

Impact of office physical environment management essay



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Abstract

The objective of this study is to find out the influence of indoor environment on workers' productivity in Call Centers. Standardized scale has been used. Data has been collected from 115 employees of Call Centers. Results have been discussed using correlation and regression analysis. The study is of high value to the call centre managers.

Key words: Office design, Productivity, Call Centers, Pakistan

Introduction

' Start with good people, lay out the rules, communicate with your employees, motivate them, provide adequate workplace conditions and reward them. If you do all those things effectively you can't miss.' (Lee Iacocca – Chrysler Corporation)

Globalization refers to the interrelation between states, societies, organizations and individuals that make up the world economic system (Acs, 2000). Globalization, the transformation of information and communication technologies and the collapse of institutional barriers have worked to speed up change and have raised the value of the tacit skills needed to use codified knowledge effectively. The integration of call centres in the internationalization and globalization trends provides an efficient and effective platform for local and multi-national exchange of information and services.

Advanced information and communication technologies (ICT) facilitate the effective exploitation of human resources (HR) regardless of geographic

location and consequently lead to a reduction in unit labour costs (BA, HSBC and Norwich Union have all located their call centres in India, Pakistan, China and Malaysia, though their main business centres are in the UK.), (Hill, 2005).

Multi-national companies such as Dell, transfer calls from one region to another around the globe, as an efficient technique to exploit time zone differences during peaks and lows (of call volume) (Hill, 2005).

Call centres manifest the paradigm of the ‘ global village’ in a sense that boundaries become transparent. It is estimated that approximately 3% of the total US labour force (more than 2, 000, 000 employees in 60, 000 call centres) is employed in call centres (Mandelbaum, 2003; Krajewski, 2007).

The indoor environment can be defined by physical features of the environment such as lighting, colour, temperature air quality and noise (Baizhan, 1998). According to the Institution of Engineering and Technology (2005) nearly a third of people in the UK say they would leave their job due to the physical office environment and a further 23% have turned down a job offer due to a company’s physical environment (IET, Engineering Management, June/July edition, 2006).

It seems almost axiomatic that people perform better in a pleasant environment than in an unpleasant one (Lorsch and Abdou, 1994). Townsend (1997), in an article entitled How to Draw out all the Talents, states that 25% of the ‘ white collar’ workforce enjoys their work, but the rest do not.

Productivity suffers when the employee lacks a sense of well-being. Low

level productivity shows up in many ways: in a higher rate of absenteeism, <https://assignbuster.com/impact-of-office-physical-environment-management-essay/>

arriving late and leaving early, over-long lunch breaks, careless mistakes and frustration with the environment.

Indoor environmental parameters (IEP) are seldom a meaningful consideration in the most basic building market transactions. The fundamental problem is that those who want and are willing to pay for improved indoor conditions do not ask for this during the market transaction, thus those capable of providing improvements are not motivated to do so (Mudarri, 2006).

Research conducted in office buildings provides compelling evidence on productivity gains (or losses) of up to 15% due to improved indoor environmental conditions (Heschong, 2006; Wheeler and Almeida, 2006).

A complete study of the effect of IEP on productivity should take into consideration not only physical but also non-physical factors such as organizational behaviour and culture, motivation socio/economic status and remuneration. Non-physical managerial issues in call centres such as organizational culture, emolument, etc are the subject of myriad publications. However the call centre industry lacks extensive research on the interrelation between building services such as acoustics, air-conditioning and ventilation, illumination, etc and the employee's well-being, satisfaction (as a mediator) and productivity.

This study will try to find out the effects of office design on employees' productivity. The area chosen is the Call Centers situated in Islamabad, Pakistan. The study will be based on primary data collected through a structured questionnaire (Appendix 1).

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Literature Review

Tarcan et al. (2004) they conclude from their study that indoor environment of organization directly affects employee's performance. The air quality, lightning, sitting arrangement directly effects the performance of employees. Their research model indicates that increasing comfort level of employees; it will play a critical role in influencing the evaluation of an employee and will build general sufficiency level judgment of the employees. To improve performance physical stress factor have to be removed for example poor indoor air quality (IAQ), noise, vibration, inadequate lighting, excessive standing, poor seating, awkward movements, repetitive motion.

Tarcan said that there is direct relationship between performance and physical environment, we agree with him because if employees don't have good environment for example poor cooling system in summers, employees will feel lazy and they can't perform task efficiently.

