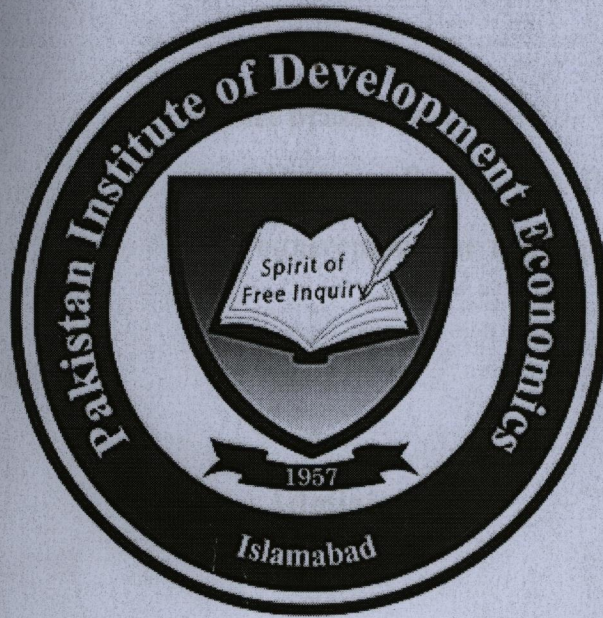


Impact of Workplace Design on Employee Productivity-Mediating Role of Comfort



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2018

**Impact of Workplace Design on Employee Productivity-Mediating
Role of Comfort**

**A Thesis presented to
Pakistan Institute of Development Economics, Islamabad
In fulfillment of the requirement for the degree of**

**Masters
in
Business Administration
(3.5 years)**

**Nawishta Nimral
04/MBA(3.5)/PIDE/2014**

Final Approval

This Thesis Titled

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Role of Comfort**

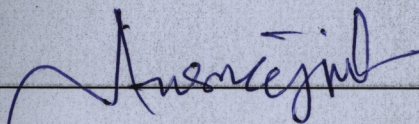
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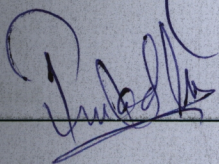
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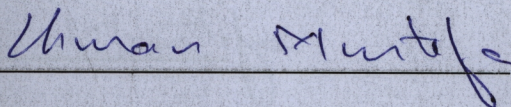


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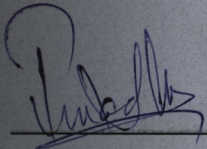
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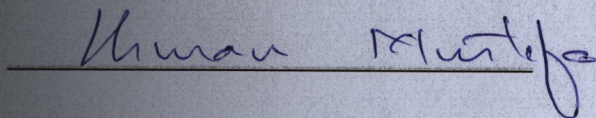


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DEDICATED
TO
MY FAMILY AND FRIENDS

*Strong and gentle souls who taught me to trust in Allah, believe in hard
work and that so much could be done with little*

Acknowledgement

Allah, the Almighty, is the only one deserving all praise and glory, for He is the one who can set our paths straight and makes us able of doing it. Muhammad (P.B.U.H), the last prophet of Allah Almighty, who urges his followers to “seek knowledge from cradle to grave”. He (P.B.U.H) is the one who shows the practical way to the enlightenment and to success in both domains.

The review of any question is very important but individually to launch such work is very difficult without the supervision, consultation and guidance of any person. As a researcher, I have also confronted these issues during my research work, but by the grace of Allah Almighty and my honourable supervisor Dr Fuad Bashir, Assistant professor (SZABIT) has provided me guidance and outstanding support, which make me to accomplish this piece of work. He made valuable and fruitful comments that helped me to improve my research. I immensely thankful and recognize all that I have received from him.

*I would never have been able to finish my dissertation without assistance from my **sisters and friends**, who helped me a lot, gave me their precious time and valuable suggestions in completing this piece of work*

I would like to thank all my friends and class mates who helped me to grasp some key concepts regarding subject knowledge during the course work and morally supported me on regular basis throughout the session

Nawishta Nirmal

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ABSTRACT

This research study is to analyze the effect of workplace design on employee productivity through the mediating role of comfort at job. Workplace is an essential factor for the employees. A good and pleasant workplace keeps employees motivated and comfortable which will ultimately result in increased employee productivity. Suitable working conditions will provide comfort to the employees, which in turn will help employees to achieve their goals and objectives while poor working conditions will have negative effect on employee performance and productivity. Employees are the key factor for any organization to become successful and competitive. The organizations/businesses that have effective and efficient employees also have competitive edge in the market. It is responsibility of organizations and businesses to create such an environment which is productive for employees to increase their own profits. The results show that workplace environment has positive relation with employee productivity through the mediating role of comfort at job.

Key words: Workplace design, Comfort at job, Employee productivity

CHAPTER I

Introduction

A proper and favorable constructed, equipped with best environment, workplace will lead to accomplishment of the objectives of an organization and corporate goals and strategies to both the employees and clients. Ultimately bringing profit to organizations current business scenario, organizations cannot bear to waste the potential of their workforce. There are some major attributes in the employee's workplace environment that have a huge impact on employee's comfort level and productivity. The concern towards improving employee productivity has been increasing in the recent years. Higher levels of productivity can help organizations enhance their profits and increase employees' wages, which could lead to increased organizational performance and greater economy outcomes (Greef *et al.*, 2004).

