fire, the staff are encouraged to work digitally. The way that the staff can locate anywhere in the building with the accessibility to electronics files and digital works make it possible to have less paperwork. Furthermore, books and papers can be stored in the departmental secretaries and the main library instead of personal storages or desks. This concept is not forcing anyone to drastically change their habits, but aims to develop a dynamic research and education landscape where social and interaction will be part of the daily routine, and a place where the feeling of home will go beyond the desk . (scribd, Innovative workplace design, 2009).

The researcher shows that the open workplace design provided the faculty building with visual expansiveness, fresh air , natural lighting and noise treatment , but to reap all the potential benefits of open workplace design , it should have a permanent workstations for employees and the concept of hotdesking is suitable for other workplaces rather than universities.

2.12.2 Physical Workplace Environment- Monster.com

2.12.2.1 Introduction

“Trumpasaurus,” the cyberspace mascot of Monster.com, greets employees and visitors to illustrate the fun, dynamic and offbeat business approach that has made the company the most successful Internet based career center. The company, formerly known as Monster Board, is part of TMP Worldwide. The physical environment inside the company’s new headquarters near Boston reflects a work-hard, play-hard attitude and incorporates innovative and eye-catching design to help recruit and retain top talent.



Figure (2.22) The Monster.com mascot greets employees and visitors. This is one of many elements in the company’s physical workplace designed to help “capture” and retain top talent (American society of interior designers, 1999)

“We are not a traditional type of company, so we wanted a non-traditional physical work environment that communicates who we are and how we work,” said Jeffrey Taylor, founder and CEO of Monster.com. “We created an imaginative and interactive environment that helps us achieve our business objectives.”

The company moved in the summer of 1998 into its new 75,000-square-foot headquarters. “We’ve seen that a terrific physical work environment influences candidates’ decisions about accepting a job and supports increased productivity and creativity among current employees,” said Taylor. “Our office design is a perk to clearly differentiate us from other companies.”



Figure (2.23) Monster murals, bright colors and recreational areas convey that Monster.com is a fun and creative place to work. Cafés, teaming areas and conference rooms provide a variety of spaces for meetings and informal gatherings (American society of interior designers, 1999)

2.12.2.2 Monstrous” environment delights employees

Management at Monster.com developed and conducted a written survey of employees in telesales, the company’s largest business unit. The survey shows the new physical environment is a key factor in helping the company recruit and retain employees as well as achieve other business goals. Survey highlights include:

- 90 percent of employees said the new physical environment improves the company’s competitiveness as an employer in the marketplace
- 68 percent of employees who joined since the move to the new office said the physical environment was an important factor in their decision to accept a position, Of this group, 38 percent said it was very important or critical
- 55 percent of employees who have received outside job offers said the new physical environment was important in their decision to stay at Monster.com
- 67 percent said the new physical environment is a motivating factor for their sales activities. Of this group, 38 percent said it is very or extremely motivating

- 62 percent said the new physical environment promotes creativity Jocelyn Talbot, senior vice president of telesales, says the new physical environment has had a positive impact on her and the department. “I’ve been in telesales for 15 years, and this is by far the best environment I have ever worked in,” said Talbot. “We worked closely with the design team to make sure all our needs were met, and I’m very pleased with the results. The design is very creative and dynamic, but also very functional.”

2.12.2.3 Making a “monstrous” office

The design team worked closely with Taylor, as well as other key staff members, to develop a physical environment that reflects the CEO’s vision and the company culture. Bright colors, monster murals, and recreational areas with pingpong tables, fusbol, video games and exercise equipment convey that this is a fun and highly creative place to work. “I believe in working hard and playing hard, and I wanted office space that allows us to do both,” said Taylor. “The physical environment supports our work style and reflects our culture. It also provides places where people can hang out to strengthen their bonds with each other and the company.” Since attracting and retaining key staff was the primary goal of the project, the design appropriately focused on four key design factors: access (to maximize creative interaction among staff), comfort (to create a business/social environment amenable to Generation X staff), privacy (to enhance employees’ ability to focus for increased effectiveness), and flexibility (to enable employees to respond quickly and efficiently to their diverse job demands). Following are some specifics on how this was accomplished:

- Access is improved by combining employees from three different buildings onto one floor in the new headquarters. Monster Den, the main common area, includes a café and a meeting space large enough to accommodate the entire company. There also are 20 other meeting areas throughout the office, including conference rooms and teaming spaces with white boards for informal meetings to brainstorm and share ideas.

- Comfort is enhanced with fully adjustable chairs and desks, keyboard trays with wrist supports, new carpet and other measures customized to meet needs of individual employees. In addition, overhead lighting was carefully positioned to enhance visibility within workstations.
- Privacy and interaction needs are balanced in the telesales area by arranging semi-open workstations in a zigzag pattern. This approach minimizes auditory and visual distractions, yet allows employees to easily communicate with co-workers simply by backing up their chairs. Acoustical materials and sound-masking systems further reduce office noise. The design team also differentiated lighting to subtly express the distinction between private workspaces and interactive social spaces.
- Flexibility is provided by using workstation tables and chairs with wheels so they can be grouped together quickly and easily for team meetings. Overhead troughs distribute electronic data and telecommunications throughout the office. The troughs can be accessed as needed as departments and teams reconfigure and evolve to respond to changing requirements. (American society of interior designers, 1999)

2.12.2.4 Conclusion

Algiers says the keys to success are having the design team work closely with the CEO to understand and express his vision for the organization and involving employees in the design process. “The CEO provided the vision, and we worked with his staff to translate it into design solutions that effectively meet their specific current and future departmental needs,” she said. While response to the new office design has been overwhelmingly positive, Taylor does have one regret: “I’m really disappointed that I came in second during our futbol tournament.” (American society of interior designers, 1999)

the researcher shows from this case study that the workplace design not only support the work style of the organization and increase employees productivity and creativity but it also can reflect the culture of the organization , express about its vision and mission, and improve its competitiveness

CHAPTER 3

EMPLOYEES PERFORMANCE

3.1 Definition of human performance

3.2 Performance appraisal:

3.3 Performance Measurements:

3.4 The impact of workplace design on employees' performance:

3.1 Definition of human performance

The classic expression for human performance is that it is a function of ability, times motivation. (Campbell and Pritchard, 1976).

Performance can be defined as employee's functional behavior inside the organizations in order to achieve their objectives and consequently it shows the importance of recognizing the duties and responsibilities of the job "Job Description", which let the workers know their duties, responsibilities and their own rights. As a result the worker could perform his right and specific mission pertaining to his job properly.

Human performance defined as a group of administrative behaviors which express how the employee performs his job with high quality of performance, good implementation, technical experience of the job, communicational interaction with other organization staff members, and the commitment of the administrative rules which organize his job and upgrade it to better response carefully. (Al Bshabsha, 2005)

human performance is one of the most important activities which reflects both objectives and the required means to be obtained or realized, and Due to the performance importance, the 80s decade witnessed a constant research to solve the problems related to the job performance, and Scientific periodicals have issued many reports on organizations that looking for new leaders and reconstructing the organizational design, the participation of employees in decision-making obviously, updating quality sessions , creating incentives for both individual and group efforts and create means that focus on realizing on objective that improving performance .(Rabiq,2004)

The researcher mentions that human performance concept means employees activities through doing their tasks, duties and responsibilities which must be implemented by individuals according to job position and title, and the best performance is based on achieving the former work properly. Performance nature differs in various administrative levels within the organization this is due to variety of activities of each organization. In general the functional job performance is the outcome of humanitarian behavior in the

light of the procedures and techniques which directs the work towards a achieving the desirable objectives.

A sh-Shimmary mentioned the elements of forming the performance as follows:

a. Individual features:

The individual abilities that describe the person mentally, physically and skills besides motives, wishes and views of the individual which play a vital role in forming and directing.

b. Situational features:

It represents everything that related to the organizational environment where the individual works in besides the external environment where he lives. This might affect him socially. (Ash. Shimmary ,2007)

One of the situational factors over which the organization has some control is the Workspace in which the organizational member performs. (Amir & Sahibzada, 2008)

As preceded the researcher can deduce another definition for human performance which is the employee's behavior, duties, tasks and results of the interaction of the individual features and situational ones related to the job requirement that the employee can do, including his duties and tasks as well.

3.2 Performance appraisal

A performance appraisal is a review and discussion of an employee's performance of assigned duties and responsibilities. The appraisal is based on results obtained by the employee in his/her job, not on the employee's personality characteristics. The appraisal measures skills and accomplishments with reasonable accuracy and uniformity. It provides a way to help identify areas for performance enhancement and to help promote professional growth

Many definitions have been recorded on performance appraisal; in the following lines we exhibit some of them:

(Armstrong, 2006) defined performance appraisal as formal assessment and rating of individuals by their managers at, usually, an annual review meeting.

(Grote, 2002) defines performance appraisal as a formal management system that provides for the evaluation of the quality of an individual's performance in an organization. The appraisal is usually prepared by the employee's immediate supervisor. The procedure typically requires the supervisor to fill out a standardized assessment form that evaluates the individual on several different dimensions and then discusses the results of the evaluation with the employee.

Performance appraisal is a process, not a form. It structures your relationship with employees while providing legal protection for your company. A good appraisal system includes observation, documentation, and communication. A performance evaluation system can provide many benefits: It can improve employee performance and morale, identify poor performers and ways they can improve, and lay the groundwork for legally defensible discipline and termination (Amy, 2007).

Performance appraisal is a formal system of review and evaluation of individual or team task performance (Mondy and Noe, 2005).

Performance appraisals provide information relevant to personnel issues such as salary increases, promotion, transfers, training programs and employee feedback (Cleveland et al, 1989)

The point of performance appraisals is to see if the people under contract are performing as well as they can, and also to assess whether they are being fairly rewarded (their Remuneration, like their duties, is subject to contractual agreement (Herwig, 2003).

Performance appraisal is defined as evaluating an employee's current or past performance relative to his or her performance standards. The appraisal process therefore involves:

- 1- setting work standards
- 2- assessing the employee's actual performance relative to these standards
- 3- providing feedback to the employee with the aim of motivating that person to eliminate performance deficiencies or to continue to perform above bar.(Dessler ,2010)

Through the previous definitions, the researcher can elicit the following points that shed more light on the meaning of performance appraisal:

- **Performance appraisal is an ongoing formal process that requires the availability of a person who monitors performance.**
- **Performance appraisal is a process that requires the existence of specified criteria against which subordinates' performances are measured.**
- **Performance appraisal is a legal document that justifies promotion, demotion, transfer, training and recruitment.**
- **Performance appraisal does not halt to rating, it rather goes beyond this to include the area in which the performance of employee falls short and specifies methods for improving unsatisfactory performance**

3.2.1 The importance of performance appraisal

The aim of appraising performance is to develop the capacity of people to meet and exceed expectations and to achieve their full potential to the benefit of themselves and the organization (Armstrong, 2006).

Performance appraisal can be a primary source of information and feedback for employees, which is essential to their future development. The output of performance appraisal can be useful in different human resource functions, therefore the major uses of performance appraisal involve:

3.2.1.1 Human resource planning

In assessing a firm's human resource, data must be available that describes the promobility and potential of all employees, especially key executives. Management succession

planning is a key concern for all firms. A well designed appraisal system provides a profile of the organization's human resource strengths and weaknesses to support this effort (Mondy and Noe, 2005).

3.2.1.2 Training and development

By identifying deficiencies that adversely affect performance, human resource and line managers are able to develop training and development programs that permit individuals to build on their strengths and minimize their deficiencies. An appraisal system does not guarantee properly trained and developed employees. However, determining training and development needs is more precise when appraisal data are available (Mondy and Noe, 2005)

3.2.1.3 Career planning and development

Career planning and development may be viewed from either an individual or an organizational viewpoint. In either case, performance appraisal data are essential in assessing an employee's strengths and weaknesses and in determining the person's potential. Managers may use such information to counsel subordinates and assist them in developing and implementing their career plans (Mondy and Noe, 2005).

3.2.1.4 Assessment of employee potential

Some organizations attempt to assess employee potential as they appraise their job performances. While past behaviors may be the best predictors of future behaviors, an employee's past performance in one job may not indicate future performance in a higher position or different position. (Mathis, 2007).

3.2.1.5 Internal employee relations

Performance appraisal data are also frequently used for decisions in several areas of internal employee relations, including promotion, demotion, termination, layoff and transfer. When the performance level is unacceptable, demotion or even termination may be appropriate. When employees working under a labor agreement are involved, seniority

is typically the basis for layoffs. However when management has more flexibility, an employee's performance record is generally a more relevant criterion. (Mondy and Noe, 2005).

3.2.1.6 Recruitment and selection

Performance evaluation ratings may be helpful in predicting the performance of job applications. In interviews for example, the interviewing committee may use the previous performance appraisal of the applicant to have more obvious knowledge about how the performance of this applicant is expected to be. Also in validating selection tests, employee ratings may be used as the variable against which test scores are compared. In this instance, determination of the selection test validity would depend in the accuracy of appraisal results (Mondy and Noe, 2005).

3.2.1.7 Compensation program

Performance appraisal results provide a basis for rational decisions regarding pay adjustment. Most managers believe that they should reward outstanding job performance tangibly with pay increases. To encourage good performance, a firm should design and implement a reliable performance appraisal system and then reward the most productive workers and teams accordingly (Mondy and Noe, 2005).

3.2.2 Methods of appraising Performance

Usually organizations determine the method by which the employees' performance will be measured. Although there are four general measures of output, quality, quantity, cost, and timeliness (Grote, 2002). (Mathis,2007) summarized the methods of appraising the employees' performance in the following pages.

3.2.2.1 The 360-Degree Feedback Evaluation

The 360-degree feedback evaluation is an increasingly popular appraisal method that involves evaluation input from multiple levels within the firm as well as external sources. In this method, people all around the rated employee may provide rating, including senior managers, the employee himself or herself, supervisors, subordinates, peers, team

members and internal or external customers. Unlike traditional approaches, 360-degree feedback focuses on skills needed across organizational boundaries. Also, by shifting the responsibility for evaluation to more than one person, many of the common appraisal errors can be reduced or eliminated (Mondy and Noe, 2005).

3.2.2.2 Critical incidents

In the critical incidents method, the manager keeps written record of both highly favorable and unfavorable actions in an employee's performance. When a "critical incident" involving an employee occurs, the manager writes it down. A list of critical incidents is kept during the entire rating period for each employee (Mathis, 2007). With this method, the appraisal is more likely to cover the evaluation period and not focus in the last few weeks or months. (Mondy et al, 2002).

3.2.2.3 Essay

In the essay method, the rater simply writes a brief narrative describing the employee's performance. This method tends to focus on extreme behavior in the employee's work rather than routine day-to-day performance. The rater is usually given a few general headings under which he is requested to categorize comments. Ratings of this type depend heavily on the evaluator's writing ability. Because of their excellent writing skills, some supervisors can make even a marginal worker sound like a top performer. Comparing essay evaluations might be difficult because no comment criteria exist (Abu – Musa, 2008).

3.2.2.4 Checklist Appraisal

A checklist appraisal contains a series of questions about an employee's performance. A supervisor answers yes or no to the questions. Thus, a checklist is merely a record of performance, not an evaluation by a supervisor. The HRM department has a key for scoring the items on the checklist; the score results in a rating of an employee's performance. (Mathis, 2007).

The checklist can be modified so that varying weights are assigned to the statements or words. The results can then be quantified. Usually the weights are not known by the rating supervisor because they are tabulated by someone else, such as a member of the HRM department.

3.2.2.5 Work standards

The work standards method compares each employee's performance to a predetermined standards or expected level of output. Standards reflect the normal output of an average worker operating at a normal pace. Work standards may be applied to virtually all types of jobs, but they are most frequently used for production jobs. (Mondy et al, 2002).

3.2.2.6 Forced distribution

Forced distribution is a method that requires managers to assign employees into predetermined groups according to their performance, potential and promotability (Grote, 2002). As an example employees in the top 10 percent are placed in the highest group, the next 20 in the next group, the next 40 percent in the middle group, the next 20 percent in the second –to-lowest group, and the remaining 10 percent in the lowest category. This approach is based in the questionable assumption that all groups of employees will have the same distribution of excellent, average and poor performance. In short, this method makes no sense unless employees have been selected randomly. (Mathis, 2007).

3.2.2.7 Ranking

The ranking method consists of listing all employees from highest to lowest in performance (Mathis, 2007). For example, the best employee in the group is ranked highest, and the poorest is ranked lowest. This procedure is continued until all employees are ranked. The primary drawback of the ranking method is that the size of the differences among employees is not well defined. For example, there may be little difference in performance between those ranked third and fourth. This drawback can be overcome to some extent by assigning points to indicate the size of the gap. Ranking also means that someone must be last. It is possible that the last-ranked individual in one group would be

the top employee in a different group. Further, ranking becomes very unwieldy if the group to be ranked is very large (Mathis, 2007).

3.2.2.8 Behaviorally anchored rating scale (BARS)

The behaviorally anchored rating scale combines elements of traditional rating scales and critical incident method. In this method, various performance levels are shown along a scale with each described in terms of an employee's specific job behavior. In evaluating a group of employees working as interviewers, for example, suppose the factor chosen for evaluation is Ability to absorb and interpret policies. On the very positive end of this factor might be this interviewer could be expected to serve as an information source concerning new and changed policies for others in the organization. On the very negative end of this factor might be even after repeated explanations, this interviewer would be unable to understand new procedures. There might several levels in between the very negative and the very positive. Rather than have the raters judge the quality of a subordinate's performance, the rater is able to determine more objectively how frequently the employee performs in each defined level (Mondy and Noe, 2005).

3.2.2.9 Behavioral Observation Scale (BOS)

The Behavioral Observation Scale (BOS) is another behavioral approach to assessing employee performance. Like BARS, a BOS is developed from critical incidents. However, rather than only use a sample of behaviors that reflect effective or ineffective behavior, a BOS uses substantially more behaviors to specifically define all the measures that are necessary for effective performance. A second difference between a BOS and BARS is that rather than assessing which behavior best describes an individual's performance, a BOS allows managers to rate the frequency with which the individual employee has exhibited each behavior during the rating period. The manager then averages these ratings to calculate an overall performance rating for the individual. (Sims, 2007).