Usually manager don't pay attention on indoor environmental factors, there is a need to increase the information on relationship among workplace environment and workplace comfort sufficiency. According to the International Facility Management Association (IFMA 1999) the facilities that are handled well and have increased efficiency levels also have important effects on the performances of the employees. This study indicates an important relationship among workplace environmental condition and performance of employees, the research model was tested using responses from 362 employees in 25 diverse hospitals and it resulted that indoor conditions can be used to increase performance level.

Another researcher Chigot (2005) researched the professional facilities concerning the use of scientific research and offers an objective structure in the decision making on facilities planning and management. This study tells us about the sound effects in offices in planning, design and management of modern workplaces. The purpose of this paper is to explore to what extent there is a association between objective measurements and subjective rating in the make use of and knowledge of office building from the point of view of sound and researched that whether it improves working condition in offices or not. It resulted that there is no simple, association between objective assessment and subjective experience of the effects of sound in the office. In other words, the expectable, aimed inference of the prospect sound environment might not reflect the subjective experience or expectations connected to the same sound environment. This recommends that end-users and external design consultants in office projects might not understand each other.

Above research paper talk about effect of sound on employee performance, it depends on business or tasks of organization for example in call centers they need complete quite environment, so that there is no interruption between attending calls. Now Govindaraju et al. (2001) focuses on the effect of ergonomics on human performance by which quality increases or decreases. Humans are the primary source responsible for lowering product and service quality, the ergonomic thought can increase human performance in manufacturing field. Technology is very important for the productivity but this productivity cannot be increased with human input. Automated equipment often provides the flexibility but not the capability. The capability

can be increased by intelligence; ability to sense, see, touch, and feel; acquire knowledge and judgment to take out complex tasks, and act according to the know-how of the skilled worker; perform tasks reliably, communicate with the operator by voice, written sentences, and other appropriate forms of communication; and learning on the job (Brady et al, 1984).

Previous researchers researched about the different aspect of environment and technology on human productivity and Vischer (2006) researched that in stress studies people give little attention to physical environment factors in which employees perform their work. Now there are so many proofs that work environment affect both job performance and job satisfaction. This research focuses on physiological factors that affect job performance. This paper presents a theoretical model of worker and work space relationship in which stress and comfort play an important role.

Vischer told about the ignorance of manager to physical environment, they said that physical environment has great effect on employees stress level which also affects his performance. Now these researchers McGuire and McLaren (2007) examined the effect of physical environment on employee commitment. They make questioners filled by 65 front line call center employee through they conclude their result. Commitment is defined as an employee's identification with and adoption of an organization's values, norms and traditions. Some researchers' estimates that improvement in physical environment will result in 5 to 10 percent increase in performance. Physical layout must be design according to employees need, it will improve his satisfaction. The function of employee well-being as intermediary of the <https://assignbuster.com/impact-of-office-physical-environment-management-essay/>

relationship between physical environment and employee commitment is examined. The modern work physical environment is distinguished by technology, computers, machines, general furniture and furnishings which continually affect the brain and health of employees. The company must ensure that the physical layout is covering all need of employees such as communication and privacy, formality and informality, functionality and cross-disciplinarily.

Companies are giving more importance to employees need and giving them comfort and give flexible workspace which increase positive work environment. Now office must have that type of furniture which can accommodate work shifts. In open offices there are no walls and barriers, it forces everybody talk to each other and eliminates the gossips and reduces the need of memo writing by eliminating private space. An office is in risk of creating poor image when there is

- Color schemes are outdated
- Ceiling system look shabby
- Heating, ventilating, and air conditioning systems are poor
- Workspace used inefficiently
- Lighting is poor

To improve all these things companies have to:

- Interior office color schemes have been using more earth tones

- Ceiling improvements
- Asking employees about their workspace needs

Most of the aspects of above research are related to our research such as lighting and how it affects employee performance. Hedge (1999) tested impacts of using ergonomic work rating software (Ergonomic Management System) on typing (accuracy and amount of keying), and mouse work (frequency and duration of mouse use). Changing users to take more short rest and break periods did not damage their overall keystroke and mouse use, but did improve their work accuracy. Sometimes use of keyboard and mouse create pains in muscles. For this there are several work factors which are important to handle it such as workflow rate, work load, work pattern, and work postures.