As the world has transformed into a global village, there is now more and more job opportunities around the world and the hiring and retention of employee is now a challenge for the businesses. There is need of better strategies. A working environment refers to the environment where employees work collectively to achieve organizational objectives (Awan and Tahir, 2015). In the past salary and compensation was considered as the main factors in employee retention and productivity but now with the changing environment the physical workplace is also a factor to attract employees. Employees are the important assets of any organization and its profitability highly depends on employee's productivity. Companies have understood now that employee productivity is crucial factor in organizational accomplishment of objectives and goals (Levin, 2005). Amplifying employee productivity is one of the most vital human-management concerns

1.1 Background of Study

The companies have realized the role of employee's comfort to enhance their productivity and up hold a competitive advantage (Luparello, 2004). In 21st century the employee productivity arguably, is the most essential measure for organizations. The challenge for organizations is to design workplace in which people get encouraged about their work priorities. Due to this the

employers are searching for innovative and creative ways to boost employee productivity and facilitate them with most valuable workplace design (Marilyn, 2001).

Designing of workplace and the structure of the office should be in accordance with the requirements of the employee and should be pleasant; this view was given by Frank Lloyd Wright, the American Architect and interior designer (Gutnick, 2007). The building should be such that it provides maximum facilities to the employee.

Employee productivity can be drastically hampered by inaccurate planning workplace design which causes destruction of employee's health, which in turn declines productivity. Since some recent years, employees comfort at the job, defined by workplace circumstances and atmosphere has been believed as a key feature for determining their productivity.

1.2 Problem Statement

In the past much, attention was not given to planning of such a workplace which can provide comfort and satisfaction to the employees. It was thought that to make employee happy compensation and bonuses are important and not the environment in which they are spending time.

But now the companies have understood that to retain employees, financial benefit is not much important. They need a place where employees can function effectively and efficiently. They have realized that to increase employee outcome it is necessary to facilitate them with a good working environment. When an employee is comfortable in its workplace, he/she will reap huge profit for the organizations as well

1.3 Research Questions

The research questions are as follows:

- i. What is the role of elements of workplace design on employee productivity?
- ii. Which elements of workplace design contributes to employee comfort at job?
- iii. What is the role of comfort at job on workplace design?
- iv. What is the role of comfort at job on employee productivity?

1.4 Objectives of the Study

The objectives of the study are given below:

- i. To determine the effect of workplace design on employee productivity
- ii. To observe the effect of workplace on employee's comfort at job
- iii. To analyze the effect of comfort at job on employee productivity
- iv. In what ways workplace design and employee comfort at job can be improved to enhance employee productivity

1.5 Significance of the Study

The employee productivity has become a key factor in success of organizations and workers are the end users of the workplace because they are spending more than eight hours of each day in that place so it is important that it should be designed according to their necessities and requirements. So, we need to study what are the factors that are contributing positively towards employee's high productivity.

The results of the study will also help organizations to concentrate on the fundamental factors necessary for effective productivity and plan strategies to build an efficient and productive workplace design.

CHAPTER II

LITERATURE REVIEW

2.1 Workplace Design

Workplace design is most important factor because it not only affects employees physically but also has psychological effect on them. A person can work effectively if he/she has a sound body as well as sound mind.

The workplace structure describes the composition of workspace in a way that is most appropriate for people to work with their maximum capabilities. The workplace is composed of the layout and physical environment. The organizations must study the workflow to enhance the employee comfort, productivity and satisfaction. Primarily, the organizations should know the work flow, then recognizing how the tasks are to be achieved and finally designing the arrangement of office to help employee to achieve their task efficiently (Hameed and Amjad,2009). It should be designed in such a way that utilizes most of most of the employee's effort. Saleem, *et al.* (2012) specifies many employees agree upon giving their extra effort and producing more output if they have been provided with better and advanced workplace and environment.

To design creative and healthy working environment the businesses should study the current market scenario and the requirements and demands of employees. Earle (2003) has described three generations for studying the requirements and expectations i.e. the baby boomers, Generation X and Generation Y. Now it is a challenge for organizations also to provide employees with environment that is most likely to meet the needs of the employees. Environment and surroundings have great effect of an individual. Pleasant and calm environment will help employees to achieve their assigned tasks while distractions and disturbances in environment will affect the employee productivity negatively.