3.2.2.10 Results-based system

This theory is the past form of management by objectives. The manager and subordinates jointly agree on objectives for the next appraisal period in a result-based system. In such a system, one objective might be, to cut waste by 10 percent. At the end of the appraisal period, an evaluation focuses on how well the employee achieved this objective (Mondy and Noe, 2005).

One distinct advantage of this approach is that it provides a measure of achievement against predetermined objectives. However, since performance is outcomes do not indicate how to change, the method may be less helpful in employee development. Nevertheless, a result oriented approach remains a popular technique to evaluate employees, especially managers (Mondy et al, 2002).

3.2.2.11 Management by objectives

Management by objectives (MBO) represented an advantage on previous approaches to defining tasks and providing a basis for assessment. It is applied in two distinct phases, one concerned with the setting of objectives and the other with appraisal of performance (Thomason, 1988).

MBO specifies the objective goals that an individual hopes to attain within an appropriate length of time. The objectives that each manager sets are derived from the overall goals and objectives of the organization, although MBO should not be disguised means for a superior to dictate the objectives of individual manager or employee.

No management tool is perfect, and certainly MBO is not appropriate for all employees or all organizations. Jobs with little or no flexibility are not compatible with MBO. When imposed on a rigid and autocratic management system, MBO may fail. Extreme emphasis on penalties for not meeting objectives defeats the development and participative nature of MBO (Mathis, 2007)

3.2.3 Problems in performance appraisal:

Ideally, rating supervisors should be completely objective in their appraisals of employees. Each appraisal should directly reflect an employee's performance, not any

biases of a supervisor. Of course, this is impossible to do perfectly as most raters either intentionally or unintentionally commit errors. Hereinafter, the researcher discusses some of these errors:

3.2.3 .1 Unclear standards

Although the graphic rating scale seems objective, it would probably result in unfair appraisals because the traits and degrees of merit are open to interpretation. For example, different supervisors would probably define good performance, fair performance, and so on, differently. The same is true of such traits as quality of work or creativity. There are several ways to rectify this problem. The best way is to develop and include descriptive phrases that define each trait, for example, by specifying on the evaluation form what is meant by such things as outstanding, superior, and good quality of work. (Sims, 2007).

3.2.3 .2 Lack of objectivity

A potential weakness of traditional performance appraisal method is that they lack objectivity. In the rating scale method, for example, commonly used factors such as attitudes, loyalty, and personality are difficult to measure. In addition, these factors may have little to do with an employees' job performance. Some subjectivity will always exist in appraisal methods. However, employee appraisal based primarily on personal characteristics may place the evaluator and the organization in untenable positions with the employee an equal employment opportunity guidelines. (Mondy et al, 2002).

3.2.3.3 Bias

Rater bias occurs when a rater's value or prejudices distort the rating. Rater bias may be unconscious or quite intentional. If a manager has strong dislike of certain ethnic group, this bias is likely to result in distorted appraisal information for some people. Halo error occurs when a manager generalizes one positive performance feature or incident to all aspects of employee performance resulting in a higher rating (Mondy and Noe, 2005).

3.2.3.4 Leniency / Strictness

Some managers may rate their subordinates very high either because they want to show that the work under their responsibilities is proceeding very well or because they do not have the ability to convince their subordinates that their performances deserve this rating. Another problem which is closely connected to leniency is strictness. Strictness is rating subordinates on the lower level of the rating system. (Mondy and Noe, 2005).

3.2.3.5 Central Tendency

Central tendency is a common error that occurs when employees are incorrectly rated near the average or middle of the scale. This practice may be encouraged by some rating scale systems that require the evaluator to justify in writing extremely high and extremely low ratings. With such system, the rater may avoid possible criticism by giving only average ratings. However, since these ratings tend to cluster in the fully satisfactory range, employees do not often complain about this (Mondy and Noe, 2005).

3.2.3.6 Recent Behavior Bias

When rating is not based on the entire appraisal period and just on the last month of the appraisal this is called recent behavior bias. The performance of the subordinate may be outstanding during the year (if the appraisal is done annually) and on the last month the performance of the subordinate worsen. The rater evaluates the subordinate based on the last month and forgets the eleven-month outstanding performance. (Mondy and Noe, 2005).

3.2.3.7 Personal Bias

This pitfall occurs when supervisors allow individuals differences such as age, religion, seniority, sex, appearance or other arbitrary classifications to affect the rating they give to appraise. If the performance appraisal is examined by higher-level managers, this problem will be overcome. This pitfall is not only detrimental to employee morale, but it is also blatantly illegal and can result in costly litigation (Armstrong, 2006).

3.2.4 Essential Characteristics of an Effective Appraisal System: (Sims, 2007)

Performance appraisal system should be effective as a number of crucial decisions are made on the basis of score or rating given by the appraiser, which in turn, is heavily based on the appraisal system. Appraisal system, to be effective, should possess the following essential characteristics:

3.2.4.1 Reliability and validity

Appraisal system should provide consistent, reliable and valid information and data, which can be used to defend the organization – even in legal challenges. If two appraisers are equally qualified and competent to appraise an employee with the help of same appraisal technique, their ratings should agree with each other. Then the technique satisfies the conditions of inter-rater reliability. Appraisals must also satisfy the condition of validity by measuring what they are supposed to measure. For example, if appraisal is made for potential of an employee for promotion, it should supply the information and data relating to potentialities of the employee to take up higher responsibilities and carry on activities at higher level.

3.2.4.2 Job relatedness

The appraisal technique should measure the performance and provide information in job related activities/areas. More specifically, evaluation criteria should be determined through job analysis. Subjective factors, such as initiative, enthusiasm, loyalty and cooperation are obviously important; however, unless clearly shown to be job related, they should not be used.

3.2.4.3 Standardization

Appraisal forms, procedures, administration of techniques, ratings, etc., should be standardized as appraisal decisions affect all employees of the group. Firms should use the same evaluation instrument for all employees in the same job category who work for the same supervisor. Supervisors should also conduct appraisals covering similar periods for these employees.

3.2.4.4 Practical viability

The techniques should be practically viable to administer, possible to implement and economical to undertake continuously.

3.2.4.5 Legal sanction

Appraisals must meet the laws of the land. They must comply with provisions of various acts relating to labor.

3.2.4.6 Training to appraisers

Because appraisal is important and sometimes difficult, it would be useful to provide training to appraisers viz., some insights and ideas on rating, documenting appraisals and conducting appraisal interviews. Familiarity with rating errors can improve rater's performance and this may inject the needed confidence in appraisers to look into performance ratings more objectively.

3.2.4.7 Open communication

Most employees want to know how well they are performing the job. A good appraisal system provides the needed feedback on a continuing basis. The appraisal interviews should permit both parties to learn about the gaps and prepare themselves for future. To this end, managers should clearly explain their performance expectations to their subordinates in advance of the appraisals period. Once this is known, it becomes easy for employees to learn about the yardsticks and, if possible, try to improve their performance in future.

3.2.4.8 Employee access to results

Employees should know the rules of the game. They should receive adequate feedback on their performance. If performance appraisals are meant for improving employee performance, then withholding appraisal result would not serve any purpose. Employees simply cannot perform better without having access to this information. Permitting employees to review the results of their appraisal allows them to detect any errors that may have been made. If they disagree with the evaluation, they can even challenge the same through formal channels.

3.2.4.9 Due process

It follows then that formal procedures should be developed to enable employees who disagree with appraisal results (which are considered to be inaccurate or unfair). They must have the means for pursuing their grievances and having them addressed objectively

3.2.4.10 Consistency with the strategic mission of the organization

Effective performance management systems evolve from the recognition that human behaviors and capabilities collapsed into a single score have a limited use in shaping the necessary range of performance. In the end, since performance appraisal feeds into the performance management process and the ultimate goal of this process is to improve performance on the job, if the process is working, managers should be able to see real improvements in organizational performance. (Sims, 2007).

3.3 Performance Measurements

Since one of the characteristics of a performance standard is that it can be measured, managers should identify how and where evidence about the employee's performance will be gathered. Specifying the performance measurements when the responsibility is assigned will help the employee keep track of his progress, as well as helping managers in the future performance discussions. There are many effective ways to monitor and verify performance, the most common of which are:

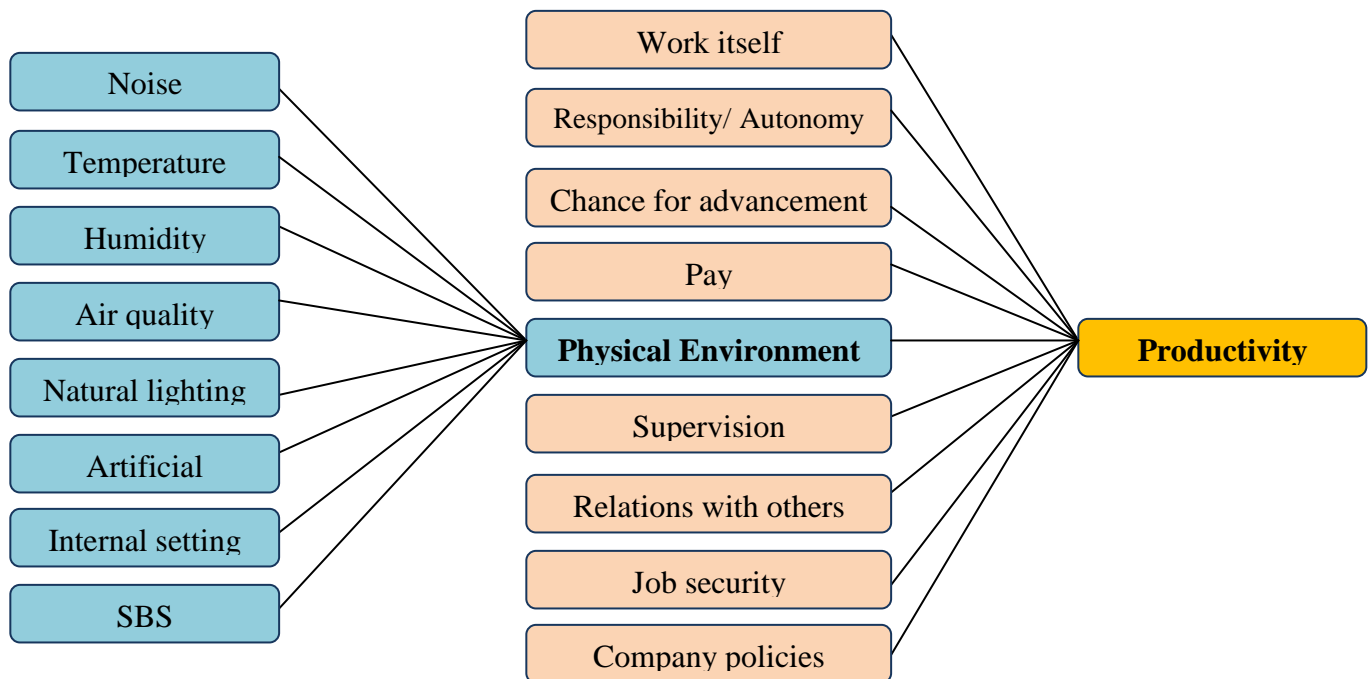
- Direct observation
- Specific work results (tangible evidence that can be reviewed without the employee being present)
- Reports and records, such as attendance, safety, inventory, financial records, etc.

Commendations or constructive or critical comments received about the employee's work. (UCSF, 2009)

3.4 The impact of workplace design on employees' performance

One way organizations increase their competitive advantage is through innovative strategies that improve human performance and can be enhanced or constrained by situational factors that are introduced into the organization's workspace. The findings of Nickell (1997) demonstrate that the more satisfied workers are with their jobs the better the company is likely to perform in terms of subsequent profitability and particularly productivity. (Amir & Sahibzada, 2008)

Figure (3.1) delineates the broader picture of tangible and intangible factors impacting productivity. (Doman, 2008)



The interior designing of offices nowadays play a crucial role as companies are being forced to raise their productivity with minimum amount of costs. By using modern office design which has given adequate consideration to an efficient and smooth workflow and improved employees satisfaction and performance, firms are able to increase their productivity. (Mooladays, office design, 2010)

The 21st century office acknowledges that the office environment is highly valued as a place for ideas, discussion, information, collaboration, teamwork and motivation. The industrial revolution created by the internet has changed everything about business. With companies doing automated sales around the clock and across time zones, office environment is the physical workplace. (Enotes, open plan office,2009)

Open environments lead to information being freely shared and thus remove the need for many targeted administrative transactions, the volume of information shared is increased, the increased frequency of interaction improves feedback/response time and work can continue unencumbered. Shared conversations can lead to faster recognition and resolution of issues. However, there is a fine balance between socializing and distraction, employees should have some privacy. Mid-height barriers are a good compromise between an open-plan office and cubicles, and soundproofing is imperative.(Improve my business, 2010)

Tacit learning is more effective than formal instruction and therefore better for employees' performance and Management can more easily monitor work in progress. (Wikipedia, open plan, 2009)

Ergonomics have a crucial contribution in guaranteeing that the workforce is efficient by maintaining employee's physical well-being. (Mooladays, office design, 2010)
Ergonomics is defined as "The science that seeks to adapt work or working conditions to suit the worker; the study of the problems of people adjusting to their environment."
Ergonomics is a key component when planning any office nowadays to support employees well being.(Office Design/layout,2009)

Well-being reflects a healthy mind and body overall contentment with the surroundings. And some degree of control of the surroundings is thermal comfort, air quality, light and acoustics. There are three indicators to evaluate well-being:

- a. Pleasure to displeasure;
- b. Comfort to anxiety;

c. Enthusiasm to depression. (Doman, 2008)

(Croome, 2006) claims that well-being is only one aspect of mental health; other aspects include personal feelings about one's competence, aspirations and degree of personal control. Task performance is best when mind and body are at an optimum stimulation level with a high degree of satisfaction. Motivation stems from satisfaction and sums up physical and non-physical factors that have a low or high magnitude and a positive and negative direction. (Doman, 2008)

As preceded the researcher can deduce the role that workplace design plays to improve employee's performance on the following points:

- **Workplace design can facilitate efficient and smooth running of workflow to raise the productivity**
- **Facilitate interaction as the office environment is highly valued as a place for ideas, discussions, information, collaboration, teamwork and motivation.**
- **Improve feedback/ response time and faster recognition and resolution of issues.**
- **Tacit learning which is more effective than formal instructions**
- **Socializing between employees while providing some privacy and less distraction.**
- **Support employees' well- being and satisfaction through ergonomics and interior design elements such as furniture and colors to stimulate employees' mind and body.**
- **Support employees' well- being and satisfaction through control of the surrounding by providing thermal control, air quality, light and acoustics.**

CHAPTER 4

ISLAMIC UNIVERSITY OF GAZA

4.1 Islamic University Overview

4.2 Building constructions development in the Islamic University

4.3A grave destruction of Islamic University of Gaza

4.4 New construction projects

4.5 The description and identification of the administration building of
Islamic University of Gaza (Kingdom of Al Bahrain building)

4.1 Islamic University Overview: (Islamic University of Gaza, 2010)

4.1.1 Introduction

IUG is an independent academic institution located in Gaza. IUG is a home to the well-planned programs, a way to the different community levels and a place for researchers and good teachers. It was established in 1978, IUG is a member of four associations: International Association of Universities, Community of Mediterranean Universities, Association of Arab Universities and Association of Islamic Universities.

4.1.2 Brief history of Islamic University of Gaza

Prior to the establishment of the Islamic University, students of Gaza Strip had to seek their higher education in Egypt because Gaza Strip lacked universities by then.

In 1967, it deemed necessary to a group of businessmen to establish a higher education institution in Gaza Strip to serve thousands of students and to help them save their time, money and effort. On that account was the establishment of Islamic University in 1978.

Starting with three faculties only, IUG developed its facilities and academic departments to have ten faculties at the moment to offer BA, B.Sc., MA, M.Sc., Diploma and higher diploma in a variety of disciplines.

After 30 years of establishment, IUG includes 21,000 students who are contributed in 50 programs in different specialists such as medicine, engineering, natural and human sciences.

Through sincere and continuous efforts and because of its highly qualified graduates, IUG has won both national respect and international fame.

4.2 Building constructions development in the Islamic University: (Islamic University of Gaza, 2009)

The Islamic University faced a lot of difficulties and obstacles in its educational process advancement. The most important obstacle was the Israeli occupation hindrance to construct both permanent and temporary building construction, thus the students were obliged to establish tents and bowers.

The Islamic University went on with its temporary constructions until 1994. After the advent of the Palestinian National Authority, a new phase of construction growth was begun. In 1994, the University started to renovate and build the university mosque; the mosque construction was completed in 1996. From 1996 to 2008, fifteen new constructions were built as permanent university buildings in figure (4.1).

The permanent buildings which were established from 1996 to 2008 in the main campus in Gaza city:

4.2.1 Al Quds Building for student activities

The construction was started on January, 1996, consists of five floors with 1500 m² for each. It is considered as lecture halls for male students, computer labs and other administration offices, there is a large stand hall that can be engaged by 180 people at one time, used for studying, symposiums and the scientific thesis discussions.

4.2.2 Shiekh Mohammed AbdelKarim Al hedan building for student activities

This project construction was started on May, 1997; it consists of six floors with total space 9000 m². It is for lecture halls for female students and computer labs. It includes the cafeteria in the basement floor, a pray hall, student activity hall and female student council. Also this building includes a large stand hall on its first floor for multi- purpose usage that can be engaged by 180 people at one time.

4.2.3 Teba building for student activities

This project construction was started on June, 1997; it consists of six floors with total space 9000 m². It is for lecture halls, computer labs and administration offices. It includes student activity halls and multi- usage halls in the basement floor. Also includes a large stand hall on its first floor for multi- purpose usage.

4.2.4 Conference building

The construction was started on July, 1997; it consists of a basement and two floors in the southern part A and in the northern part B , a ground floor and a large grand stand hall

that can be engaged by more than 1000 people at one time , it is used for conference purposes and university celebrations. the total space of the building is 7200 m2.