Research of Mills et al. (2007) about the effect of high correlated color temperature office lighting on employee wellbeing and work performance. The special effects of lighting on the human are entrenched. The bad lighting system can affect human sight. If the employees cannot see the writings correctly, the number of error in their work will increase. The most important thing if an employee gives stress to see anything he can get headache, through which his performance can decrease. A potential controlled involvement study was conducted within a shift-working call centre to examine the effect of newly developed bright light sources with a high connected color temperature upon the wellbeing, functioning and work performance of employees.

Attaran and Wargo (1999) studied the ergonomics in computerized offices. Attaran and Wargo has indicted important factors that are contributing to the increase focus on ergonomics, high costs for health checkups, quality and productivity relies on the working environment and government regulations as the ISO has set regulations that include the ergonomics that drive the increasing adoption of ergonomics in industries. The office they analyzed had cubicles that had fabric walling to reduce sound noise. Lights kept bright, carpeted floors that provide comfort; Chairs used were with the feature of self adjustment according the individual requirements.

Marquardt et al. (2002) also researched the link between open plan offices and environmental satisfaction. They said while designing an open plan office the design should address the physical, task needs, privacy needs and recognition. Employees spend about 50 percent of their time at offices. So the environment certainly affects the mood and emotions of employees. In open plan office it needs to be decided how close the employees are to be seated. They need to have their boundaries set so that the privacy element may be covered. Privacy here focuses on the aspects that the employee is able to concentrate and have least distractions during work. It would be called the degree of enclosure. The furniture should be chosen that an employee is able to adjust according to his comfort. The storage space of furniture is quite important as well. The area designated and the furniture that is allocated to the employees of different positions is also important. The need of recognition of the different levels of employees sitting in open plan environment needs to be given due attention as well.

Ergonomics Factors

A key to getting the layout and internal structure right is to understanding the communication network of employees and requirement of office. Brooks said that any change to an office is a change to peoples " working live".

Preceding research is about the psychological and morale matters surrounding the office changes should not be undervalued. As above researchers talked about stress due to bad physical environment another research was made by Levinson (1999) on finding methods to reduce and prevent repetitive stress injury. During Levinson's research he found that people were victimized to the following health problems such as tendonitis, pinched nerves, neck injuries, bone spurs, eye strain, etc. termed as repetitive strain injury. The reason for this injury was poor working habits and poor organization of work area that could easily be corrected. Levinson's team conducted personal evaluations how tasks were being performed. This helped users with such topics as monitor height adjustment, keyboard height, chair adjustments, and stress reduction exercises. They encouraged the use of wrist rests while using the use of mouse costing less than \$5, which is beneficial compared to the treatment of RSI costing \$5000 to \$15000. Those working on monitor screen should take a 15 minute break after an hour work this will help reduce eye strain.

As computer system is the most important part of physical work environment, because employees spend most of their time doing work on computers and mouse is the mostly used part of computer so, Bertuca (2001) said that the use of mouse leads to many repetitive stress injury. It is a device that is used by all. But is not the best device to be used for those

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people that have to use the computer for extensive timings. Track ball, touch pad, and graphic tablets are a better option which gives better cursor accuracy and reducing the potential injury. The mouse is a major offender, causing severe stress to fingers, hands, wrists, arms, and shoulders. The writer says that compared to writing by hand, using a mouse is like trying to write with a brick. All these factors generate fatigue, strain, and frustration. Moving the mouse, clicking buttons, and trying to make precise movements require a good amount of strength, coordination, and practice. This activity uses more energy and involves more muscle movements than users realize.

Again Roper and Juneja (2008) discussed the issues of an open space plan. They say that when formulating such a plan that consider the important contrasting aspects Collaboration and concentration. Roper and Juneja (2007) mentioned the Yerkes-Dodson law or the arousal-performance relationship, states that the most favorable level of arousal for performance on a task is inversely related to task complexity, so that the performance of more complicated tasks will weaken at lower levels of encouragement than will the performance of easier tasks. This explains the reason behind performance improvement on simple tasks and impairment of performance on complex tasks.

Another aspect the Roper and Juneja mentioned is interruption and distraction. Distraction is a generally occurring phenomenon in human surroundings that can be caused by many factors, such as noise, anxiety, stress, temperature, poor appraisal, and new organizational policies.