2.1.1 The key factors of workplace design

The workplace design is divided into office layout and physical environment (Figure 1). Office layout consists of furniture, office equipments and office type whereas physical environment is composed of lightning, colors, temperature, noise, spatial arrangement and aroma

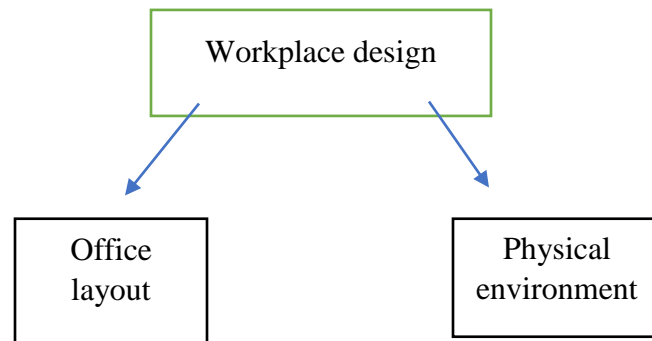


Figure 1 Factors of Workplace Design

2.1.1.1 Office Layout

The components of office layout are as follows:

i. Furniture

Furniture assists in communication and interaction among employees immediately and constantly such as tables for meetings, chairs and desk dividers which assist to focus on work and work attentively (Fassoulis and Alexopoulos, 2015). The office furniture should be designed and arranged in such a manner that it facilitates the employees which in turn will increase its productivity. For example, office desk should be designed that provides comfort to the employee rather than causing issues and problems for them. The color of table should be such that it balances the white paper and does not harm vision or create stress (Gutnick, 2007).

ii. Office equipments

Office equipments are the objects or entities which assist the performance and outcome of an employee. It comprises all the types of hardware and software. The sufficient quantity of equipment for execution of task and the position of an employee in relation to the equipment is very significant in planning workplace (Lelebici, 2012). Firstly, the equipments should be placed in accurate position so that it does not affect the health of the employee; otherwise it will result in low productivity. Secondly, equipments must be updated and in accurate working state so that employee's productivity should not hindered. The employee will not be able to complete task within given time duration, which will ultimately affect its performance and productivity and the specified settled goals will not be achieved.

iii. Office type

De Been and Beijer (2014) have classified office into three types i.e. individual and shared room office, combined office, and flexible office. The individual and shared room office is usually tiny and bounded, shared by more than one or three employees. It is connected through a hallway which is opened and closed by door. It also has a supplementary area provided for meetings or other shared resources. Each employee is given hold over temperature and lightning in that particular room. It grants them high confidentiality with less diversion and more concentration on tasks (Ajala, 2012).

The combi-offices are open, clear and transparent. There is an extra area provided for activities as individual focused tasks, conference, meeting, a phone call and other related activities. The offices are planned with transparent glass to create openness, boosting interactions among employees. It has usually central lighting and temperature regulating system. The employees can only control light and temperature in small enclosed rooms allotted to them for a conference or any interactive activities.

The flex-office approximately like combi-office but only vary in the use of workspace. There is no allocated workspace and there are fewer workspaces than the employees. Hence employees can select any workspace according to their daily wok requirements and are supposed to clean the workspace for others after they left. The employees are given lockers and trolleys for preserving their documents and important possessions. Also, to assist this office type, the records and documents are digitalized generally. In both combi- and flex- offices, there is low confidentiality and more noise disturbance which can be tiring and not inspiring, can result in discouraging employees (Ajala, 2012)

2.1.1.2 Physical Environment

It denotes the surroundings such as instant workplace and an office building in employee's perspective (Dul and Ceylan, 2011). Work surroundings can be summarized as the conditions in which the employee functions to complete their tasks (Akporehe, 2011) This incorporates the quantity of natural and artificial light in the office, the temperature, sounds, noise, aroma or fragrances, and the selection of colors such as calm and cool colors provide soothing and peaceful experience and inspiring and motivating colors providing exciting and enthusiastic

experience and so forth. In organizations, physical environment has a robust impact on how employee achieve task, intermingle with others and are preceded (Ajala, 2012). The physical environment is central part of workplace design that comprises all the physical elements of surroundings that helps employees in achievements of their tasks.

- **The elements of physical environment**

Some of the main elements of physical environment are discussed.

- i. Lightning**

Lightning is a key factor to complete your assigned tasks. Due to the absence of appropriate lighting the employees will not be able to work easily and calmly. It is verified than giving authority to employees to have control over lighting will bring positive results in the form of their increased productivity.

Humans are affected psychologically and physiologically by the different ranges or bands given by the different kinds of light. These effects are less assessable and simply snubbed. The advantages of day lighting have been linked with better mood, raise morale, reduce fatigue, and lower eyestrain.

Lighting condition is very significant; the glowing environment mostly differs with the type of lighting sources and setting of the sources. Inappropriately designed and preserved lighting can cause glare and flicker that may result in eye sight problems (Pulay, 2010). Natural lighting is one of the most prime mean of light that gives the employees the comfort. White lighting lamps are the finest artificial lighting means that give the employees the comfort (Hawes, Brunye, Mahoney, Sullivan and Aall, 2012).

- ii. Colors**

Color is one of many stressor agent or characteristics of the environment that urge us to adapt or modify. As a stress agent, color may have an ability to influence a person's operations at all levels approximately, physiology, motivation, behavior, and cognitive and social interactions (Bleicher, 2005).

Color may also have effect on moods of people. People are emotionally attached to colors. Calm colors have pleasant effect on people; vibrant colors can motivate people while dull colors can create boring effect on people. So, color is considered as one of the important elements of workplace design (Hill and Barton, 2005).