4.2.5 The scientific laboratories building

The construction was started on November, 1997, it consists of a basement and five floors with total space 5160 m2, the five floors includes the scientific labs for science college with all specializations and the basement includes the soil lab.

4.2.6 Prince Hamad bin khalefa al Thani building for student activities

The construction was started on July, 1998, it consists of a basement , a ground floor , mezzanine and two floors with total space 3850 m2.

4.2.7 Prince Turkey bin Abdulaziz building for Engineering and Technology

The construction was started on October, 1999, it consists of a basement and five floors with total space 3000 m2, it includes engineering labs, lecture halls and administration offices.

4.2.8 Al Madena Al Munawrah building for student activities

The construction was started on March, 2000, it consists of a basement and five floors with total space 7680 m2, it includes lecture halls for female students and a kitchen and rest halls in the basement floor.

4.2.9 The central Library building

The construction was started on November, 2001, it consists of a basement and five floors with total space 5400 m2, the building includes the university central library, reading halls and administration offices for the library.

4.2.10 Administration and teaching staff building (Kingdom of Al Bahrain)

The construction was started on August, 2003, it consists of a basement and five floors with total space 9900 m2, the building includes the presidency and all administrations of

Islamic University of Gaza, and the various deaneries of Islamic University Faculties and their academic and administration departments.

4.2.11 Information Technology (IT) Building

The construction was started on March, 2005, it consists of four floors with total space 4000 m², and the building includes the IT College administration, lab technician center and computer administration offices.

4.2.12 Continuous Learning Building

The construction was started on June, 2005, it consists of four floors with total space 3360 m². The building includes the guest rest hall, computer labs, workshops halls, lecture halls, Al Quran Al Karim center and the administration offices of the faculty of medicine.

4.2.13 Lecture halls with grand stand Building

The construction was started on May, 2006, it consists of a basement and five floors with total space 4920 m². The building includes the drawing halls for the Architecture department of the Engineering College in its basement and large grand stand lecture halls in the five floors.

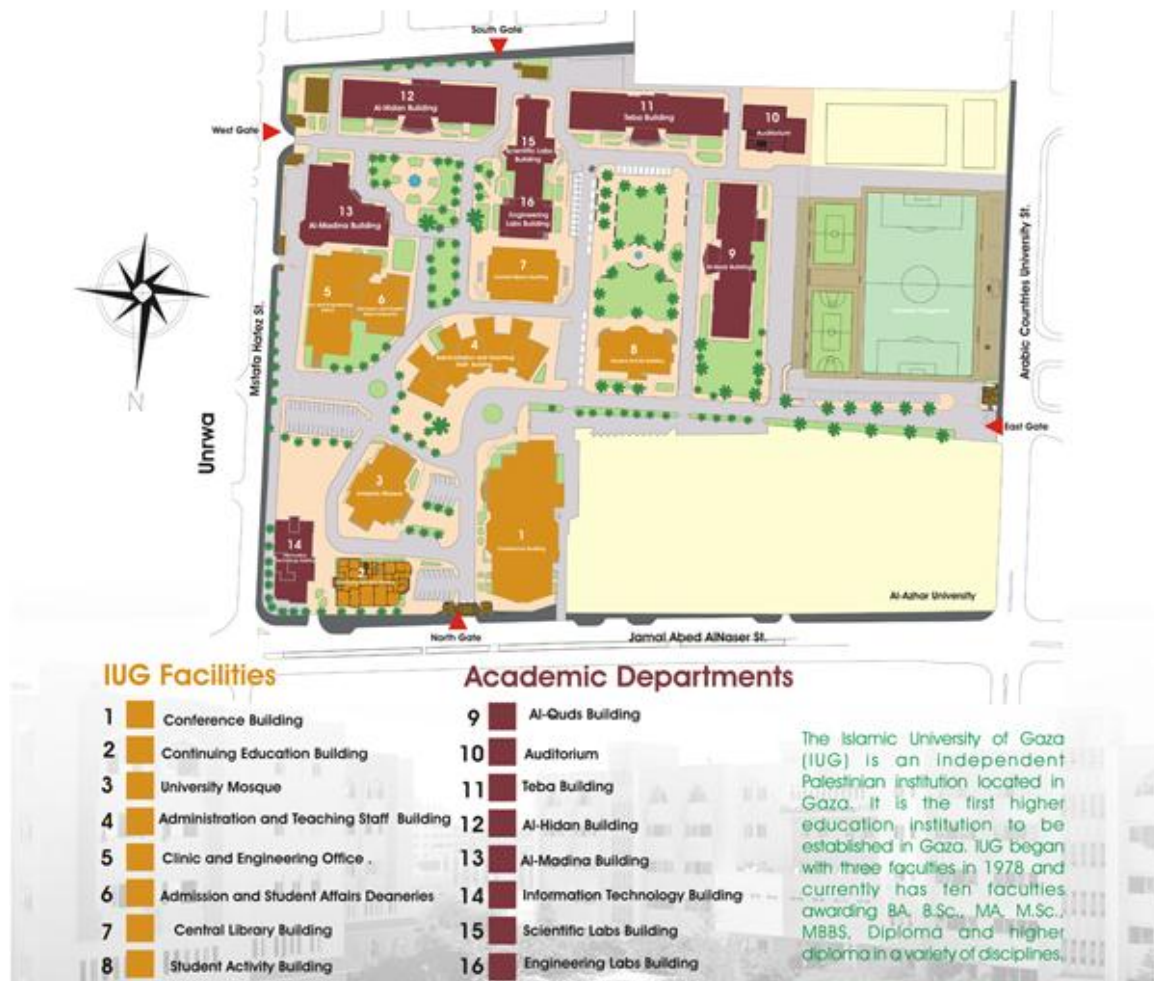


Figure (4.1) the site plan of the main campus of Islamic University and its buildings (Islamic University of Gaza, 2010)

4.3 A grave destruction of Islamic University of Gaza

On the 28 December 2008 the Israeli occupation air force shelled with heavy bombs and missiles the buildings of Islamic University that caused a total destruction of two main buildings in the campus which are the science labs building and Engineering labs building. Both buildings contained seventy four science and engineering laboratories that were equipped with thousands of modern apparatuses, appliances and devices. The two buildings turned into ruins including everything contained therein. A number of other buildings were damaged and many parts of them fell down. (Islamic University of Gaza, 2009)

4.4 New constructions projects: (Islamic University of Gaza, 2009)

Islamic University of Gaza has new construction projects and expansions in the southern Gaza Strip

4.4.1 Khanyounis campus

The IUG campuses were expanded from the main campus in western Gaza City to include the Khanyounis campus, which has new expansions in southern Gaza Strip.

4.4.2 Campus of Engineering & Technology Sciences

IUG prepared a design to establish a campus of Engineering & Technology Sciences aiming at serving the higher education in the field of Engineering and Technology as well as business and industrial development. That will be achieved through scientific technological centers, business incubators and research centers. To fulfill this project, IUG allocated 140 donums southern Gaza city and two buildings, from this campus were understructure.

4.4.3 Campus of medicine faculty

IUG is to establish a Medical Faculty Campus to include Medicine Faculty and University Hospital aiming at graduating a distinctive staff and participating in the rehabilitation of the medical staff in Gaza Strip.

4.5 The description and identification of the administration building of Islamic University of Gaza (Kingdom of Al Bahrain building):

The administration building includes the presidency and all administrations of Islamic University of Gaza, and the various deaneries of Islamic University Faculties and their academic and administration departments. The building was constructed on August, 2005, consists of five floors and basement with total space of 9900m².

4.5.1 Design problem

The designer of this building wanted to present an architecture solution for the administration building which includes presidency, administrations and various deaneries of Islamic University of Gaza colleges in one building, which were distributed in the past on various university buildings. The major problem was to reconcile between these various academic and administrations departments through giving spaces and facilities in motion among the employees with each other on one hand, and other academic and administrations on the other hand. In addition to that, to avail simple and easy contact with all male / female students separately. Besides the designer's care to offer that through constructing strong architecture form which express the building function and at the same time has the impression of strength and control over the space and respects the visual and motional dimensions, particularly the building is located on the cross point at the end of the east western and the north western dimensions.

So the formation took an arch shape which expressed strongly in its front where is a main mass in the middle which represents a main meeting hall in the building. Figure (4.2, 4.3) show the public position and photographic for the building.



Figure (4.2) the administration building of IUG (Mohsen, 2008)



Figure (4.3) the site plan of the administration building of IUG (Mohsen, 2008)

The building is located on the cross point at the end of the east western and the north western dimensions. So the formation took an arch shape which expressed strongly in its front where is a main mass in the middle which represents a main meeting hall in the building

4.5.2 The architecture description of the building

Figure (4.4) shows a typical model to one of the top view plans, express about the architectural formation of the building in general. The building consist of underground floor(basement) which includes stores and purchase field and computer Engineering labs and ground floor which includes public relations field, scientific research deanery, higher education and Sharea college deanery .the first, second, and third floors include the deaneries of various colleges of Islamic University of Gaza, as Engineering college , science, commerce, education colleges including the various offices of academic and administrative staff of the departments. The fifth floor includes the presidency offices, academic affairs deputies and administration, information technology, planning and development, human resources development and their assistants and other administrators.

Finally the roof includes the mechanical and electrical services. And the floors from first to fourth show a meeting hall on the middle of each floor of the building to appear as a strong element in the main elevation of the building.

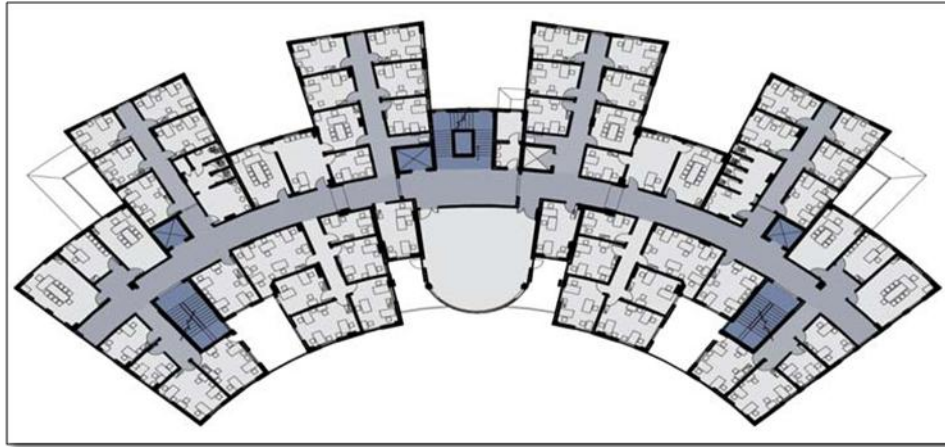


Figure (4.4) A typical model of the top view plans for the administration building of Islamic university of Gaza (Mohsen, 2008)

It is noticed from the plan, that there are many closed spaces which affect the visual connection and decrease the natural lighting and ventilation for the offices, in addition to the confusion that overwhelmed those spaces and the main circulation of the building and limited and decreased motion flexibility.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 Introduction:

5.2 Data Collection:

5.3 Research Population:

5.4 Research Sample :

5.5 Data Measurement :

5.6 Statistical analysis Tools

5.7 Validity of Questionnaire:

5.8 Statistical Validity of the Questionnaire:

5.9 Reliability of the Research

5.10 Internal validity

5.11 Structure validity

5.12 Reliability Statistics

5.1 Introduction

This chapter defines the methodology used in this thesis. The researcher uses analytical descriptive method, which tries to describe and assess the impact of workplace design on employees performance.

The descriptive analysis method compares, explains, and evaluates in order to generalize meaningful results to enrich knowledge in this regard. This methodology scans past studies to make full use of them when applied, and predicts the outcomes of the study in the coming stage.

5.2 Data Collection:

5.2.1 Primary Data:

The questionnaire survey was chosen as the main tool for primary data collection. The questionnaires were distributed to IUG employees whom working in the administration building in order to assess the impact of workplace design on employees performance.

5.2.2 Secondary Data:

The data is collected here depending on reviewing of: Published data search, including papers, documents and books and Researches and previous studies conducted by organizations which are of some important for improving employees performance through workplace design

5.3 Research population:

The Study population consists of IUG employees whom working in the administration building which includes academic employees, administrative , academic/ administrative and services employees. The researcher referred to the administrative affairs and employees affairs of the Islamic University of Gaza to determine the research population .There are 401 employees working in the administration building

5.4 Research Sample:

The researcher chose the sample study using Stratified random sampling that includes 270 employees working in the administration building which represented 67.3% of the study population. 270 questionnaires were distributed to the administration building employees at all academic faculties and administrative departments of Islamic University of Gaza , A total of 217 out of the 270 questionnaires were retrieved for a response rate of 80.4 %.

Table (5.1) Sample distribution

Job type	population	# questionnaires	Percent %
Academic	207	125	60.3%
Administrator	132	100	75.7%
Academic/Administrator	62	45	72.5%
Total	401	270	67.3%

5.5 Data Measurement

In order to be able to select the appropriate method of analysis, the level of measurement must be understood. For each type of measurement, there is/are an appropriate method/s that can be applied and not others. In this research, ordinal scales were used. Ordinal scale is a ranking or a rating data that normally uses integers in ascending or descending order. The numbers assigned to the important (1,2,3,4,5) do not indicate that the interval between scales are equal, nor do they indicate absolute quantities. They are merely numerical labels. Based on Likert scale we have the following:

Item	<i>Strongly agree</i>	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
Scale	5	4	3	2	1

5.6 Statistical analysis Tools

The researcher would use data analysis both qualitative and quantitative data analysis methods. The Data analysis will be made utilizing (SPSS 15). The researcher would utilize the following statistical tools:

- 1) Cronbach's Alpha for Reliability Statistics
 - 2) Spearman Rank correlation for Validity
 - 3) Frequency and Descriptive analysis
 - 4) Nonparametric Tests (Sign test, Mann-Whitney test, and Kruskal-Wallis test)
- *Sign test* is used to determine if the mean of a paragraph is significantly different from a hypothesized value 3 (Middle value of Likert scale). If the P-value (Sig.) is smaller than or equal to the level of significance, $\alpha=0.05$, then the mean of a paragraph is significantly different from a hypothesized value 3. The sign of the Test value indicates whether the mean is significantly greater or smaller than hypothesized value 3. On the other hand, if the P-value (Sig.) is greater than the level of significance, $\alpha=0.05$, then the mean a paragraph is insignificantly different from a hypothesized value 3.
 - *Mann-Whitney test* is used to examine if there is a statistical significant difference between two means among the respondents toward the Up to what extent there is gender mainstreaming within NGOs in the Gaza Strip due to gender and marital status.
 - *Kruskal-Wallis test* is used to examine if there is a statistical significant difference between several means among the respondents toward the *Up to what extent there is gender mainstreaming within NGOs in the Gaza Strip?* due to Years of operation, Number of employees, Number of employees, Age group, Marital Status, Education, Job Title, Years of service

5.7 Validity of Questionnaire

Validity refers to the degree to which an instrument measures what it is supposed to be measuring. Validity has a number of different aspects and assessment approaches.

Statistical validity is used to evaluate instrument validity, which include criterion-related validity and construct validity.

5.8 Statistical Validity of the Questionnaire

Validity refers to the degree to which an instrument measures what it is supposed to be measuring (Pilot and Hungler,1985). Validity has a number of different aspects and assessment approaches.

To insure the validity of the questionnaire, two statistical tests should be applied. The first test is Criterion-related validity test (Spearman test) which measure the correlation coefficient between each paragraph in one field and the whole field. The second test is structure validity test (Spearman test) that used to test the validity of the questionnaire structure by testing the validity of each field and the validity of the whole questionnaire. It measures the correlation coefficient between one filed and all the fields of the questionnaire that have the same level of similar scale.

5.8.1 Internal Validity

Internal consistency of the questionnaire is measured by a scouting sample, which consisted of 30 questionnaires through measuring the correlation coefficients between each paragraph in one field and the whole filed.

5.8.2 Structure Validity of the Questionnaire

Structure validity is the second statistical test that used to test the validity of the questionnaire structure by testing the validity of each field and the validity of the whole questionnaire. It measures the correlation coefficient between one filed and all the fields of the questionnaire that have the same level of liker scale.

5.9 Reliability of the Research

The reliability of an instrument is the degree of consistency which measures the attribute; it is supposed to be measuring (Polit & Hunger,1985). The less variation an instrument produces in repeated measurements of an attribute, the higher its reliability. Reliability can be equated with the stability, consistency, or dependability of a measuring

tool. The test is repeated to the same sample of people on two occasions and then compares the scores obtained by computing a reliability coefficient (Polit & Hunger, 1985).

5.9.1 Cronbach's Coefficient Alpha

This method is used to measure the reliability of the questionnaire between each field and the mean of the whole fields of the questionnaire. The normal range of Cronbach's coefficient alpha value between 0.0 and + 1.0, and the higher values reflects a higher degree of internal consistency. The Cronbach's coefficient alpha was calculated for each field of the questionnaire.

5.10 Internal Validity

The researcher assessed the fields' internal validity by calculating the correlation coefficients between each paragraph in one field and the whole field.

Table (6.1) clarifies the correlation coefficient for each Paragraph of the " Administration building spaces " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at $\alpha = 0.05$, so it can be said that the paragraphs of this field are consistent and valid to be measure what it was set for.

Table (5.2) Correlation coefficient of each Paragraph of " Administration building spaces " and the total of this field

No.	Paragraph	Spearman Correlation Coefficient	P-Value (Sig.)
1-	facilitate flexibility and the ease of movement	0.694	0.000*
2-	increased the efficiency of space utilization	0.696	0.000*
3-	Facilitate interaction ,communication and teamwork between employees	0.796	0.000*

4-	facilitate the efficiency and the smooth of the workflow	0.791	0.000*
5-	increased social relationships between employees	0.662	0.000*
6-	provide visual expansiveness and views	0.765	0.000*
7-	provide the natural lighting and fresh air to reach all of the interior spaces	0.716	0.000*
8-	increased your privacy	0.630	0.000*
9-	increased the opportunity to secure materials and equipment more easily	0.423	0.000*
10-	decreased the level of noise	0.388	0.000*

* Correlation is significant at the 0.05 level

Table (5.3) clarifies the correlation coefficient for each Paragraph of the " Interior design " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at $\alpha = 0.05$, so it can be said that the paragraphs of this field are consistent and valid to be measure what it was set for.

Table (5.3) Correlation coefficient of each Paragraph of " Interior design " and the total of this field

No.	Paragraph	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Your office is well organized	0.645	0.000*
2.	Your office is sufficiently equipped for your typical needs	0.745	0.000*
3.	Your office furniture design is convenient for your job performance	0.814	0.000*

4.	Your office furniture quality is considered high	0.827	0.000*
5.	Your office furniture is comfortable so you can work for a long time without getting tired	0.807	0.000*
6.	There is a flexibility of use in your office furniture	0.773	0.000*
7.	You have color harmony in your office that you like	0.751	0.000*
8.	Your office furniture quality is considered high	0.799	0.000*
9.	Your office furniture is comfortable so you can work for a long time without getting tired	0.704	0.000*
10.	There is a flexibility of use in your office furniture	0.734	0.000*

* Correlation is significant at the 0.05 level

Table (5.4) clarifies the correlation coefficient for each Paragraph of the " lighting " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at $\alpha = 0.05$, so it can be said that the paragraphs of this field are consistent and valid to be measure what it was set for.

Table (5.4) Correlation coefficient of each Paragraph of " lighting " and the total of this field

No.	Paragraph	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Your workspace is provided with efficient lighting so you can work easily without strain on your eyes or visual confusion	0.852	0.000*
2.	Ample amount of natural lighting comes into your office	0.874	0.000*

3.	You don't face any problems of lighting in your office like silhouette, sparkle or glare	0.859	0.000*
4.	Your office lighting support the function and desired atmosphere	0.884	0.000*
5.	Your office lighting support your productivity and morale	0.899	0.000*

* Correlation is significant at the 0.05 level

Table (5.5) clarifies the correlation coefficient for each Paragraph of the " Temperature and Ventilation " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at $\alpha = 0.05$, so it can be said that the paragraphs of this field are consistent and valid to be measure what it was set for.

Table (5.5) Correlation coefficient of each Paragraph of " Temperature and Ventilation " and the total of this field

No.	Paragraph	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Your office temperature affects your normal level of performance positively	0.692	0.000*
2.	The overall temperature of your office is pleasant	0.855	0.000*
3.	Windows in your office provide you the fresh air	0.858	0.000*
4.	You are able to control temperature and airflow in your office	0.868	0.000*
5.	Your office temperature support your productivity and morale	0.827	0.000*

* Correlation is significant at the 0.05 level

Table (5.6) clarifies the correlation coefficient for each Paragraph of the " Noise " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at $\alpha = 0.05$, so it can be said that the paragraphs of this field are consistent and valid to be measure what it was set for.

Table (5.6) Correlation coefficient of each Paragraph of " Noise " and the total of this field

No.	Paragraph	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Your work environment is quiet	0.779	0.000*
2.	You have quiet and undisturbed time	0.762	0.000*
3.	Your workspace is free from noise distractions	0.823	0.000*
4.	You have speech privacy and intelligibility	0.763	0.000*
5.	You are able to control noise transmission	0.776	0.000*
6.	You have some treatments for acoustical control	0.702	0.000*
7.	affordable noise level at your workspace won't affect your productivity and morale	0.720	0.000*

* Correlation is significant at the 0.05 level

Table (5.7) clarifies the correlation coefficient for each Paragraph of the " Employees performance " and the total of the field. The p-values (Sig.) are less than 0.05, so the correlation coefficients of this field are significant at $\alpha = 0.05$, so it can be said that the paragraphs of this field are consistent and valid to be measure what it was set for.

Table (5.7) Correlation coefficient of each Paragraph of " Employees performance " and the total of this field

No.	Paragraph	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Due to overall workplace environment and design you can complete your daily tasks easily and efficiently	0.392	0.000*
2.	Due to overall workplace environment and design you can finish your tasks on the specific time	0.459	0.000*
3.	Good design of Workplace support your satisfaction and well-being	0.489	0.000*
4.	your satisfaction of your workplace design improve your performance	0.586	0.000*
5.	Workplace design affects the efficient and smooth of workflow	0.642	0.000*
6.	Workplace design affects team working	0.696	0.000*
7.	Workplace design affects collaboration and discussions between employees	0.649	0.000*
8.	Workplace design affects sharing information	0.682	0.000*
9.	Workplace design affects the need for administration transactions	0.688	0.000*
10.	Workplace design affects feedback and response time	0.638	0.000*
11.	Workplace design affects faster recognition and resolution of issues	0.654	0.000*
12.	Workplace design affects tacit learning	0.572	0.000*
13.	Workplace design affects your motivation	0.653	0.000*
14.	Workplace design affects socializing and relationships between employees	0.677	0.000*

15.	Workplace design affects decision making process	0.624	0.000*
16.	Workplace design affects monitoring of the work	0.711	0.000*
17.	Workplace design affects your privacy and distraction	0.600	0.000*
18.	Workplace design affects your absenteeism and your commitment of work times	0.605	0.000*
19.	Workplace design affects your commitment of the administrative rules and procedures of the organization	0.639	0.000*
20.	Workplace design affects your performance measurement	0.737	0.000*
21.	Workplace design affects your performance appraisal	0.726	0.000*
22.	Your workplace design affects your performance	0.649	0.000*

* Correlation is significant at the 0.05 level

5.11 Structure Validity

The researcher assessed the fields' structure validity by calculating the correlation coefficients of each field of the questionnaire and the whole of questionnaire.

Table (5.8) clarifies the correlation coefficient for each field and the whole questionnaire.

The p-values (Sig.) are less than 0.05, so the correlation coefficients of all the fields are significant at $\alpha = 0.05$, so it can be said that the fields are valid to be measured what it was set for to achieve the main aim of the study.

Table (5.8) Correlation coefficient of each field and the whole of questionnaire

No.	Field	Spearman Correlation Coefficient	P-Value (Sig.)
1.	Administration building spaces	0.769	0.000*
2.	Interior design	0.739	0.000*

3.	lighting	0.708	0.000*
4.	Temperature and Ventilation	0.698	0.000*
5.	Noise	0.707	0.000*
6.	Workplace Design	0.904	0.000*
7.	Employees performance	0.487	0.000*

* Correlation is significant at the 0.05 level

5.12 Reliability Statistics

5.12.1 Cronbach's Alpha Coefficient:

Table (5.9) shows the values of Cronbach's Alpha for each field of the questionnaire and the entire questionnaire. For the fields, values of Cronbach's Alpha were in the range from 0.874 and 0.963. This range is considered high; the result ensures the reliability of each field of the questionnaire. Cronbach's Alpha equals 0.939 for the entire questionnaire which indicates an excellent reliability of the entire questionnaire.

And the values of the Reliability were in the range from 0.935 and 0.981. This range is considered high.

Table (5.9) Cronbach's Alpha for each field of the questionnaire and the entire questionnaire

No.	Field	Cronbach's Alpha	Reliability
1.	Administration building spaces	0.874	0.935
2.	Interior design	0.928	0.963
3.	lighting	0.936	0.967
4.	Temperature and Ventilation	0.900	0.949
5.	Noise	0.883	0.940

6.	Workplace Design	0.963	0.981
7.	Employees performance	0.924	0.961
	Total paragraphs of the questionnaire	0.939	0.969

5.13.2 Split Half Method:

Table (5.10) clarifies the correlation coefficient for each field of the questionnaire. The correlation coefficients of all field are significant at $\alpha = 0.05$, so it can be said that the fields are consistent and valid to be measure what it was set for. Thereby, it can be said that the researcher proved that the questionnaire was valid, reliable, and ready for distribution for the population sample.

Table (5.10) the correlation coefficient for each field of the questionnaire

No.	Field	Correlation Coefficient	Spearman-Brown Correlation Coefficient
1.	Administration building spaces	0.850	0.919
2.	Interior design	0.902	0.948
3.	Lighting	0.853	0.921
4.	Temperature and Ventilation	0.814	0.898
5.	Noise	0.816	0.899
6.	Workplace Design	0.961	0.980
7.	Employees performance	0.932	0.965

CHAPTER 6
DATA ANALYSIS, INTERPRETATIONS AND
HYPOTHESIS TESTING

6.1 Data results and interpretation:

6.2 Hypotheses testing

6.1 Data results and interpretation:

6.1.1 Personal Traits

Table (6.1) showed the breakdown of the returned questionnaires. Administrators have the highest response rate where they responded effectively to the questionnaire , Academic and Academic/ administrators are very busy and some of them apologized about filling the questionnaire.

Table (6.1): Breakdown of the Answered Questionnaires

Job type	Distributed Frequency	Answered Frequency	Response rate	Answered percent %
Academic	125	82	66%	37.8%
Administrator	100	97	97%	44.7%
Academic/Administrator	45	38	84.4%	17.5%
Total	270	217	80.4%	100%

6.1.1.1 Gender

Table (6.2) shows that males represent 84.2% of the sample while female represents only 15.8%. this indicates that most of Islamic University employees are male, And the reason here as noted by the researcher is due to the number of qualified males is more than females In Gaza Strip location.

Table (6.2): Gender

Gender	Frequency	Percent
male	186	84.2
female	35	15.8
Total	221	100.0

6.1.1.2 Age

Table (6.3) shows that 54.8% of the respondents' ages are between 25 to less than 35 years, 19.0% of the ages are between 35 to less than 45 years, and 26.2% of ages are 45

and more, this indicates that the respondents from different ages but the most dominant age of respondents is From 25 to less than 35 years , as IUG encourages the employment of youth and new graduates , and most of IUG administrative employees are from this age group. some of the academic employees whom their ages more than 35 are very busy and apologized about filling the questionnaire.

Table (6.3): Age

Age	Frequency	Percent
From 25 to less than 35 years	115	54.8
From 35 to less than 45 years	40	19.0
45 and more	55	26.2
Total	210	100.0

6.1.1.3 Type of job

Table (6.4) shows that type of job " Academic" represents 37.8%, 17.5% " Academic/Administrator" , and 44.7% " Administrator". The biggest number of respondents are administrators, where Academic and academic/administrators are busy and apologized about filling the questionnaires

Table (6.4):Type of job

Type of job	Frequency	Percent
Academic	82	37.8
Academic/Administrator	38	17.5
Administrator	97	44.7
Total	217	100.0

6.1.1.4 College

Table (6.5) shows the type of colleges and departments of Islamic University of Gaza where IUG employees working according to their specialization. it is clear from the table

that the Engineering College have the large number of respondents 21.2% , then the commerce 15.6 % , then the Arts 11.5%, other colleges and departments have small percentages because they have small number of employees.

Table (6.5): college type

Departments	Answered Frequency	Answered percent %
Faculty of Arts	25	11.5
Faculty of Asoul Al-Deen	11	5
Faculty of Commerce	34	15.6
Faculty of Education	18	8.2
Faculty of Engineering	46	21.2
Faculty of Science	20	9.2
Faculty of Sharea and Law	10	4.6
University presidency	4	1.8
Academic Affairs	5	2.3
Admin. Affairs	5	2.3
resources development	2	0.9
Employees affairs	3	1.3
Graduate studies	4	1.8
Requirements and purchasing	5	2.3
Public relation	10	4.6
External relation	1	0.46
Planning and development	1	0.46
Scientific research	2	0.9
Labs trustees	1	0.46
services	10	4.6
Total	217	100.0

6.1.2 Analyzing the dimensions of the questionnaire:

6.1.2.1 Analyzing the first dimension : Administration building spaces

The first dimension discusses the administration building spaces where table (6.6) shows the following results:

- The mean of the paragraph #1 “facilitate flexibility and the ease of movement” equals 3.70 (74.04%), Test-value = 8.90, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3. which indicates that the respondents agreed that the administration building spaces provide flexibility and ease of movement but didn’t reach the required level, as the design of this building shows a typical model of top view plans which creates a rigid office size by modules and columns locations and the closed spaces were constructed of solid dry wall partitions which extended from floor to ceiling.
- The mean of the paragraph #6 “provide visual expansiveness and views” equals 3.02 (60.35%), Test-value = 1.06, and P-value = 0.145 which is greater than the level of significance $\alpha = 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 3. This indicates that the respondents were not able to formulate a concrete answer, 60.36% agreed that the administration building spaces didn’t provide visual expansiveness and views because the spaces are fully closed and windows are not open to the interior spaces.
- The mean of the paragraph #10 “decreased the level of noise” equals 2.71 (54.14%), Test-value = -2.96, and P-value = 0.002 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is negative, so the mean of this paragraph is significantly smaller than the hypothesized value 3 because. This indicates that the respondents disagreed that the administration building spaces decreased the level of noise, whereas it is considered a closed plan

In general the mean of the field “the administration building spaces” equals 3.35 (66.96%), Test-value = 6.57, and P-value=0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 3.

Which indicates that the 66.9% of IUG employees agreed about the administration building spaces but the percentage is considered low , this reveals that the design of the administration building spaces did not reach the required level, where it creates rigid small offices by modules and columns locations which are fully closed, constructed of solid dry wall partitions extended from floor to ceiling, which decreased flexibility and ease of movement , limits interaction and the smooth of workflow , decreased visual expansiveness and views and limited natural lighting and fresh air to reach all of the interior spaces , while it is considered a closed plan , it decreased employees privacy and increased the level of noise where two or three employees are shared in each office and large number of students visit each employee during the day without any treatments for acoustical transmission which affect their concentration, productivity and performance negatively

This finding is consistent with (mohsen, 2008) which shows that 56% of IUG employees agreed that the flexibility and ease of movement were achieved through the spaces of the administration building, and shows that 69% of IUG employees agreed that the open spaces affects employees productivity and work efficiency positively. Also it is consistent with (American Society of Interior Designers, 1997) which shows that Nearly one quarter of the “ASID 200” survey respondents say they improved productivity by improving flexibility, it is consistent with (Corporate interiors ,2005) which shows that open offices foster collaboration and social bonding, and it is consistent with (Gensler,2006) which shows that 30% of workers think their current workplace promotes spontaneous interaction, collaboration, cooperation and team work.

Table (6.6): Means and Test values for “Administration building spaces”

	Item	Mean	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	facilitate flexibility and the ease of movement	3.70	74.04	8.90	0.000*	1
2.	increased the efficiency of space utilization	3.47	69.34	6.52	0.000*	5
3.	facilitate interaction ,communication and teamwork between employees	3.50	69.91	6.17	0.000*	3
4.	facilitate the efficiency and the smooth of the workflow	3.47	69.38	6.48	0.000*	4
5.	increased social relationships between employees	3.45	68.96	5.83	0.000*	6
6.	provide visual expansiveness and views	3.02	60.35	1.06	0.145	9
7.	provide the natural lighting and fresh air to reach all of the interior spaces	3.19	63.84	2.58	0.005*	8
8.	increased your privacy	3.37	67.42	4.33	0.000*	7
9.	increased the opportunity to secure materials and equipment more easily	3.65	72.98	8.63	0.000*	2
10.	decreased the level of noise	2.71	54.14	-2.96	0.002*	10
	Administration building spaces	3.35	66.96	6.57	0.000*	

* The mean is significantly different from 3 at 0.05 level

6.1.2.2 Analyzing the second dimension : interior design

The second dimension discusses the interior design of the administration building where table (6.7) shows the following results:

- The mean of the paragraph #1 “Your office is well organized” equals 3.44 (68.74%), Test-value = 5.67, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3. This indicates that the respondents agreed but not to the level needed, this reveals that large number of employees are not satisfied about the organization of their offices
- The mean of the paragraph #4 “Your office furniture quality is considered high” equals 3.12 (62.47%), Test-value = 1.42, and P-value = 0.078 which is greater than the level of significance $\alpha = 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 3. This indicates that the respondents were not able to formulate a concrete answer, which refers that 62.47% agreed that their offices furniture quality is low which affect their comfort and satisfaction.
- The mean of the paragraph #5 “Your office furniture is comfortable so you can work for a long time without getting tired” equals 3.07 (61.50%), Test-value = 0.69, and P-value = 0.244 which is greater than the level of significance $\alpha = 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 3. This indicates that the respondents were not able to formulate a concrete answer, which refers that 61.50% agreed that their offices furniture is not comfortable so they get tired when they work for a long time which affect their performance negatively

In general the mean of the field “Interior design” equals 3.24 (64.83%), Test-value = 4.50, and P-value=0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 3.

this indicates that 64.8% of the IUG employees agreed about the administration building interior design but the percentage is considered low , which refers that the interior design of the offices did not reach the required level for employees where their satisfaction about their offices decoration is only 63.81%, large number of them are getting tired when they work for a long time because their offices furniture is not comfortable and not convenient for their job performance which indicates that ergonomics is not considered and the elements of interior design and colors didn't give them the required sense for their work to be productive which affect their performance and morale negatively , it is important to know that Offices are built for people to enjoy living and working. So if we get the emotional side right, this will have a direct, positive effect on the rational factors which related to the performance

This findings is consistent with (Space city & the office, 2009) which shows that 64% suffering from back pain because of setting on uncomfortable chair and recommended that office interior design should be motivated and furniture should be sufficient and flexible, and consistent with (Hameed ,2009) which shows that comfortable and ergonomic office design motivates employees and increase their performance substantially, also it is consistent with (the commission for Architecture & build environment, 2005) which shows that a variety of work sitting should be available based on activity under taken by each individual and team balancing the need for concentration and communication.