Schloss and Palmer (2011) say that color not only have impact on the mood but also well-being and productivity. Color has been recommended to boost productivity and performance, decrease accidents, and enhances employees` morale and also decreases health issues.

iii. Temperature

Temperature at workplace is largely related to the work type. People working in a workshop have natural temperature. For people working in offices the temperature has some factors 35% of employees replied rapidly that the shortage of windows was their major obstacle with their office place. The particular causes given for the dislike of the windowless offices were no sun light, improper ventilation, unable to know about the weather, unable to view outside, sense of restricted and hampered, sense of desolation and claustrophobia, and feelings of depression, stress and anxiety (Seppanen, 2006).

Berry, Bowen and Kjellstrom (2010) stated that temperature plays an essential part in workplace environment, especially how a human body retains an ideal temperature. A theory of effective temperature suggested four factors that are air temperature, humidity, airflow and temperature of entities. However, temperature is also regarded as one of the most important factors of the work environment. The suitable temperature leads to amplify or raise productivity while extremely high or low temperature leads to the distress or anxiety in the employees and a decline in productivity (Jaakola, 2012).

The maximum indoor temperature is considered as satisfactory if 80% of the employees are feeling relaxed in that atmosphere. Wyon says that thermal comfort is essential, if the thermal provision is within the thermal comfort zone, employee`s performance can decrease by 5% to 15%. As stated by DOSH most of the employees work comfortably in office at the temperature of between 23°C to 26°C.

iv. Noise

Noise is considered as one of the foremost cause of employee's disruption, causing to decline productivity, severe errors, and intensify job-related trauma or tension; workplace disturbance reduce employee's productivity by as much as 40%, and enhance errors by 27 % (Dobrucki, zoltogorski, Pruchnicki and Bolejko, 2010).

Noise in the work place has strong relation with employee's behavior. Loud voice will bring tension and stress to employees, shadowed by discomfort or disappointment from the work space. Therefore, it will result in declining productivity and performance. Some equipment can be a cause of noise such as heaters, hoods, ACs, printers and photocopiers. Ringing phones can be regarded as one of the major cause that has impact on the employee's performance, especially if several telephones exist in the same place (Amato, Rivas, Viana, Moreno, Bouso and Reche, 2014). Unfortunately, the issues of sound or noise are something that cannot be ignored in offices. In the absence of noise, errors or mistakes in work become less and productivity becomes high (Bruce, 2008).

The workers specify that the absence of noise disturbances can help them to achieve their tasks efficiently and effectively. 80% of the workers says that they can produce better results if they are provided with privacy space and if 25 % of the noise distractions were decreased. This will enhance their working environment and will bring reduction in stress by 27 percent and results in increase performance of employees by 20% (Smith, 2011).

v. Spatial arrangement

Vischer (2008) explained that every single person has their own distinct personal space, when it is disturbed or interrupted; make them feel congested and distressing or uneasy. Thus, when violations on personal space inherent to the open design surpasses or go beyond employees' comfort levels, sense of over denseness and damage of secrecy are likely to arise. These feelings of over denseness and damage of secrecy then leads to discontentment and pessimistic responses showed by employees working in open designed workspaces. Keller (2008) discusses that an organization's physical arrangements is planned around employee's requirements in order to

optimize productivity, comfort level at job and satisfaction. The physical environment and layout of an organization can have an effect on employee's behavioral conduct.

Brown (2013) the presence of numerous employees in a small area with office furniture and equipment cause distress. Furthermore, there is benefit of the open space offices as they help to facilitate information transmission among the employees and provides the space for arranging offices and equipment comparatively.

vi. Aroma

Welch (1996), said that unpleasant aroma boosts the heart rate which consequently may raise stress levels which in turn may affect the productivity. The pleasurable or pleasing aroma in office atmosphere can uplift your mood which will ultimately increases your productivity. The organizations are setting new systems for using distinct fragrances as it has relation with employee mood and behavior. Organizations are using distinct fragrances such as lavender, citrus, woody scents to know its influence on employee's leisure and attitude towards work. Therefore, it is essential that organizations to concentrate on air quality of working environment so that they are not harmed by

2.1.2 Comfort at Job

The word comfort is described as "the ease felt by the consumer during or just after using the product (Kuijt-Evers *et al.*, 2005). This implies that employees should be comfortable and relaxed while using those equipments and does not feel stress or fatigue while executing their tasks in offices. In order to make employee feel comfortable, it is important to ergonomically design the whole setting i.e. it aids employees in adjusting to workplace and job. For example, the furniture should be designed in such a manner that it stimulates suitable and safe position which assists in lessening employee tiredness and exhaustion and improving productivity.

The employee should be relaxed operating in that temperature, lighting and noise levels at workplace. If they are not suitable and comfortable, the furniture is rigid and firm, workplaces results in extreme employee anxiety. Studies have revealed that whole designing of workplace including its decoration, color schemes, lighting, temperature etc. and employee comfort at job leads to raise employee productivity.

Haynes endeavored to examine the effect that office comfort has on office occupier's productivity. The analysis stated that there exists a relation between the physical comfort of the office environment and the impact on the productivity of the office occupiers. The writer from his literature review created that there is sufficient evidence to support the claim that office comfort can affect productivity. But, it was discovered that there is no commonly accepted explanation of office comfort, and there is obvious absence of conformity as to how office comfort should be evaluated.

The organizations are trying to create a workplace design which is safe and comfortable for the employees so that they may not have any issues by employing comfortable furniture, suitable lightning, air conditions, temperature etc. When an employee fits with the given environment, he will also produce much better outcomes for the organizations.

The previous studies revealed that comfort and productivity are interconnected, and the experts agree that nearly every organization can take advantage from a small change in arrangement of office. The possibility of inappropriate environment comfort in an office building can cause various possible health concerns. Raw, Garston and Ronald, Catherine underlines that when employees have to undergo through different health issues such as stress, eye irritation, back pain, uncomfortable, then their productivity will also be hampered.

When employees are not comfortable with their physical environment they are more likely to feel disturb and tired. This may cause any immoral deed thus; it will have influence on the performance and productivity of their tasks. Thus, human behavior relating to workplace comfort will affect the level of their output. Thus, the surroundings or comfort at environment have relation with health of the employees which ultimately damage their productivity.

2.1.3 Employee Productivity

Employee productivity is determined by the amount of time a person is physically present at a job and also the extent to which he or she is "mentally present" or usefully operating while present at a job. Organizations must consider both of these matters in order to sustain high employee productivity and this may happen through diverse strategies that emphasis on employee's workplace Design.

Empirically, Roelofs has stated that enhancing the working environment causes in decreasing the number of complaints and absenteeism, but it results in raising productivity. However, working circumstances functioning in many of organizations may be deficient in safety, health and comfort issues such as inappropriate lightening and ventilation, too much noise and emergency excess (Leblebici). Employees operating under unfavorable workplace circumstances might appear to be less productive. This may be so as the employees have to struggle with many risk and threats and other problems that causes danger to their safety such as too much noise, functioning on hazardous/unsafe machines and situations that causes damage to employees (Yankson).

According to the architecture and design firm's Gensler 2006 U.S. Workplace Survey, "Office design is directly and significantly related to employee productivity. Businesses that do not pay attention to their workplace design, remains deprived of optimum human resource power" (Beauty man, 2006).

Favorable workplace design can be beneficial in providing employee satisfaction and comfort at job and also helps to motivate them. It can also affect the ability, skills, and knowledge possessed by the workers and how innovative and creative they are. Unfavorable workplace design, in contrast, results brings stress and tension to both organizations and employees. The employers have now acknowledged the significance of planning a workplace that has both physical and emotional connection with employees, so that they may be more beneficial and useful. Proper highlights that an effective work design should encourage or stimulus through the provision of proper color, lighting, aroma, space, and furniture. These factors are considered as essential to effective work actions and workplaces, and they lead to boost productivity of employees. A basic factor in raising the productivity is the physical work design. According to a report by the Rocky Mountain Institute in Boulder (Training, 1997), employees could be more beneficial if employers pays more consideration to the work Design.

To summarize, employees' productivity is the main affair of any organization that should be paid attention. Through employees' productivity, the goals of organizations will be achieved and hence their victory will flaunt among their competitors or rival organizations. One of the goals to

measure the achievement of any organization is the employee's productivity (Cerasoli, Nicklin and Ford, 2014).

According to Swasta and Sukotjo (1995:281) productivity is a notion that defines the connection between the outcomes (number goods and services) with sources (the amount of labor, capital, land, energy, and so on) are used to produce the outcomes. While Washinis (Rusli Sharif, 1991:1) gave the opinion that "Productivity includes two fundamental concepts, which are efficiency and effectiveness. Efficiency describes the extent of human resources, reserves, and features needed to obtain particular outcomes, while the effectiveness to describe the outcomes and the superiority of the outcomes."

CHAPTER III

DESCRIPTION OF DATA AND METHODOLOGY

In this section, methodology use to conduct the whole research has been described. Choosing a right methodology is very important to get accurate results. A well organized and structured research was conducted to see the impact of workplace on employee productivity through the mediating role of comfort at job. The data was collected from different public and private banking sectors of Rawalpindi.

3.1 Conceptual Framework

This is a simple model in which we determine the impact and significance of workplace design on employee productivity through the mediating role of comfort at job (Figure 2).