Table (6.7): Means and Test values for “Interior design”

	Item	Mean	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	Your office is well organized	3.44	68.74	5.67	0.000*	1
2.	Your office is sufficiently equipped for your typical needs	3.43	68.57	5.56	0.000*	2
3.	Your office furniture design is convenient for your job performance	3.33	66.52	4.27	0.000*	4
4.	Your office furniture quality is considered high	3.12	62.47	1.42	0.078	9
5.	Your office furniture is comfortable so you can work for a long time without getting tired	3.07	61.50	0.69	0.244	10
6.	There is a flexibility of use in your office furniture	3.16	63.29	1.87	0.030*	7
7.	You have color harmony in your office that you like	3.14	62.88	2.01	0.022*	8
8.	Your office colors give you the need sense for your work to be productive	3.18	63.58	2.75	0.003*	6
9.	Your office interior design elements (floor covering-ceiling – wall covering- curtains) are harmonized and integrated successfully	3.36	67.13	5.17	0.000*	3
10.	I am satisfied with my office decoration	3.19	63.81	3.01	0.001*	5
	Interior design	3.24	64.83	4.50	0.000*	

* The mean is significantly different from 3 at 0.05 level

6.1.2.3 Analyzing the third dimension : Lighting

The third dimension discusses the interior design of the administration building where table (6.8) shows the following results:

- The mean of the paragraph #3 “You don’t face any problems of lighting in your office like silhouette, sparkle or glare” equals 3.89 (77.73%), Test-value = 10.28, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3. this reveals positive , but indicates that there are some employees face problems of lighting like silhouette, sparkle or glare
- The mean of the paragraph #2 “Ample amount of natural lighting comes into your office” equals 3.68 (73.59%), Test-value = 8.07, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3 because. this reveals positive , but indicates that the natural lighting doesn’t reach all the offices as some offices lack of windows.

In general the mean of the filed “Lighting” equals 3.78 (75.54%), Test-value = 9.82, and P-value=0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 3. This indicates that 75.5% of the IUG respondents agreed about the administration building lighting but didn’t reach the required level as their offices lighting support their productivity and morale by 74.2% only , some of them face some problems of lighting and some offices are lacking of natural lighting which affect their performance negatively. In today’s environment, a successful lighting design should support the function and desired atmosphere of each space, as maximize the use of daylight, support employee productivity and morale, and maximize energy efficiency.

This findings is consistent with (Mohsen, 2008) which shows that 58% of IUG employees agreed that the natural lighting and fresh air were achieved, and consistent with (Space city & the office, 2009) which shows that lighting should be sufficient and controlled, also it is consistent with (Hameed ,2009) which shows that lighting was found the factor affects employees productivity, in addition it is consistent with (Newsham & others , 2009) which shows that results confirmed the important role of window access of the desk in satisfaction with lighting.

Table (6.8): Means and Test values for “Lighting”

	Item	Mean	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	Your workspace is provided with efficient lighting so you can work easily without strain on your eyes or visual confusion	3.88	77.67	10.14	0.000*	2
2.	Ample amount of natural lighting comes into your office	3.68	73.59	8.07	0.000*	5
3.	You don't face any problems of lighting in your office like silhouette, sparkle or glare	3.89	77.73	10.28	0.000*	1
4.	Your office lighting support the function and desired atmosphere	3.72	74.35	8.88	0.000*	3
5.	Your office lighting support your productivity and morale	3.71	74.20	8.78	0.000*	4
	Lighting	3.78	75.54	9.82	0.000*	

* The mean is significantly different from 3 at 0.05 level

6.1.2.4 Analyzing the fourth dimension : temperature & ventilation

The fourth dimension discusses the temperature and ventilation of the administration building where table (6.9) shows the following results:

- The mean of the paragraph #1 “Your office temperature affects your normal level of performance positively” equals 3.52 (70.13%), Test-value = 6.17, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3. this indicates that the respondents agreed but not to the level needed , this reveals that some offices temperatures are not convenient and don’t support employees’ performance because of its orientation or lacking of windows
- The mean of the paragraph #4 “You are able to control temperature and airflow in your office” equals 3.16 (63.20%), Test-value = 1.97, and P-value 0.024 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3 because. this indicates that the respondents agreed but not to the level needed , this reveals that some employees are not able to control temperature and airflow in their offices which create an undesired indoor environment .affect their performance and morale.

In general The mean of the field “Temperature and Ventilation” equals 3.36 (67.29%), Test-value = 5.60, and P-value=0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 3. this indicates that 67.2% of the IUG employees agreed about the administration building temperature and ventilation but the percentage is considered low , which refers that the temperature and ventilation of the offices did not reach the required level for employees where their offices lighting support their productivity and morale by 67.5% only , the temperature and ventilation of some offices are not convenient and some employees are not able to control temperature and airflow in their offices.

This findings is consistent with (Cullen ,2008) which shows that 100% of respondents reported effective office lighting compared with 30% of respondents in prior location, also it is consistent with (Space city and the office, 2009) which recommended that air ventilation and temperature should be suitable and controlled. Last it is consistent with (Knoll,2005) which shows that the control of HVAC system has high impact on productivity.

Table (6.9): Means and Test values for “Temperature and Ventilation”

	Item	Mean	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	Your office temperature affects your normal level of performance positively	3.51	70.13	6.17	0.000*	1
2.	The overall temperature of your office is pleasant	3.32	66.41	4.55	0.000*	4
3.	Windows in your office provide you the fresh air	3.46	69.22	5.56	0.000*	2
4.	You are able to control temperature and airflow in your office	3.16	63.20	1.97	0.024*	5
5.	Your office temperature support your productivity and morale	3.38	67.51	4.75	0.000*	3
	Temperature and Ventilation	3.36	67.29	5.60	0.000*	

* The mean is significantly different from 3 at 0.05 level

6.1.2.5 Analyzing the fifth dimension : Noise

The fifth dimension discusses the Noise of the administration building where table (6.10) shows the following results:

- The mean of the paragraph #2 “You have quiet and undisturbed time” equals 3.37(67.34%), Test-value = 4.87, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3. this indicates that only 67.34% of respondents have quiet and undisturbed time which considered low, this affect employees performance, As they should have quiet time for concentration, planning and other tasks
- The mean of the paragraph #3 “Your workspace is free from noise distractions” equals 2.98 (59.57%), Test-value = -0.15, and P-value = 0.440 which is greater than the level of significance $\alpha = 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 3. this indicates that 59.57 % of respondents agree that their workplace is not free from noise distractions
- The mean of the paragraph #4 “you have speech privacy and intelligibility” equals 2.9 (58.1%), Test-value = -1.04, and P-value = 0.149 which is greater than the level of significance $\alpha = 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 3. this indicates that 58.1 % of respondents agree that don't have speech privacy and intelligibility.
- The mean of the paragraph #5 “you are able to control noise transmission” equals 2.93 (58.5%), Test-value = -1.14, and P-value = 0.126 which is greater than the level of significance $\alpha = 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 3. this indicates that 58.5 % of respondents agreed that they are not able to control noise transmission.
- The mean of the paragraph #6 “You have some treatments for acoustical control” equals 2.57 (51.34%), Test-value = -5.29, and P-value = 0.000 which is smaller than the level

of significance $\alpha = 0.05$. The sign of the test is negative, so the mean of this paragraph is significantly smaller than the hypothesized value 3. This indicates that the respondents agreed that they don't have any treatments for acoustical control.

In general The mean of the filed “Noise” equals 2.97 (59.36%), Test-value = -0.27, and P-value=0.393 which is greater than the level of significance $\alpha = 0.05$. Then the mean of this paragraph is insignificantly different from the hypothesized value 3. This indicates that the respondents were not able to formulate a concrete answer , this refers that 59.36% of respondents agreed that their working environment is distracting , where they are not able to control noise transmission , don't have speech privacy and intelligibility and don't have quiet and undisturbed time and they don't have any treatments for acoustical control

This findings is consistent with (doman,2008) which shows that satisfaction with acoustics conditions have the greatest contribution of employees performance, and consistent with (knoll, 2005) which shows that quiet spaces have high impact on productivity, and consistent with (Space city and the office , 2009) which recommended noise control and treatments, finally it is consistent with (Knoll,2008) which recommended reduce distraction.

Table (6.10): Means and Test values for “Noise”

	Item	Mean	Proportional mean	Test value	P-value (Sig.)	Rank
1.	Your work environment is quiet	3.25	64.91	3.23	0.001*	2
2.	You have quiet and undisturbed time	3.37	67.34	4.87	0.000*	1
3.	Your workspace is free from noise distractions	2.98	59.57	-0.15	0.440	3

4.	You have speech privacy and intelligibility	2.90	58.10	-1.04	0.149	5
5.	You are able to control noise transmission	2.93	58.53	-1.14	0.126	4
6.	You have some treatments for acoustical control	2.57	51.34	-5.29	0.000*	7
7.	affordable noise level at your workspace won't affect your productivity and morale	2.76	55.24	-2.74	0.003*	6
	Noise	2.97	59.36	-0.27	0.393	

* The mean is significantly different from 3 at 0.05 level

6.1.2.6 Analyzing of workplace design

The mean of all paragraphs of the field "Workplace Design" equals 3.31 (66.16%), Test-value = 6.29, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of all paragraphs is significantly greater than the hypothesized value 3.

Which indicates that 66.1% of the IUG employees agreed about the workplace design but the percentage is considered low , this reveals that the workplace design did not reach the required level where it limits flexibility and ease of movement, limits interaction and the smooth of workflow, decrease employees privacy , increase the level of noise and limits visual expansiveness and natural lighting, and employees satisfaction about their offices interior design and furniture is considered low and the temperature and ventilation of some offices are not convenient , this affect employees satisfaction , performance and morale negatively , affect their mood and attitude about their work , affect work processes such as innovation, collaboration, and creativity which affect the achievements of Islamic University in general and the ability to a achieve its objectives regarding the scientific research , in addition this affect employees absenteeism and thier

commitment of work times, turnover and the ability to recruit and retain of top skilled workers

This finding is consistent with (space city & the office, 2009) which shows that 52% of employees agreed that the suitable workplace design increase their desire to work. In addition it is consistent with (Doman, 2008) which shows that 10% of overall employees' satisfaction is attributed to indoor environmental parameters, and consistent with (Gensler, 2006) which shows that Forty-six percent of workers do not believe creating a productive workplace is a priority at their companies, 40% say that minimizing costs is the main reason behind their workplace's current layout , 30% of workers don't think their current workspace promotes spontaneous interaction, collaboration, or cooperation and teamwork and Only 50% believe that their current workplace design encourages innovation and creativity. Also it is consistent with (Roberts, 2008) which shows that the workplace design is responsible for 24% of job satisfaction, and consistent with (American Society of Interior Designers, 1997) which shows that 97 percent of respondents say it is worth the investment to redesign offices if a correlation can be made to increased employee productivity, 68 percent of survey respondents say that office design needs to be reviewed at least once every five years to help their companies remain competitive and 36 percent say that office design should be reviewed at least once a year. Finally it is consistent with (The Commission for Architecture & the Built Environment and the British Council for Offices, 2005) which shows that In the rapidly changing world of work, the implications of linking office design with business performance are so profound that innovation is as important in the conduct of research as in the ways that offices are developed, designed and managed

Table (6.11): Means and Test values for “Workplace Design”

Item	Mean	Proportion al mean (%)	Test value	P-value (Sig.)
All of the paragraphs	3.31	66.16	6.29	0.000*

* The mean is significantly different from 3 at 0.05 level

6.1.2.7 Analyzing of employees performance

this dimension discusses the employees performance working at the administration building where table (6.12) shows the following results:

- The mean of the paragraph #6 “Workplace design affects team working” equals 4.05 (81.04%), Test-value = 12.25, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3 . this indicates that the respondents agreed that Workplace design affects team working
- The mean of the paragraph #18 “Workplace design affects your absenteeism and your commitment of work times” equals 3.33 (66.70%), Test-value = 4.27, and P-value = 0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this paragraph is significantly greater than the hypothesized value 3 . this indicates that the respondents agreed that workplace design affects employees absenteeism and their commitment of work times

In general the mean of the field “Employees performance” equals 3.80 (75.96%), Test-value = 12.59, and P-value=0.000 which is smaller than the level of significance $\alpha = 0.05$. The sign of the test is positive, so the mean of this field is significantly greater than the hypothesized value 3. This indicates that the IUG respondents agreed that the work place design affects employees performance

positively, where it affects employees satisfaction, motivation and retention, and affects the efficient and smooth of workflow, team working , collaboration , sharing information, feedback and response time, socializing and relationships between employees, employees privacy and distraction And absenteeism and thier commitment of work times, this refers that the performance level of the employees will be improved by conducting better work place design, and this indicates that the percentage of employees performance 75.96% is good but it doesn't reach to the creativity level, it considered high if we compared it with the workplace design 66.1%, this because of the loyalty of IUG employees , they jump their workplace design problems and constraints to work efficiently . In addition they compare this building with the previous situation, as there were no offices and no services for them

This finding is consistent with (space city & the office, 2009) which shows that 90% of employees agreed that the workplace design affects their productivity. Also it is consistent with (Gensler, 2006) which shows that Office workers believe they would be 21% more productive if given a better working environment and 48% of them say they would log an extra hour per day under such improved circumstances. Also it is consistent with (Doman, 2008) which shows that low level of employee satisfaction with the indoor environment contributing to the chronic maladies of high attrition, absence and turnover rates. In addition it is consistent with (Knoll, 2005) which shows that companies have opportunities to motivate and inspire workers by creating environments that underscore inspiration, innovation, creativity and attributes which are highly valued by all workers. Also it is consistent with (Roberts, 2008) which points to evidence that office design influences a range of factors critical to business performance, including:

- staff attraction, motivation and retention
- staff satisfaction
- knowledge and skills of staff
- innovation and creativity

- responsiveness to business and technological change
- customer attraction and retention.

In addition it is consistent with (Coward, 2007) which offers a psychological perspective on three ways in which the workplace can be used to motivate staff: fostering a sense of obligation via perceived organizational support, offering the user control over their environment, and using internal branding to encourage desired behaviors. Finally it is consistent with (The Commission for Architecture & the Built Environment and the British Council for Offices, 2005) which shows that Differences in productivity as high as 25 per cent have been reported between comfortable and uncomfortable staff.

Table (6.12): Means and Test values for “Employees performance”

	Item	Mean	Proportional mean (%)	Test value	P-value (Sig.)	Rank
1.	Due to overall workplace environment and design you can complete your daily tasks easily and efficiently	3.85	76.94	10.59	0.000*	10
2.	Due to overall workplace environment and design you can finish your tasks on the specific time	3.72	74.37	9.47	0.000*	18
3.	Good design of Workplace support your satisfaction and well-being	3.81	76.10	10.09	0.000*	14
4.	your satisfaction of your workplace design improve your performance	3.88	77.67	10.74	0.000*	9
5.	Workplace design affects the efficient and smooth of workflow	4.05	80.96	12.05	0.000*	2
6.	Workplace design affects team working	4.05	81.04	12.25	0.000*	1
7.	Workplace design affects collaboration and	3.97	79.31	11.50	0.000*	3

	discussions between employees					
8.	Workplace design affects sharing information	3.90	77.92	10.90	0.000*	7
9.	Workplace design affects the need for administration transactions	3.83	76.52	10.52	0.000*	13
10	Workplace design affects feedback and response time	3.83	76.70	10.84	0.000*	12
11	Workplace design affects faster recognition and resolution of issues	3.84	76.90	10.97	0.000*	11
12	Workplace design affects tacit learning	3.76	75.13	10.43	0.000*	16
13	Workplace design affects your motivation	3.90	78.09	11.04	0.000*	6
14	Workplace design affects socializing and relationships between employees	3.96	79.12	11.40	0.000*	4
15	Workplace design affects decision making process	3.74	74.74	9.26	0.000*	17
16	Workplace design affects monitoring of the work	3.89	77.89	10.73	0.000*	8
17	Workplace design affects your privacy and distraction	3.91	78.15	11.03	0.000*	5
18	Workplace design affects your absenteeism and your commitment of work times	3.33	66.70	4.27	0.000*	22
19	Workplace design affects your commitment of the administrative rules and procedures of the organization	3.34	66.81	4.03	0.000*	21
20	Workplace design affects your performance measurement	3.61	72.12	7.37	0.000*	20
21	Workplace design affects your performance appraisal	3.64	72.75	7.94	0.000*	19
22	Your workplace design affects your performance	3.80	75.93	9.79	0.000*	15
	Employees performance	3.80	75.96	12.59	0.000*	

* The mean is significantly different from 3 at 0.05 level.

6.2 Hypothesis Testing

Sign test is used to determine if the mean of a paragraph is significantly different from hypothesized value 3 (Neutral). If the P-value (Sig.) is smaller than the level of significance, $\alpha = 0.05$, then the mean of a paragraph is significantly different from a hypothesized value 3. The sign of the Test value indicates whether the mean is significantly greater or smaller than hypothesized value 3. On the other hand, if the P value (Sig.) is greater than the level of significance, $\alpha = 0.05$, then the mean of a paragraph is insignificantly different from a hypothesized value 3.

There are two main hypotheses for this research:

- There is no difference of the respondents' answers about the impact of workplace design on employees performance at significant level $\alpha = 0.5$ due to personal traits (Gender, Age, job type).
- There is a statistical relation between organization workplace design and employees performance

From this main hypothesis the following sub hypotheses result:

- A) There is a statistical relation between open spaces and employees performance.
- b) There is a statistical relation between Interior design and employees performance.
- c) There is a statistical relation between lighting and employees performance .
- d) There is a statistical relation between temperature and ventilation and employees performance.
- e) There is a statistical relation between noise and employees performance.