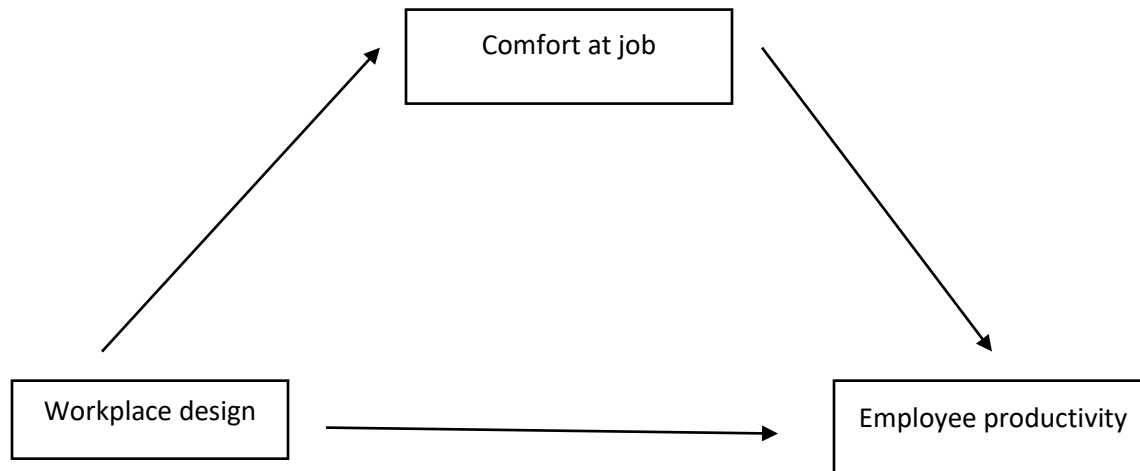


Figure 2 Conceptual Framework of the Study

➤ **Independent variable**

Workplace design

➤ **Dependent variable**

Employee productivity

➤ **Mediator**

Comfort at job

3.2 Research Design

It is a quantitative research as the data is analyzed in numeric form. The data is collected through primary source. A survey approach is use for data collection. The deductive approach is used in this study as the framework has been developed through literature view. The research is cross sectional study which is defined as the study that is carried out at one point time or over a short period.

3.3 Research Procedure

A structured questionnaire was adopted from the study “The Relationship of Workplace Design on Employees’ Perceived Productivity: A Case of Higher Education Institutions”. The questionnaire is attached in appendix section I. It consisted of twenty one questions in total relating to workplace design, comfort at job and employee performance. Workplace design comprises of twelve items, comfort at job comprises of six items and employee productivity comprises of three items. Workplace is further divided into physical environment and office layout.

The questionnaire was circulated personally to all the public and private banks and the data was collected. After the collection of data it was entered in SPSS. The data was collected using a Likert scale questionnaire which was then coded for further analysis. It was coded as 1=strongly agree, 2= agree, 3=neutral, 4=disagree and 5=strongly disagree.

The reliability was checked using Cronbach alpha, descriptive was run to check for normality of data, correlation was run to know the association among variables, regression was run to test the impact of each variable and Hayes and Preacher method, model 4 was used to assess the impact of mediation.

3.4 Population and Sample

The target population was all the public and private banks of Rawalpindi. More than 80 branches of 15 banks were selected for data collection.300questionnaireswere circulated and only 260 responses were received, out of which only 250 were filled correctly.

3.5 Hypothesis

H1: Workplace design has significant positive impact on employee productivity

H2: Workplace design has significant positive impact on employee's comfort at job

H3: Comfort at job has significant positive impact on employee productivity

H4: Workplace design and employee comfort at job have significant positive impact on employee productivity

CHAPTER IV

ANALYSIS AND INTERPRETATION

The following tests were conducted to find the outcomes of the study.

- Cronbach Alpha to test the reliability of the data
- Correlation analysis to know the association among the variables
- Regression analysis to know the relationship between dependent variable and one or more independent variables.
- Mediation analysis to know the effect of mediator whether it is significant or not?

4.1 Reliability Test

Cronbach alpha

It is use to check the reliability of data. The value of Cronbach alpha should range from 0.00 to 1.00. It must be at least 0.7.

Interpretation

In this study the value of workplace design is 0.847, comfort at job is 0.854 and employee productivity is 0.873. All these values show that the data is reliable as they are above 0.7 (Table 1).

Table 1 Reliability Test for Workplace Design, Comfort at Job and Employee Productivity

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Wd	5.4867	3.215	.817	.847
Comf	5.6850	3.041	.807	.854
Ep	5.6117	3.081	.785	.873

4.1.2 Descriptive Analysis

This analysis is to check the normality of data. The descriptive statistics tells about variables, including the values of Skewness and Kurtosis with accompanying standard error for each variable (Table 2).

Skewness

The skewness involves the symmetry of distribution skewness that is normal involves a perfectly symmetric distribution. A positively skewed distribution has scores clustered to left, with tail extending to right. A negatively skewed distribution has score clustered to right, with tail extending to left.

Kurtosis

Kurtosis involves the peakedness of the distribution. Kurtosis that is normal involves a distribution that is bell-shaped and not too peaked or flat. Positive kurtosis is indicated by peak while negative kurtosis is indicated by flat distribution.

Interpretation

Workplace design has values (mean 2.90, stdev.0.89, skewness-0.20 and kurtosis -0.95).

Comfort at job has values (mean 2.70, st dev.0.95, skewness0.42 and kurtosis -0.55).

Employee productivity has values (mean 2.78, st dev.0.14, skewness -0.20 and kurtosis -1.)

Table 2 Descriptive Analysis of Workplace Design, Comfort at Job and Employee Productivity

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Wd	250	1.13	4.38	2.9050	.89431	-.207	.154	-.959	.307
Comf	250	1.33	5.00	2.7067	.95326	.423	.154	-.555	.307
Ep	250	1.00	4.75	2.7800	.95669	.141	.154	-1.031	.307
Valid N (listwise)	250								

4.1.3 Correlation Analysis

Pearson Correlation

The Pearson Correlation can range from -1 to +1. A value 0 indicates that there is no association between two variables. The value greater than 0 indicates that there is positive association which means that as the value of one variable increases the value of another variable will also increase.