6.2.1 Open spaces

There is a statistical relation between open spaces and employees performance at significant level $\alpha = 0.5$

Table (6.13) shows that the correlation coefficient between Administration building spaces and Employees performance equals 0.187 and the p-value (Sig.) equals 0.002. The p-value (Sig.) is less than 0.05, so the correlation coefficient is statistically

significant at $\alpha = 0.05$. So it can be said that **a significant relationship exists**, between Administration building spaces and Employees performance

This indicates that the design of spaces affects employees performance , but the relationship is very weak because the closed administration building spaces didn't reach the required level of employees needs and expectations, this refers that the performance level will be improved by conducting better spaces design

This finding is consistent with (Mohsen, 2008) which shows that 69% of IUG employees agreed that the open spaces affects employees productivity and work efficiency positively , and consistent with (Doman, 2008) which shows that there is strong correlation exists between space allocation and employees' satisfaction. Also it is consistent with (Amir & Sahibzada, 2008) which shows that there is a strong positive significant relationship between performance of the private sector office employees and the office layout. And consistent with (Knoll, 2005) which shows that 60% to 69% or more employees agreed that Space that can be personalized to support individual work style would have moderate impact on productivity. And consistent with (Robertson and Huang, 2005) which showed a significant, positive impact of the intervention on environmental satisfaction for workstation layout and Satisfaction with workstation layout had a significant relationship with individual performance, group collaboration and effectiveness. Also it is consistent with (Corporate Interiors, 2005) which shows that Open offices foster collaboration and social bonding. In addition it is consistent with (Microsystems, 2005) which The questionnaire analysis revealed perceived improvement in communication, collaboration, creativity and performance in the third type of layout (semi closed). Finally it is consistent with (Knoll, 2008) which A research project conducted by UCLA revealed that companies who had modified their business processes to encourage collaboration and supported new work processes by moving from private spaces to open, collaborative environments realized performance increases (speed and accuracy of work)

Table (6.13) Correlation coefficient between Administration building spaces and Employees performance

Field	Spearman Correlation Coefficient	P-Value (Sig.)
Administration building spaces	0.187	0.002*

* Correlation is statistically significant at 0.05 level

6.2.2 Interior Design

There is a statistical relation between Interior design and employees performance at significant level $\alpha = 0.5$

Table (6.14) shows that the correlation coefficient between Interior design and Employees performance equals 0.070 and the p-value (Sig.) equals 0.143. The p-value (Sig.) is greater than 0.05, so the correlation coefficient is statistically **insignificant** at $\alpha = 0.05$. So it can be said that an **insignificant relationship** exists between Interior design and Employees performance.

This indicates that interior design affect employees performance , but the interior design of the administration building affects employees performance negatively, because it didn't reach the required level of employees needs and expectations. this refers that the performance level will be improved by conducting better offices interior design.

This finding is consistent with (Hameed, 2009) which shows that there is a correlation exists between spatial arrangement and employees' productivity. Also it is consistent with (Doman, 2008) which shows that there is strong correlation exists between Ergonomics and employees' satisfaction. And consistent with (Knoll, 2005) which shows that 50% to 59% or more employees agreed that an ergonomically designed chair would have moderate impact on productivity, The fact that ergonomic seating fell into the third tier of impact on productivity is surprising. And consistent with (American

Society of Interior Designers, 1997) which shows that 90 percent of the “ASID 200” respondents say that improving interior design can boost productivity. In addition it is consistent with (The Commission for Architecture & the Built Environment and the British Council for Offices, 2005) which shows that a variety of work settings should be available, based on the activity undertaken by each individual and team, balancing the need for concentration and communication

Table(6.14) Correlation coefficient between Interior design and Employees performance

Field	Spearman Correlation Coefficient	P-Value (Sig.)
Interior design	0.070	0.143

* Correlation is statistically significant at 0.05 level

6.2.3 Lighting

There is a statistical relation between Lighting and employees performance at significant level $\alpha = 0.5$

Table (6.15) shows that the correlation coefficient between Lighting and Employees performance equals 0.117 and the p-value (Sig.) equals 0.037. The p-value (Sig.) is less than 0.05, so the correlation coefficient is statistically **significant** at $\alpha = 0.05$. So it can be said that a **significant relationship** exists between Lighting and Employees performance.

This indicates that lighting affect employees performance , but the relationship is very weak because the lighting of the administration building didn't reach the required level of employees needs as there are some problems of lighting and some offices are lacking of natural lighting, this refers that the performance level will be improved by conducting better office lighting

This finding is consistent with (Hameed, 2009) which shows that there is strong correlation exists between lighting and employees’ productivity, And consistent with (Doman, 2008) which shows that there is strong correlation exists between lighting and employees’ satisfaction. Also it is consistent with (Knoll, 2005) which shows that 60% to 69% or more employees agreed that access to natural lighting would have moderate impact on productivity. And consistent with (Roberts, 2008) which shows that Both good lighting design and adequate daylight have been linked to a 15 per cent reduction in absenteeism and increases of between 2.8 per cent and 20 per cent in productivity. In addition it is consistent with(The Commission for Architecture & the Built Environment and the British Council for Offices, 2005) which indicates that Good lighting design and adequate daylight in particular have been linked to 15 per cent reductions in absenteeism and increases of between 3 per cent and 20 per cent in productivity.

Table (6.15) Correlation coefficient between Lighting and Employees performance

Field	Spearman Correlation Coefficient	P-Value (Sig.)
Lighting	0.117	0.037*

* Correlation is statistically significant at 0.05 level

6.2.4 Temperature and Ventilation

There is a statistical relation between Temperature and Ventilation and employees performance at significant level $\alpha = 0.5$

Table (6.16) shows that the correlation coefficient between Temperature and Ventilation and Employees performance equals 0.094 and the p-value (Sig.) equals 0.077. The p-value (Sig.) is greater than 0.05, so the correlation coefficient is statistically **insignificant** at $\alpha = 0.05$. So it can be said that **insignificant relationship** exists between Temperature and Ventilation and Employees performance.

This indicates that temperature and ventilation of the offices affect employees performance , but the temperature and ventilation of the administration building offices affects employees performance negatively, because it didn't reach the required level of comfort and pleasure for employees. this refers that the performance level will be improved by conducting better offices temperature and ventilation systems.

This finding is consistent with (Hameed, 2009) which shows that there is strong correlation exists between temperature and employees' productivity. and consistent with (Doman, 2008) which shows that there is strong correlation exists between thermal control and employees' satisfaction. Also it is consistent with (Amir & Sahibzada, 2008) which shows that there is a strong positive significant relationship between performance of the private sector office employees and the comfort level . And consistent with (Knoll, 2005) which shows that 70% or more employees agreed that climate control (HVAC) factor would have high impact on productivity. In addition it is consistent with (American Society of Interior Designers, 1997) which indicates that 42 percent say they improved productivity by changing their office design to improve employee comfort. Finally it is consistent with (The Commission for Architecture & the Built Environment and the British Council for Offices, 2005) which shows that the lost time could be reduced by 20 per cent by improving the delivery of outdoor air, And Decreases in productivity of the order of 30 per cent have been found in offices experiencing extreme temperature conditions.

Table (6.16) Correlation coefficient between Temperature and Ventilation and Employees performance

Field	Spearman Correlation Coefficient	P-Value (Sig.)
Temperature and Ventilation	0.094	0.077

Correlation is statistically significant at 0.05 level

6.2.5 Noise

There is a statistical relation between Noise and employees performance at significant level $\alpha = 0.5$.

Table (6.17) shows that the correlation coefficient between Noise and Employees performance equals 0.074 and the p-value (Sig.) equals 0.129. The p-value (Sig.) is greater than 0.05, so the correlation coefficient is statistically **insignificant** at $\alpha = 0.05$. So it can be said that **insignificant relationship** exists between Noise and Employees performance.

This indicates that noise level affect employees performance, but the working environment of the administration building affects employees performance negatively because it is considered distracting, without any treatments for acoustical control and noise transmission. This refers that the performance level will be improved by conducting suitable treatments for acoustical control

This finding is consistent with (Doman, 2008) which shows that there is strong correlation exists between acoustic conditions and employees' satisfaction. And consistent with (Knoll, 2005) which shows that 70% or more employees agreed that quiet spaces factor would have high impact on productivity. Also it is consistent with (American Society of Interior Designers, 1997) which shows that Limiting noise and distraction, while increasing privacy, was cited by 28 percent of the "ASID 200" respondents as helping improve employee productivity. And consistent with (The Commission for Architecture & the Built Environment and the British Council for Offices, 2005) which indicated that significant improvements have been reported in the performance of both simple and complex tasks (38 per cent and 27 per cent respectively) when acoustic conditions have been optimized. In addition it is consistent with (Knoll, 2008) which The researchers found that dry wall offices, even with the door closed, only achieve 75% acoustical privacy compared to 8'x 8' open plan offices with 60" high

acoustical panels, acoustical ceiling tiles and sound masking which achieve 93% acoustical privacy.

Table (6.17) Correlation coefficient between Noise and Employees performance

Field	Spearman Correlation Coefficient	P-Value (Sig.)
Noise	0.074	0.129

6.2.6 Main hypothesis

There is a statistical relation between organization workplace design and employees performance at significant level $\alpha = 0.5$.

Table (6.18) shows that the correlation coefficient between Workplace Design and Employees performance equals 0.121 and the p-value (Sig.) equals 0.033. The p-value (Sig.) is less than 0.05, so the correlation coefficient is **statistically significant** at $\alpha = 0.05$. So it can be said that there **exists a significant relationship** between Workplace Design and Employees performance .

This indicates that the workplace design affects employees performance , but the relationship is very weak , this because the workplace design of the administration building didn't reach the required level of employees needs and expectations, this affect employees satisfaction , performance and morale negatively , affect their mood and attitude about their work , affect work processes such as innovation, collaboration, and creativity which affect the achievements of Islamic University in general and the ability to a achieve its objectives regarding the scientific research particularly, in addition this affect employees absenteeism and their commitment of work times, turnover and the ability to recruit and retain of top skilled workers.

But IUG employees are loyal , they jump their workplace design problems and constraints to perform their tasks efficiently , in addition they compare this building with the previous situation, as there were no offices and no services for them, But certainly by conducting better workplace design , the performance level of IUG employees will be improved significantly

This finding is consistent with (Hameed, 2009) which shows that there is a direct relationship between office design between office design and employees' productivity. And consistent with (Doman, 2008) which demonstrates that low level of employee satisfaction with the indoor environment contributing to the chronic maladies of high attrition, absence and turnover rates . Also it is consistent with (Gensler, 2006) which indicates that Nine in ten workers believe that better office design leads to better overall employee performance, and also makes a company more competitive, Nearly 90% of respondents feel that a better physical working environment would result in better overall employees performance , Over 90% say the quality of their working environment affects their mood and attitude about their work. And 89% believe that the quality of their working environment is very important to their sense of job satisfaction. In addition it is consistent with (Amir & Sahibzada, 2008) which shows that there is a strong positive significant relationship between performance of the private sector office employees and the office environment. And consistent with (Knoll, 2005) which shows that Attract and retain the “best and the brightest.” Companies can exceed the expectations of college educated employees by providing a functional, yet beautiful, work environment - and surprise and delight less educated workers. And consistent with (Cullen, 2008) which indicates that 75% of respondents saw a 10% or more improvement in group productivity compared to their original workspace, which was related to significant improvements in 11 of 23 workspace factors in the new space. And consistent with(Roberts, 2008) which provides a range of evidence showing the links between poor workplace design, lower business performance and higher level of stress experienced by employees. With differences in productivity of 25 per cent reported between comfortable and

uncomfortable staff, due to basics, such as, air quality, temperature, overall comfort, noise and lighting. And consistent with (Robertson and Huang, 2005)which suggests that when an office work environment is ergonomically designed and coupled with training, it provides employees with a high degree of environmental control and knowledge, which may positively influence individual performance, group collaboration and effectiveness. And consistent with (Corporate Interiors, 2005) revealed that office design was one of the most critical determinants of knowledge worker productivity. In addition it is consistent with (The Commission for Architecture & the Built Environment and the British Council for Offices, 2005) which Claims have been made that the workplace is responsible for 24 per cent of job satisfaction and that this can affect staff performance by 5 per cent for individuals and (because of the benefits of improved interaction) by 11 per cent for teams.

Table (6.18) Correlation coefficient between Workplace Design and Employees performance

Field	Spearman Correlation Coefficient	P-Value (Sig.)
Workplace Design	0.121	0.033*

* Correlation is statistically significant at 0.05 level

6.2.7 Differences Hypothesis

There is statistical difference in respondents' answers toward "The impact of workplace design on employees' performance" (at $\alpha = 0.05$) attributed to the following personal information: Gender, Age, and Type of job

This hypothesis can be divided into the following sub-hypotheses:

- ***There is statistical difference in respondents' answers toward "The impact of workplace design on employees' performance" (at $\alpha = 0.05$) attributed to gender***

Table (6.19) shows that the p-value (Sig.) is smaller than the level of significance $\alpha = 0.05$ for the fields "Noise" and " Employees performance", then there is significant difference in respondents' answers toward these fields due to gender.

Which means that the personal trait gender has an effect on this fields. This is due to women preference of socialization and communication more than men which affect their performance

Table (6.19) shows that the p-value (Sig.) is greater than the level of significance $\alpha = 0.05$ for the other fields, then there is insignificant difference in respondents' answers toward these fields due to gender.

Which means that the personal traits gender has no effect on these fields. this due to the same need of lighting , ventilation , good interior design and flexible spaces for Male and Female employees to work effectively

These results agree with the study conducted by Knoll (2005) which shows that can consider leveraging workplace design in order to Create open, social, collaborative environments specially to meet the new expectations of a growing contingent of female workers as formality gives way to creativity, even among the executive ranks

- ***There is statistical difference in respondents' answers toward "The impact of workplace design on employees' performance" (at $\alpha = 0.05$) attributed to Age***

Table (6.19) shows that the p-value (Sig.) is smaller than the level of significance $\alpha = 0.05$ for the field "Employees performance", then there is significant difference in respondents' answers toward these fields due to age.

The researcher concludes that the respondents' age has an effect on their opinion concerning the impact of workplace design on employees performance

Table (6.19) shows that the p-value (Sig.) is greater than the level of significance $\alpha = 0.05$ for the other fields, then there is insignificant difference in respondents' answers toward these fields due to age.

Which means that the personal traits age has no effect on these fields. this can be explained by the essential need of lighting , ventilation , noise control, good office design and flexible spaces for all employees to work effectively regardless of their age groups

These results agree with the study conducted by Knoll (2005) which shows that that companies have opportunities to motivate and inspire workers by creating environments that underscore inspiration, innovation, creativity and attributes which are highly valued by all workers, no matter what their age.

- *There is statistical difference in respondents' answers toward "The impact of workplace design on employees' performance" (at $\alpha = 0.05$) attributed to type of job*

Table (6.19) shows that the p-value (Sig.) is smaller than the level of significance $\alpha = 0.05$ for the fields " Interior design ", and " Workplace Design ", then there is significant difference in respondents' answers toward these fields due to type of job. We conclude that the personal trait type of job has an effect on these fields.

this can be explained by the need of convenient workplace design and office interior design to suits employees job type, as administrators need workplace design which support interaction, efficient and smooth running of workflow, communication, socialization and teamwork more than academic employees who need more concentration and privacy to work effectively.

Table (6.19) shows that the p-value (Sig.) is greater than the level of significance $\alpha = 0.05$ for the other fields, then there is insignificant difference in respondents' answers toward these fields due to type of job.

We conclude that the personal traits type of job has no effect on these fields. this can be explained by the essential need of lighting , ventilation , noise control and flexible spaces for all employees to work effectively regardless of their job type

These results agree with the study conducted by Knoll (2005) which shows that that companies have opportunities to motivate and inspire workers by creating environments that underscore inspiration, innovation, creativity and attributes which are highly valued by all workers, no matter what their educational background

Table (6.19) personal traits

No	Field	Gender		Age		Type of job	
		Test value	Sig.	Test value	Sig.	Test value	Sig.
1.	Administration building spaces	-0.291	0.385	1.527	0.466	4.474	0.107
2.	Interior design	-0.673	0.250	0.259	0.879	13.577	0.001*
3.	Lighting	-0.565	0.286	2.512	0.285	5.069	0.079
4.	Temperature and Ventilation	-1.617	0.053	5.808	0.055	1.858	0.395
5.	Noise	-1.935	0.026*	4.774	0.092	3.253	0.197
6.	Workplace Design	-1.347	0.089	2.328	0.312	7.028	0.030*
7.	Employees performance	-1.881	0.030*	6.264	0.044*	2.134	0.344

* The mean difference is significant a 0,05 level

• Gender, Age, and Type of job

Table (6.20) shows the mean rank for each field of personal traits

A) Gender

For the field “Noise” , the mean rank for Males is higher than Females and for the field " Employees performance", the mean rank for females is higher than Males

This indicates that noise affect the performance of male employees more than female , this because women like socialization and communication more than men, and the workplace design affect the performance of female employees more than male employees

, this is normal result as women affected by beautiful , attractive , collaborative, flexible and comfortable places more than men.

B) Age

For the field " Employees performance", the mean rank for age respondents "45 and more" is higher than other age groups.

This indicates that the workplace design affects the performance of employees whom their age are (45 years and more) more than other age groups, this can be explained by the importance of convenient workplace design for this age group to be productive because of their essential need for comfortable workplaces in addition to the need of concentration, flexibility and easy work processes

C) Type of job

For the fields " Interior design ", and " Workplace Design ",, the mean rank for the respondents whom are Administrators is higher than other type of job.

This indicates that the interior design and workplace design affect the performance of administrative employees more than other job types, this can be explained by their essential need of interaction, collaboration, teamwork, flexibility, the efficiency and smooth of workflow , communication and socialization to work efficiently.

Table (6.20): Mean rank for each field of personal information

No	Field	Mean Rank							
		male	Female	From 25 to less than 35 years	From 35 to less than 45 years	45 and more	Academic	Academic/ Administrator	Administrator
1.	Administration building spaces	111.54	108.11	104.38	98.09	113.23	107.73	91.64	116.88
2.	Interior design	112.26	104.33	103.59	107.24	108.24	93.51	98.09	126.37
3.	Lighting	112.04	105.47	100.79	118.23	106.10	104.59	93.80	118.69
4.	Temperature and Ventilation	114.01	95.03	96.65	111.74	119.46	109.84	96.84	113.05
5.	Noise	114.60	91.84	99.28	102.44	120.73	104.71	97.61	117.09
6.	Workplace Design	113.51	97.64	100.34	106.59	115.49	101.72	93.63	121.18
7.	Employees performance	107.49	129.64	106.65	85.95	117.31	101.70	108.34	115.43

CHAPTER 7

CONCLUSION & RECOMMENDATIONS

7.1 Conclusion:

7.2 Recommendations

7.1 Conclusions

This research investigates the relationship between workplace design and employees performance, through Empirical study of the IUG employees who are working in the Administration Building of Islamic University of Gaza) . Five factors of workplace design (spaces, interior design, lighting, temperature & ventilation and noise) are considered to represent the impact of workplace design on employees performance .

The research discovered the following results:

- 1- 75.96% of IUG respondents agreed that the work place design affects employees performance, where it affects employees satisfaction, motivation and retention, and affects the efficient and smooth of workflow, team working , collaboration , sharing information, feedback and response time, socializing and relationships between employees, it affects employees privacy , distraction , absenteeism and their commitment of work times, this refers that the performance level of IUG employees will be improved by conducting better work place design.
- 2- The performance level of IUG employees is considered good, where the mean equals 3.80 and the proportional mean equals (75.96%). which means it doesn't reach the innovation and creativity level which affect the achievements of Islamic University in general and the ability to a achieve its objectives regarding the scientific research
- 3- 66.16% agreed about the workplace design of the administration building. This percentage is considered low, Which indicates that the workplace design of the administration building did not reach the required level of employees needs where it limits flexibility and ease of movement, limits interaction and the smooth of workflow, decrease employees privacy , increase the level of noise and limits visual expansiveness and natural lighting, employees satisfaction about their offices interior design and furniture is considered low and the temperature and ventilation of some

offices are not convenient , this affect employees satisfaction , performance and morale negatively.

- 4- The proportional mean of Employees performance (75.9%) is considered good comparing with the proportional mean of workplace design 66.1%, this because of the loyalty of IUG employees , where they work under pressure and they jump their workplace design problems and constraints to work efficiently . In addition they compare this building with the previous situation, as there were no offices and no services for them.
- 5- A significant relationship exists between Workplace Design and Employees performance .This indicates that the workplace design affects employees performance , but the relationship is very weak , this because the workplace design of the administration building didn't meet the employees needs and expectations.
- 6- 66.96% of IUG employees agreed about the administration building spaces, which indicates low satisfaction about the design of the administration building, where it creates rigid small offices by modules and columns locations which are fully closed, constructed of solid dry wall partitions extended from floor to ceiling, which decreased flexibility and ease of movement , limits interaction and the smooth of workflow , decreased visual expansiveness and views and limited natural lighting and fresh air to reach all of the interior spaces , while it is considered a closed plan , it decreased employees privacy and increased the level of noise where two or three employees are shared in each office and large number of students visit each employee during the day without any treatments for acoustical transmission which affect their concentration, productivity and performance negatively
- 7- A significant relationship exists between Administration building spaces and Employees performance , This indicates that the design of spaces affects employees performance , but the relationship is very weak because the closed administration

building spaces didn't reach the required level of employees needs and expectations, this refers that the performance level can be improved by conducting better design for spaces.

- 8- 64.83% of IUG employees agreed about the administration building interior design , the percentage is considered low , where their satisfaction about their offices decoration is only 63.81%, large number of them are getting tired when they work for a long time because their offices furniture is not comfortable and not convenient for their job performance which indicates that ergonomics is not considered and the elements of interior design and colors didn't give them the required sense for their work to be productive which affect their performance and morale negatively , it is important to know that Offices are built for people to enjoy living and working. So if we get the emotional side right, this will have a direct, positive effect on the rational factors which related to the performance.
- 9- There is insignificant relationship between Interior design and Employees performance. This indicates that interior design affect employees performance , but the interior design of the administration building affects employees performance negatively, because it didn't reach the required level of employees needs and expectations. this refers that the performance level will be improved by conducting better offices interior design.
- 10- 75.54% of IUG respondents agreed about the administration building lighting , this is a moderate percentage, which means that it didn't reach the required level of satisfaction, where their offices lighting support their productivity and morale by 74.2% only , some of them face some problems of lighting and some offices are lacking of natural lighting which affect their performance negatively.
- 11- A significant relationship exists between Lighting and Employees performance. This indicates that lighting affect employees performance , but the relationship is very weak because the lighting of the administration building didn't reach the required level as

there are some problems of lighting and some offices are lacking of natural lighting, this refers that the performance level will be improved by conducting better office lighting.

12- 67.29% of IUG employees agreed about the administration building temperature and ventilation which indicates low satisfaction about the temperature and ventilation of the administration building, where their offices lighting support their productivity and morale by 67.5% only , the temperature and ventilation of some offices are not convenient and some employees are not able to control temperature and airflow in their offices.

13- insignificant relationship exists between Temperature and Ventilation and Employees performance. This indicates that temperature and ventilation of the offices affect employees performance , but the temperature and ventilation of the administration building offices affects employees performance negatively, because it didn't reach the required level of comfort and pleasure for employees. this refers that the performance level will be improved by conducting better offices temperature and ventilation systems.

14- 59.36% of respondents agreed that their working environment is distracting , where they are not able to control noise transmission , don't have quiet and undisturbed time and they don't have any treatments for acoustical control.

15- There is insignificant relationship between Noise and Employees performance. This indicates that noise level affect employees performance, but the working environment of the administration building affects employees performance negatively because it is considered distracting, without any treatments for acoustical control and noise transmission. This refers that the performance level will be improved by conducting suitable treatments for acoustical control.

16- There is statistical difference in respondents' answers toward "The impact of workplace design on employees' performance" (at $\alpha = 0.05$) attributed to gender, there is significant difference in respondents' answers toward the fields "Noise" and "Employees performance" due to gender where p-value (Sig.) is smaller than the level of significance $\alpha = 0.05$. which means that the personal trait gender has an effect on these fields . For the field "Noise" , the mean rank for Males is higher than Females and for the field " Employees performance", the mean rank for females is higher than Males. This indicates that noise affect the performance of male employees more than female , this because women like socialization and communication more than men, and the workplace design affect the performance of female employees more than male employees , this is normal result as women affected by beautiful , attractive , collaborative, flexible and comfortable places more than men.

And there is insignificant difference in respondents' answers toward the other fields (interior design, spaces, lighting, temperature & ventilation, noise and workplace design) due to gender where p-value (Sig.) is greater than the level of significance $\alpha = 0.05$. which means that the personal traits gender has no effect on these fields. this is due to the same need of lighting , ventilation , good interior design and flexible spaces for Male and Female employees to work effectively .

17- There is statistical difference in respondents' answers toward "The impact of workplace design on employees' performance" (at $\alpha = 0.05$) attributed to age. there is significant difference in respondents' answers toward the field "Employees performance" due to age where p-value (Sig.) is smaller than the level of significance $\alpha = 0.05$. The researcher concludes that the respondents' age has an effect on their opinion concerning the impact of workplace design on employees performance, and the mean rank for age respondents "45 and more" is higher than other age groups. This indicates that the workplace design affects the performance of employees whom their age are (45 years and more) more than other age groups, this can be explained by the importance of convenient workplace design for this age group to be productive

because of their essential need for comfortable workplaces in addition to the need of concentration, flexibility and easy work processes. And there is insignificant difference in respondents' answers toward the other fields due to age where p-value (Sig.) is greater than the level of significance $\alpha = 0.05$. which means that the personal traits age has no effect on these fields. this is due to the essential need of lighting , ventilation , noise control, good office design and flexible spaces for all employees to work effectively regardless of their age groups.

18- There is statistical difference in respondents' answers toward "The impact of workplace design on employees' performance" (at $\alpha = 0.05$) attributed to type of job. there is significant difference in respondents' answers toward the fields " Interior design ", and " Workplace Design "due to type of job where p-value (Sig.) is smaller than the level of significance $\alpha = 0.05$. which means that the personal trait type of job has an effect on this field. this is due to the need of convenient workplace design and office interior design to suits employees job type, as administrators need workplace design which support interaction, efficient and smooth running of workflow, communication, socialization and teamwork more than academic employees who need more concentration and privacy to work effectively, and there is insignificant difference in respondents' answers toward the other fields due to type of job where p-value (Sig.) is greater than the level of significance $\alpha = 0.05$. which means that the personal trait type of job has no effect on these fields. this can be explained by the essential need of lighting , ventilation , noise control and flexible spaces for all employees to work effectively regardless of their job type.

7.2 Recommendations:

The following recommendations were derived from the research findings of the impact of workplace design on employees' performance.

7.2.1 Recommendations to the board of the Islamic University of Gaza

- As research findings show low satisfaction of IUG employees about their workplace design which affect their performance and morale negatively, so it is useful for the administration of Islamic university of Gaza to solve workplace design problems and provide employees with comfortable , attractive workplace that support employees satisfaction and well being .
- Noise is the most critical problem facing IUG employees while the administrative building is considered a closed plan, so buildings should be treated for noise control and transmission
- The researchers found that dry wall offices, even with the door closed, only achieve 75% acoustical privacy compared to 8'x 8'(2.4 x 2.4m) open plan offices with 60” 1.5 m high acoustical panels, acoustical ceiling tiles and sound masking which achieve 93% acoustical privacy.
- the administration building was designed as closed plan but the virtual reality it is considered open plan where two or three employees are shared in each office and large number of students visit each employee during the day without any treatments , so the real application of open plan concept with suitable treatments for noise transmission and the use of systems furniture with suitable height panels will achieve better results regarding natural lighting , ventilation, noise transmission, visual expansiveness, flexibility and of course will support the function and work processes
- the researcher suggest semi closed spaces or semi open spaces to include the advantages of open spaces and the advantages of closed spaces through integration of small spaces into large one by decreasing the number of solid walls and decrease its height to provide natural lighting and fresh air to reach all of the interior spaces.

- using systems furniture to separate between spaces while providing acoustical treatment. and to increase the connectivity between employees through visual expansiveness .
- People work in a variety of ways, and they need the flexibility to work in different types of spaces as their tasks change, they need private or 'cave' space for concentrated or confidential work, semi-private space for heads-down work on computers and public space for teaming and collaboration
- Creating environments that support work processes such as innovation, collaboration, and creativity to support the achievements of Islamic University and the ability to a achieve its objectives regarding the scientific research and increase its competitiveness among other universities.
- Workplace design affect the turnover rate and the IUG ability to recruit and retain of top skilled workers
- IUG can benefit from research results and recommendations for new buildings design or redesign of current buildings.

7.2.2 Recommendations to Administrative and Human Resources Professionals

- Strengthen the interest in workplace design as it is very vital in terms of increasing employees' performance and productivity to optimize the full value of human capital, therefore this enables different administrations and businesses to raise their efficiency , increase productivity and achieve their objectives
- Integrate Design Into the Organization's Strategic Plan to improve their competitiveness and adapt to changing conditions.
- Creating environments that underscore inspiration, innovation, creativity and attributes which are highly valued by all workers through workplace design.
- Creating environments that support work processes such as interaction, collaboration, teamwork, monitoring, sharing information, feedback and response time , innovation and Tacit learning which is more effective than formal instructions

- Ensure staff satisfaction ,attraction and motivation where it affects absenteeism and commitment of work times and to reduce rates & costs of attrition, turnover which is critical to business performance, and to improve recruitment and retention initiatives.
- Ensure staff satisfaction and well-being through workplace design as it affects their mood and attitude about their work , And it is very important to their sense of job satisfaction.
- Stakeholders and administrative professionals should revitalize design and construction approaches to reap potential benefits.
- Plan for flexibility and change , as work patterns evolve and new technologies emerge, adapting workspaces to change becomes even more critical to reduce operating costs and decreasing the costs and stress of churn
- It is recommended undertaking post-occupancy evaluation one year after completion and operation of newly constructed or refurbished call centers. A second POE is advisable three years later, following the implementations of the first set of recommendations.
- Circulating a multi-disciplinary questionnaire once a year among all employees is suggested to assess self-assessed (perceived) performance.

7.2.3 Recommendations to designers and architects

- The high level of unsatisfactory evidence provided by respondents emphasizes the need for the design community to refresh its overall design approach.
- There is an urgent need for architects, town planners and building services engineers to join forces to close the growing gap between sophistication of management especially regarding human resource issues, the digital platform and the physical properties of the indoor and outdoor environment.
- The designers should ensure that The workplace design factors which affects employees performance are convenient for the work nature and controlled to achieve the required level of comfort for employees to be productive.

- 1- Lighting : provide proper and adequate controlled artificial as well as natural light to improve the office design for better performance
 - 2- Air ventilation and temperature : should be suitable and controlled
 - 3- Noise : control for noise transmission and treatments for acoustical control
 - 4- Spaces : should be flexible, facilitate interaction and other work processes , increase visual expansiveness and views , provided with natural lighting and fresh air , balance the need for concentration and communication
 - 5- Office interior design should be motivated through:
 - Furniture: should be sufficient and flexible, using systems furniture which provided by suitable height panels to facilitate communication as well as visual and acoustical privacy
 - All interior design elements should be integrated successfully
 - Colors should provide the required sense to be productive
- Ergonomic should be undertaken during design to ensure employees comfort and satisfaction.
 - leverage the use of both open and enclosed spaces through Create Dedicated Collaboration Areas, Promote Spontaneous Interaction, Reduce Distractions, Balance Communication and Privacy.
 - workplace design should be responsiveness to business and technological change
 - Involve employees when making office design decisions, and work with an integrated team of professionals
 - Designers and their clients can better support employees when they create task-based workspaces that meet the needs of particular tasks to be accomplished in them. To achieve this goal, office design must reflect an understanding of the work individuals, teams and departments do and how they do it.

The researcher agree with Dr.Mohsen suggestion of semi closed plan for the administration building spaces through the integration of small offices into large one and the using of transparent partitions and systems furniture to separate between spaces to provide visual expansiveness , natural lighting and fresh air to reach all of the interior spaces.



Figure (7.1) semi closed plan for the administration building spaces (Mohsen,2008)

7.3 Suggestion for further studies

This is the first study to be conducted on the impact of workplace design on employees performance in Palestine and the second in the Arabic word. This field of research is completely new and deserves more exploration and because of the importance on this topic , The researcher suggests the following research areas for further studies:

- 1- The impact of workplace design on employees performance , Empirical studies on administrative organizations and business companies .
- 2- The technical solutions and the suitable treatments of workplace design factors affecting employees performance.
- 3- The role of Human Resources Management to improve employees performance through their physical environment.
- 4- Increasing competitiveness through workplace design.

Arabic references:

- Abu Musa, Jamal (2008), UNRWA's Area Staff Satisfaction on Performance Appraisal System and its Incentives in the Gaza Field Office , Master Thesis: Islamic University- Gaza
- Al Omari, Ayman (2009), The impact of administrative computerized data on employees performance of Palestinian telecommunication company, Master Thesis: Islamic University- Gaza
- Al Bshabsha, Samer (2005). The role of the quality administrative computerized data for raising the performance level , Master Thesis: Naef Academy for safety science – Sudia Arabia
- Ash. Shimmery ,Mohamed (2007). Performance appraisal of security and safety institutions employees, Master Thesis: Naef Academy for safety science – Sudia Arabia
- Rabiq, Mohamed (2004). The effected factors on the efficiency of employees performance for security leaders, Master Thesis: Naef Academy for safety science – Sudia Arabia
- (Space city & The office , Workplace design affects employees' productivity, URL: <http://www.nufooz.com/ar/article/content/miscellaneous-news/service-sectors/office-employers.html> accessed on August, 2009

English References :

- Alexander, K., Atkin, B., Brochner, J., & Haugen, T. (2004). Facilities management: Innovation and performance. London: Spon Press
- Amir, Faiza & Sahibzada, Dr. Shamim (2008), Measuring the impact of office environment on performance level of employees in the private sector of Pakistan. Pakistan, Islamabad : Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology .
- Andrews, K. R. (1971). The concept of corporate strategy. Homewood, IL: Irwin

- Armstrong, Michael, (2006) 'Handbook of Human Resources Management Practice (10th Edition), London, GBR: Kogan Page, Limited.
- Armstrong, Michael, (2006) 'Performance Management: Key Strategies and Practical Guidelines' London, GBR: Kogan Page, Limited.
- Armstrong, Michael (2001) ,A handbook of Human Resource Management (8th edition) London, GBR: Kogan Page, Limited.
- Barry, P. Haynes. (2008). An Evaluation of the Impact of the Office Environment on Productivity. Journal of Facilities, 26 (5/6), pp. 178-19.
- Benton, charlotte & Tim (1975) , Form and function : A source book for the history Architecture and design, the open University.
- Campbell, D. & Pritchard, R. 1976. Motivation theory in industrial and organizational psychology. In M. D. Dunnette (1st,Ed.), Handbook of industrial and organizational psychology. P 63-130. Chicago: Rand McNally.
- Chadderdon , Lisa (1999) . Monster World," Fast Company
- Cleveland, J. N., Murphy, K. R., & Williams, R. E. (1989). Multiple uses of performance appraisal: Prevalence and correlates. Journal of Applied Psychology, 74, 130-135.
- Coward, (2007): The Motivational Workplace, A synthesis of interior design principles and psychological research
- Corporate Interiors, (2005): Does your office design compliment the working style of your workforce
- Cullen, Bernie ,Partner, Cambria Consulting, Inc. , (2008) ,How Workspace Design Drives Workplace Productivity and Employee Engagement
- Delpo, Amy, (2007) "Performance Appraisal Handbook, The : Legal & Practical Rules for Managers (2nd Edition), Berkeley, CA, USA: Nolo
- Dessler, Gray (2000), Human Resource Management, Eight Edition, Prentice Hall, Upper saddle River, New Jersey
- Doman, Uri (2008). The impact of the indoor environment on the productivity of call centers employees, , PHD thesis: Faculty of Business and Economics- UK

- Elgner, Helga (2006). New interior design trends, Design aspects – colours and materials , accessed on april 2006
- Eley, Joanna & Marmot Alexi (2000), office space planning : designing for tomorrows workplace. McGraw- Hill professional
- Fabbrizzi, Fabio (2002), office design. TeNeues, 2002
- Gibbs, Jenny (1995), A Handbook for interior designers. London: ward lock limited
- Grote, Dick. (2002) ‘Performance Appraisal Question and Answer Book’ Saranac Lake, NY, USA: Amacom.
- Hameed, Amani (2009), Journal of public affairs, administration and management :Impact of Office Design on Employees’ Productivity: A Case study of Banking Organizations of Abbottabad, Pakistan.
- Islamic university of Gaza : centers and units, accessed on February,2009
- Keable, Ellen & Turner Sharon (2004) Workplace Trends: The Emerging Office Landscape
- Knoll (2005), Workplace Preferences: The Employee Perspective
- Knoll, (2008): Open Plan and Enclosed Private Offices
- Kressler, Herwig. (2003) ‘Motivate and Reward: Performance Appraisal and Incentive Systems for Business Success’ Gordonsville, VA, USA: Palgrave Macmillan.
- Moore, D., McCabe, G., Duckworth, W., Sclove, S. (2003) The Practice of Business Statistics
- Mohsen , Abd El Kareem, (2008), Open and close design for arch. Plan and their effects on the social dimension in administrative buildings: Case study "The administration building of the Islamic University.
- Microsystems, (2005): BP Blue Chalk program of office design
- Myerson ,Jeremy& Ross, philip (2006), Space to work. Laurence King publishing