Interpretation

Workplace design is positively and significantly related with comfort at job ($r = 0.776$, $p < 0.05$)

Workplace design is positively and significantly related with employee productivity ($r = 0.746$, $p > 0.05$) shown in Table 3.

Table 3 Correlation Analysis of Workplace Design, Comfort at Job and Employee Productivity

		Correlations		
		wd	comf	Ep
Wd	Pearson Correlation	1	.776**	.746**
	Sig. (2-tailed)		.000	.000
	N	250	250	250
Comf	Pearson Correlation	.776**	1	.734**
	Sig. (2-tailed)	.000		.000
	N	250	250	250
Ep	Pearson Correlation	.746**	.734**	1
	Sig. (2-tailed)	.000	.000	
	N	250	250	250

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

4.1.4 Regression Analysis

Anova

ANOVA is a statistical method used to test differences between two or more means (Table 4).

Regression is explained sum of square

Residual is unexplained sum of square

R square

The value of R square measures the proportion of variation in dependent variable (employee productivity) that was explained by variations in independent variables (workplace design and comfort at job). The R square tells us that 55.7% of the variation is explained by workplace design and 61.8% is explained by comfort at job.

Adjusted R square

The value of adjusted R square measures the proportion of variance in the dependent variable (employee productivity) that was explained by variations in the independent variable (workplace design and comfort at job). The adjusted R square tells that 55.5% of the variance was explained by workplace design and 61.5% explained by comfort at job.

Table 4 ANOVA

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.746 ^a	.557	.555	.63806
2	.786 ^b	.618	.615	.59394

a. Predictors: (Constant), wd

b. Predictors: (Constant), wd, comf

Table 5 Regression analysis for workplace design, comfort at job and employee productivity

Interpretation

The value of f stats is, the higher the better. As, the value of F is 311.787 and $p < 0.05$ for workplace design F is 199.515 and $p < 0.05$ for comfort at job (Table 5)

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	126.935	1	126.935	311.787	.000 ^b
	Residual	100.965	248	.407		
	Total	227.900	249			
2	Regression	140.766	2	70.383	199.515	.000 ^c
	Residual	87.134	247	.353		
	Total	227.900	249			

- a. Dependent Variable: ep
- b. Predictors: (Constant), wd
- c. Predictors: (Constant), wd, comf

4.1.5 Mediation Analysis

Mediation seeks to identify mechanism that underlies an observed relationship between an independent variable and dependent variable via the inclusion of third hypothetical variable, known as mediator variable (also a mediating, intermediary or intervening variable). Rather than direct causal relationship between independent and dependent variable, mediation model proposes that the independent variable influences the mediator variable, which in turn influences the dependent variable

Interpretation

Andrew F. Hayes process is used to test mediation and model 4 is used.

X=Independent variable=workplace design

Y=Dependent variable=employee productivity

M=Mediator=comfort at job

The below results show that comfort at job predicts workplace design with values $F= 375.0935$, $\beta=0.8270$, $R\text{-sq}=.6020$ and $p < 0.05$, so the model is significant. So, there is positive significant relationship between workplace design and comfort at job (Table 6).

Direct effect of workplace design on employee productivity is significant because $p < 0.05$

Indirect effect of workplace design on employee productivity through mediating role of comfort at job is also significant and positive, so there is partial mediation (both paths are significant) that is shown in Table 7.

Model: 4

Y: ep

X: wd

M: comf

Sample Size: 250

Outcome variable:

comf_mean

Model summary

Table 6 Mediation Analysis of Comfort at Job

R	R sq	MSE	F	Df1	Df2	P
.8690	.7552	.3054	765.0244	1.0000	248.0000	.0000

Model 1

	Coeff	Se	T	P	LLCI	ULCI
Constant	.3042	.1298	2.3440	.0199	.0486	.5598
Wd_mean	.8270	.0427	19.3673	.0000	.7429	.9111

Outcome variable:

ep_mean

Model Summary

R	R sq	MSE	F	Df1	Df2	P
.7859	.6177	.3528	199.5149	2.0000	247.0000	.0000

Model

	Coeff	Se	T	P	LLCI	ULCI
Constant	.3415	.1293	2.6412	.0088	.0868	.5962
wd_mean	.4743	.0667	7.1090	.0000	.3429	.6057
comf_mean	.3919	.0626	6.2616	.0000	.2686	.5152

Table 7 Direct and Indirect Effects of x (workplace design) on y (employee productivity)

Direct effect of X on Y

Effect	se	t	p	LLCI	ULCI
.4743	.0667	7.1090	.0000	.3429	.6057

Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
comf_mean	.4881	.0486	.3946	.5857

4.1.6 Summary of Hypothesis

H 1: workplace design has significant positive impact on employee productivity

According to results the relationship between workplace design and employee productivity is positive as $p < 0.05$, value of R square is 0.6177. Co-efficient value of WD on EP is 0.4743 which shows that 1% change in WD will lead to .4743 % change in EP and non-zero values of LLCI is .3429 and ULCI is 0.6057. As both the values are positive to we accept the hypothesis.

H 2: workplace design has significant positive impact on employee’s comfort at job

According to results the relationship between workplace design and comfort at job is positive as $p < 0.05$; value of R square is .6177. Co-efficient value of WD on comfort is .8270 which shows that 1% change in WD will lead to .8270 % change in EP and non-zero values of LLCI is .7429 and ULCI is 0.9111. As both the values are positive to we accept the hypothesis.

H 3: comfort at job has significant positive impact on employee productivity

According to results the relationship between comfort at job and employee productivity is positive as $p < 0.05$, value of R square is .6177. Co-efficient value of comfort on EP is .3919 and none zero values of LLCI.2686 is and ULCI is .5152. As both the values are positive to we accept the hypothesis.

H 4: workplace design and employee comfort at job have significant positive impact on employee productivity

According to results comfort at job is mediating the relationship between workplace design and employee productivity is significant as $p < 0.05$. Co-efficient value is .3241 and non-zero values of LLCI.2184 are and ULCI is .4358. As both the values are significant and effect is positive so we accept the hypothesis.

Table 7 Summary of Hypothesis

Sr.No	Hypothesis	Result
1.	Workplace design has significant positive impact on employee productivity	Accepted
2.	Workplace design has significant positive impact on employee’s comfort at job	Accepted

3.	Comfort at job has significant positive impact on employee productivity	Accepted
4.	Workplace design and employee comfort at job have significant positive impact on employee productivity	Accepted

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The aim of this research study was to analyze the impact of workplace design on employee productivity through the role of comfort at job. Workplace design and comfort at job have positive impact on employee productivity which means that if employees are provided with suitable and appropriate work environment then their productivity will definitely enhance. Lightning, furniture, office space, colors, aroma etc. are the crucial factors to boost employee productivity. A safe and healthy workplace will also help to retain employees. All these factors provide comfort to the employees which in turn have effect on their productivity at work. Environment have huge impact on people, similarly work environment have huge impact on employees. So, importance must be given to designing such workplace that helps employees to be comfortable in that design rather than being uncomfortable.

Now the organizations and businesses are focusing on the development of workplace design they have understood now that for retaining and increasing employee productivity it is essential to construct a safe and sound workplace. A healthy employee will be beneficial for organizations because he will bring profit for the company because as it is well said “**health is wealth**”. They will be productive only if they are comfortable and satisfy with their workplace environment.

5.2 Limitations and Area of Further Research

- i. This research is conducted only in banking sector of Rawalpindi; however, this research can be conducted in other organizations and industries.
- ii. Other variables can also be added to further carry out research and validate the study.
- iii. Time constraint was also a limitation factor in this research as limited time was allowed to complete this research.

5.3 Recommendations

- i. Employers should be concerned about ergonomics, since ignoring these principles will result in reduced productivity and increased medical costs.

- ii. High-performance acoustical ceiling systems. The materials in the ceiling should be able to absorb sounds striking at angles of incidence of 45 to 55 degrees (the angles that allow sound to bounce over cubical walls rather than entering the cubicle).
- iii. Fitness centers should be established. This is important, since physical fitness can be promoted in the workplace for the benefit of everyone, both employers and employees.
- iv. Organizations must focus their attention on improving the workplace design rather than just focusing on the monetary and other benefits
- v. The office design which is suitable for one organization will often not work for another because the context in which the work is done is different. Therefore, the workplace design and how it operates must fit within the organizational philosophy

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APPENDIX I

IMPACT OF WORKPLACE DESIGN ON EMPLOYEE PRODUCTIVITY: MEDIATING ROLE OF COMFORT

This questionnaire is for collecting data on the workplace design in private and public banking sector in Rawalpindi. This is purely for academic purpose. The identity of respondents will not be disclosed and research will not be used anywhere else. Your cooperation in this respect is highly appreciated.

Sr.no		Strongly agree	agree	neutral	disagree	Strongly disagree
	Physical factors					
1	The lighting provided in office is suitable for the work					
2	Ample amount of natural light comes into my office.					
3	There is adequate ventilation in my office.					
4	The colours used in my office uplift my mood.					
5	The wall hangings, plants and décor in office is appealing.					
6	The office aroma is pleasant.					
7	There is adequate ventilation and comfortable indoor air quality.					
8	Office workspace has many noise distractions (traffic, speech)					
	Office layout					
9	The amount of space provided for storage and displaying important material is sufficient					
10	Current office design facilitates in performing my core duties.					
11	Current office type helps in effective communication and collaboration with others					
12	Workspace serves multipurpose functions for informal, instant and formal meetings					

	Employee productivity					
13	Due to overall work environment I feel engaged to organization					
14	I feel stressed due to uncomfortable office space, furniture, office equipment					
15	Favorable environmental conditions (less noise, suitable temperature) increase my performance at work.					
16	Due to overall office environment I can complete my daily tasks easily					
17	My independent productivity is enhanced through properly designed office.					
18	Work environment is quiet enough for productive work					
	Comfort					
19	Are you mentally satisfied with your workplace					
20	Physical working conditions are safe not injurious to health, not stressful					
21	Do you feel stress and uncomfortable in office					