- Newsham, G.R.& Brand, J.& others (2009).Linking indoor environment conditions to organizational productivity: a field study . Building Research & Information, 37, (2), pp. 129-147
- Poilt, D., and Hungler, B., 1985. Essentials of nursing research; Methods and applications, J. B. Lippincott company.
- Rao, M. Pratap (1998) ,Interior design: Principles and practice. (3rd, Edition), delhi: standard publishing
- Rawson, Philip (1988), design. (1st, Edition), North and South America : Prentic hall
- Rayfield, Julie (1994), office interior design guide: an introduction for facilities managers and designers. John Wiley & Sons, Inc., New York: Library of congress cataloging.
- Rayfield, Julie (1997), office interior design guide: an introduction for facilities managers and designers. John Wiley & Sons, Inc., New York: Library of congress cataloging
- R. Wayne Mondy, Robert M. Noe, Shane R. Premeaux. (2002), Human Resource Management (8th edition). Prentice Hall, Upper saddle River, New Jersey
- Riratanaphong, Chaiwat (2009), Innovative Workplace Design: A Case Study of the Faculty of Architecture, Delft University of Technology . Journal of Architectural/Planning Research and Studies Volume 6. Issue 3. 2009
- R. Wayne Mondy and Robert M. Noe. (2005), "Human Resource Management", (9th edition). Pearson Education, Inc, USA.
- Robert L. Mathis, 2007. Human Resource Management 9th Edition. Thomson Learning Inc. USA.
- Roberts, Hugh , (2007).How to Increase Productivity with Office Design
- Robertson and Huang, (2005): Effect of a workplace design and training intervention on individual performance, group effectiveness and collaboration: The role of environmental control

- Sims, Ronald R. (2002), 'Managing Organizational Behavior'. Westport, CT, USA: Greenwood Publishing Group, Incorporated.
- Smithies, K.W (1981), Principles of design in Architecture. England : Library of congress cataloging
- Thompson, A. A., & Strickland, A. J. (1990). Strategic management: Concepts and cases. Homewood, IL: Irwin.
- The public affairs , Islamic university of Gaza : A notable Academic Insistution under attack, accessed on February,2009
- Williams L.C. & Associates, Inc.(1999) . Recruiting and retaining qualified employees , American Society of Interior Designers , Washington

Internet Citation:

- American Society of Interior Designers, 1997): ASID productive solutions: The Impact of Interior Design on the Bottom Line URL: www.asid.com
- All business , [URL:http://www.allbusiness.com/company-activities-management/operations-office/5341274-1.html](http://www.allbusiness.com/company-activities-management/operations-office/5341274-1.html) accessed on Jan. 2010
- Color matters, color theory, URL: <http://www.colormatters.com/colortheory.html>) accessed on May, 2009
- Delft University of Technology. URL : <http://www.tudelft.nl/>, accessed on May, 2009
- Enotes, open plan office, URL: http://www.enotes.com/topic/Open_plan_office accessed on 2010
- Ficosystems, URL: <http://www.ficosystems.com/> accessed on 2009
- Gensler, Well-Designed Office Key to Improving Employee Performance . URL: <http://www.gensler.com/viewpoint/publications> accessed on 2006
- Improve my business, Creating a warm office interior design can increase productivity , URL: <http://www.improvemybusiness.com.au/improve-premises/professional-services/creating-a-warm-office-interior-design-can-increase> accessed on May,2010

- infoplease,modernArchitecture,URL:<http://www.infoplease.com/ce6/world/A0833538.html#axzz0x98545Ea> , accessed on April, 2007
- Islamic university of Gaza, URL: <http://www.iugaza.edu.ps/ar/> ,accessed on 2009
- Mooladays, Office Design: A Key To Business Productivity
URL: <http://www.a.mooladays.com/570/office-design-a-key-to-business-productivity> accessed on Jan, 2010
- NSW government workplace guidelines, space types (2009) URL:
http://www.gamc.nsw.gov.au/workplaceguidelines/3_wpdirections/wpdirections_3_04.htm
- Office Design/layout, URL: <http://www.123sortit.com/BO/OD.html>, accessed on 2009
- The Commission for Architecture & the Built Environment and the British Council for Offices, (2005): The impact of office design on business performance ,
URL: www.cabe.org.uk accessed on 2005
- UCSF, university of California, san Francisco, performance management,
<http://ucsfhr.ucsf.edu/index.php/pubs/hrguidearticle/chapter-7-performance-management/> accessed on 2009
- Wikipedia, architecture, URL: <http://en.wikipedia.org/wiki/Architecture>, accessed on August, 2010
- Wikipedia, open plan, URL: http://en.wikipedia.org/wiki/Open_plan, accessed on August, 2010
- wikipedia , design elements and principles URL:
http://en.wikipedia.org/wiki/Design_elements_and_principles accessed on 2010

بسم الله الرحمن الرحيم



قسم

عمادة

الجامعة الإسلامية - غزة
الدراسات العليا
كلية التجارة
إدارة الأعمال

استبيان حول

أثر تصميم مكان العمل على أداء الموظفين
(دراسة تطبيقية على مبنى الإدارة في الجامعة الإسلامية)

الأساتذة و الإداريين الأعضاء

هذا الاستبيان وسيلة لجمع المعلومات لتقييم أثر تصميم مكان العمل على أداء الموظفين في مبنى الإدارة في الجامعة الإسلامية، لغرض استكمال متطلبات الحصول على درجة الماجستير في إدارة الأعمال من الجامعة الإسلامية. يرجى التكرم بالإجابة عن الاستبيان المرفق علماً بأن إجاباتكم سوف تستخدم لأغراض البحث العلمي فقط و تتوقف عليها صحة النتائج التي سوف تتوصل إليها الدراسة .

شاكرين لكم حسن تعاونكم

الباحثة : م.عبير عقيل

يرجى وضع إشارة () أمام الإجابة المناسبة

- الكلية :

- الجنس:

أنثى

ذكر

- العمر:

من 35 إلى أقل من 45

من 25 إلى أقل من 35

45 فأكثر

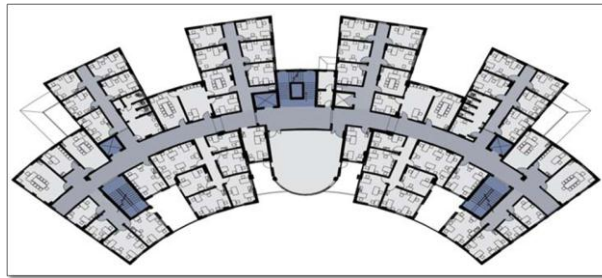
- نوع الوظيفة:

أكاديمي إداري

أكاديمي

إداري

ثانياً: تقييم مبنى الإدارة في الجامعة الإسلامية



المسقط الأفقى لمبنى الإدارة
يرجى وضع إشارة () أمام الإجابة المناسبة

أ- تصميم مكان العمل					
الرقم	السؤال	موافق بشدة	موافق	محايد	غير موافق بشدة
1- الفراغات الداخلية في مبنى الإدارة					
1	توفر المرونة و سهولة الحركة بين الموظفين				
2	تزيد من كفاءة استغلال الفراغ الداخلي				
3	تسهل التفاعل و التواصل بين الموظفين والعمل كفريق				
4	تسهل انسياب و تدفق العمل بكفاءة				
5	تزيد و تقوي العلاقات الإنسانية بين الموظفين				
6	توفر التواصل و الامتداد البصري و الإطلالة الطبيعية				
7	توفر الإضاءة و التهوية الطبيعية لتصل إلى كل الفراغات الداخلية				
8	توفر لك الخصوصية في العمل				
9	توفر الأمان المطلوب لحفظ المستندات و المعدات				
10	تزيد من مستوى الضوضاء				

الرقم	السؤال	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
2- التصميم الداخلي						
11	مكتبك منظم بطريقة جيدة					
12	متطلبات عمالك و احتياجاتك متوفرة في مكتبك					
13	تصميم أثاث مكتبك مناسب لأداء وظيفتك					
14	يعتبر الأثاث المستخدم في مكتبك ذو جودة عالية					
15	أثاث مكتبك مريح لذلك تستطيع أن تعمل لفترات طويلة دون أن تشعر بالتعب					
16	يوجد مرونة في الاستخدام في أثاث مكتبك					
17	يتوفر انسجام ألوان في مكتبك					
18	ألوان مكتبك تعطيك الإحساس المطلوب للعمل لتكون منتجا					
19	عناصر التصميم الداخلي في مكتبك (الأرضيات - الحوائط - الأسقف - الستائر) منسجمة و متكاملة مع بعضها البعض					
20	ديكور مكتبك مناسب لطبيعة عمالك					
3- الإضاءة						
21	مكان عمالك مزود بالإضاءة الكافية لذلك لا تشعر بأي إجهاد لعينيك أثناء العمل					
22	تصل الإضاءة الطبيعية بكمية كافية إلى مكتبك					
23	لا تواجه أي مشاكل في الإضاءة في مكتبك مثل التوهج أو اللمعان أو الظل					
24	تعزز الإضاءة المتوفرة في مكتبك المناخ المناسب للعمل					
25	تعزز الإضاءة المتوفرة في مكتبك الإنتاجية و العمل بهمة ونشاط					
4- درجة الحرارة والتهوية						
26	تؤثر درجة الحرارة في مكتبك ايجابيا على مستوى أداءك					
27	درجة حرارة مكتبك مناسبة					
28	الفتحات الخارجية في مكتبك تزودك بالتهوية الطبيعية الكافية					
29	يمكنك التحكم في درجة الحرارة و تدفق الهواء في مكتبك					
30	تعزز درجة حرارة مكتبك الإنتاجية و العمل بهمة و نشاط					
5- الضوضاء						
31	تعتبر بيئة عمالك هادئة نسبيا					
32	يوجد لديك أوقات هادئة لا تشعر فيها بالإزعاج					
33	يعتبر مكان عمالك خالي من التشويش والضوضاء التي تمنعك من التركيز في العمل					
34	تستطيع أن تتحدث بوضوح دون أن يسمعك الآخرين					
35	يمكنك التحكم في انتقال الصوت					
36	يوجد بعض المعالجات للتحكم الصوتي في مكتبك					
37	لا يؤثر مستوى الضوضاء المحتمل في مكان عمالك على إنتاجيتك والعمل بهمة ونشاط					

ب- الأداء الوظيفي

الرقم	السؤال	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
38	بيئة عملك وتصميمها المناسب يساعدك على اكمال مهامك اليومية بسهولة وكفاءة					
39	بيئة عملك وتصميمها المناسب يساعدك على انجاز مهامك في الموعد المحدد					
40	يعزز التصميم الجيد لمكان عملك الراحة والسعادة في العمل					
41	شعورك بالرضا عن تصميم مكان عملك يحسن من أداءك					
42	يؤثر تصميم مكان العمل على كفاءة وانسيابية العمل					
43	يؤثر تصميم مكان العمل علي العمل كفريق					
44	يؤثر تصميم مكان العمل على التعاون و النقاش بين الموظفين					
45	يؤثر تصميم مكان العمل على مشاركة و تبادل المعلومات					
46	يؤثر تصميم مكان العمل على الحاجة للإجراءات الإدارية					
47	يؤثر تصميم مكان العمل على عملية التغذية الراجعة وزمن الإجابة					
48	يؤثر تصميم مكان العمل على الإدراك والحل السريع للقضايا والمشاكل المتعلقة بالعمل					
49	يؤثر تصميم مكان العمل على التعلم الضمني					
50	يؤثر تصميم مكان العمل على التحفيز للعمل					
51	يؤثر تصميم مكان العمل على المحادثات والعلاقات الاجتماعية بين الموظفين					
52	يؤثر تصميم مكان العمل على عملية اتخاذ القرار					
53	يؤثر تصميم مكان العمل على مراقبة العمل					
54	يؤثر تصميم مكان العمل على الخصوصية و الإزعاج في العمل					
55	يؤثر تصميم مكان العمل على معدل غيابك والتزامك بأوقات العمل					
56	يؤثر تصميم مكان العمل على مدى التزامك بالقوانين والإجراءات الإدارية في المؤسسة					
57	يؤثر تصميم مكان العمل على قياس أداءك					
58	يؤثر تصميم مكان العمل على عملية تقييم أداءك					
59	يؤثر تصميم مكان العمل على أداءك بشكل عام					

ما هي اقتراحاتك لحل بعض المشاكل التي تواجهك في مكان عملك لتحسين أداءك في العمل؟

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Islamic University of Gaza
Deanery of Graduate Studies
Faculty of Commerce
Department of Business Administration



**Questionnaire About
The impact of workplace design on employees' performance
(An Empirical study of the Administration Building of Islamic University of
Gaza)**

Academic and Administrative Staff at Islamic University,

This questionnaire is a tool of collecting data in order to assess the impact of workplace design on employees' performance at the administration building of Islamic University of Gaza, to be submitted in a partial fulfillment of the requirement for MBA degree.

Your participation in answering the questionnaire is highly appreciated to achieve the objectives of this research.

Thank You for your cooperation

**Researcher:
Eng. Abeer Aqeel**

First: Personal Information:

Please indicate your answer by putting the sign X in the appropriate place

Gender:

Male

Female

Age :

From 25 to 35 years

From 36 to 45 years

From 46 to 60 years

Type of job:

Academic

Academic/Administrator

Administrator

Qualifications:

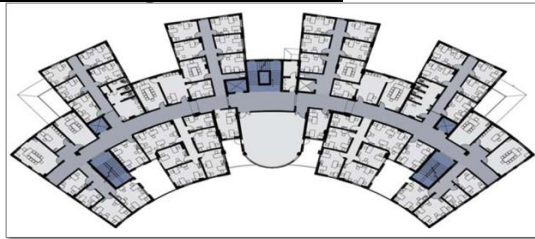
Diploma

Bachelor

Master degree

PHD degree

Second: Administration Building Evaluation



Horizontal plan for the administration building

Please indicate your answer by putting the sign X in the appropriate place.

A- Workplace Design

No.	Item	Strongly agreed	Agreed	Neutral	Disagree	Strongly disagree
1- Administration building spaces						
1	facilitate flexibility and the ease of movement					
2	increased the efficiency of space utilization					
3	facilitate interaction ,communication and teamwork between employees					
4	facilitate the efficiency and the smooth of the workflow					
5	increased social relationships between employees					
6	provide visual expansiveness and views					
7	provide the natural lighting and fresh air to reach all of the interior spaces					
8	increased your privacy					
9	increased the opportunity to secure materials and equipment more easily					
10	decreased the level of noise					

No.	Item	Strongly agreed	Agreed	Neutral	Disagree	Strongly disagree
2- Interior design						
11	Your office is well organized					
12	Your office is sufficiently equipped for your typical needs					
13	Your office furniture design is convenient for your job performance					
14	Your office furniture quality is considered high					
15	Your office furniture is comfortable so you can work for a long time without getting tired					
16	There is a flexibility of use in your office furniture					
17	You have color harmony in your office that you like					
18	Your office colors give you the need sense for your work to be productive					
19	Your office interior design elements (floor covering-ceiling – wall covering- curtains) are harmonized and integrated successfully					
20	I am satisfied with my office decoration					
3- lighting						
21	Your workspace is provided with efficient lighting so you can work easily without strain on your eyes or visual confusion					
22	Ample amount of natural lighting comes into your office					
23	You don't face any problems of lighting in your office like silhouette, sparkle or glare					
24	Your office lighting support the function and desired atmosphere					
25	Your office lighting support your productivity and morale					
4- Temperature and Ventilation						
26	Your office temperature affects your normal level of performance positively					
27	The overall temperature of your office is pleasant					
28	Windows in your office provide you the fresh air					
29	You are able to control temperature and airflow in your office					
30	Your office temperature support your productivity and morale					
5- Noise						
31	Your work environment is quiet					
32	You have quiet and undisturbed time					

No.	Continuous noise	Strongly agreed	Agreed	Neutral	Disagree	Strongly disagree
33	Your workspace is free from noise distractions					
34	You have speech privacy and intelligibility					
35	You are able to control noise transmission					
36	You have some treatments for acoustical control					
37	affordable noise level at your workspace won't affect your productivity and morale					

B- Employees performance

No	Item	Strongly agreed	Agreed	Neutral	Disagree	Strongly disagree
38	Due to overall workplace environment and design you can complete your daily tasks easily and efficiently					
39	Due to overall workplace environment and design you can finish your tasks on the specific time					
40	Good design of Workplace support your satisfaction and well-being					
41	your satisfaction of your workplace design improve your performance					
42	Workplace design affects the efficient and smooth of workflow					
43	Workplace design affects team working					
44	Workplace design affects collaboration and discussions between employees					
45	Workplace design affects sharing information					
46	Workplace design affects the need for administration transactions					
47	Workplace design affects feedback and response time					
48	Workplace design affects faster recognition and resolution of issues					
49	Workplace design affects tacit learning					
50	Workplace design affects your motivation					
51	Workplace design affects socializing and relationships between employees					
52	Workplace design affects decision making process					
53	Workplace design affects monitoring of the work					
54	Workplace design affects your privacy and distraction					
55	Workplace design affects your absenteeism and your commitment of work times					
56	Workplace design affects your commitment of the administrative rules and procedures of the organization					

57	Workplace design affects your performance measurement					
58	Workplace design affects your performance appraisal					
59	Your workplace design affects your performance					

What are your suggestions to solve your workplace problems to improve your performance?

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Thanks for your cooperation