According to the literature, some of these distractions are internally generated. Research has consistently shown that open plan designs increase
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physiological and psychological stress, many companies continue to adopt open-plan office designs primary because of the reduced costs in construction and maintenance. But progressive companies are moving back to conventional enclosed/private offices because of the realization that their employees, that are their most critical assets and the productivity of the company is a direct result of employee performance.

Lighting ergonomic is discusses many times previously now Varol and Ates (2004) studied about air of office as well with lighting, Varol and Ates studied the facilities and environment provided to employees effecting the performance. Varol and Ates say that both these variables have a direct effect on employee performance. The air, lighting ergonomics', acoustics are such factors that let one know about the employees performance levels. Poorly maintained work conditions draw evidence towards health issues of the employees. Companies usually are reluctant towards investing into the ergonomics, but it is a wise choice to do so. This investment surely increases productivity leading to increased profits. Three factors are usually the causes of stress: These are physical environment, work organization and psycho-social factors. Physical stress factors include poor indoor air quality, noise, vibration, inadequate lighting, excessive standing, poor seating, uncomfortable movements, repetitive motion and other ergonomics problems. Humans cannot perform well until they are in an ideal environment.

Conceptual Framework

Based on the literature review, the relationship between office design and productivity can be conceptualized and depicted in Figure (1). The <https://assignbuster.com/impact-of-office-physical-environment-management-essay/>

relationship is defined in such a way that the set of factors impact on an individual, which in turn determine the final outcome in terms of increased or decreased productivity of that individual. These factors have different impacts on different employees based on their gender.

Figure : 1 Conceptual Frame work

Furniture

Noise

Lighting

Temperature

Productivity

Spatial Arrangements

Independent Variables

(Office Design)

Dependent Variable

Research Methodology

The purpose of the study is to find out the relationship between office design and employees' productivity and the impact of office design on employees' productivity.

The objectives of the study include:

- To analyze office design of Call Centers in Islamabad, Pakistan.
- To analyze the features that employees value in the workplace.

- To assess whether office design is one of the factors in affecting employees' productivity.
- To determine the impact of office design on employees' productivity.
- To analyze the impact of office design if any on gender of employees.

The Call Centers of Islamabad, Pakistan has been chosen as the population for the study. Out of 40 operational Call Centers 4 Call centers were taken as sample. A total of 115 employees from these 4 Call Centers were taken as the sample size. The distribution of sample among banks and number of employees taken from each bank are given.

Primary data was collected through a structured questionnaire. Observation was also used to collect information about the office design. The Questionnaire consisted of 30 questions; 4 questions on each variable. Out of these, 4 questions were on productivity, based on the technique of subjective productivity measurement. Subjective productivity data was gathered from the employees, supervisors, clients, customers and suppliers. A direct subjective productivity measurement is a survey question concerning an employees' own productivity. For example, such a question might be, on a scale of 1-4; ' how your productivity changed during the last year' (Black and Lynch, 1996 and Laitinen et al. 1999). Data was collected from the sample of 4 Call Centers (115 employees). A five point Likert Scale was used to measure all the variables. The scale varies from 1 (strongly disagree) to 5 (strongly agree) for most of the questions. A few questions were measured by the five point Likert Scale ranging from 1 (not at all) to 5

(always). The questions in the questionnaire for the subjective productivity measurement were in percentages.

Research Findings

Five dimensions of office design such as furniture, noise, temperature, lighting and spatial arrangement were considered for study. The overall response for each factor was analyzed and the mean and standard deviation values are shown in the Table 1. Data was analyzed to identify the factor that the relatively high tendency towards decreasing productivity. Different office design factors such as furniture, noise, lighting, temperature and spatial arrangement were used to determine the extent of the loss in productivity.

Table 1: Mean & Standard Deviation of Factors

Factors

Total Number of Respondents

Mean for Factors

Standard Deviation for Factors

Furniture

115

3. 2935

0. 6877

Noise

115

2. 9239

0. 7233

Lighting

115

2. 5152

0. 7859

Temperature

115

2. 9304

0. 5556

Spatial Arrangement

115

3. 0457

0. 7357

The prime factor which affects the productivity of employees is lighting in the office. Next to the factor lighting, it is noise. Then the importance sequence is temperature, spatial arrangements and furniture. Both natural

and artificial light is very essential in any office environment. It gives a sense of energy and affects the mood of the employees. Hawthorne studies are the best example of benefit of lighting in productivity. Accomplishment of daily tasks in workplaces with low intensity of light is difficult for employees.

Working in low intensity of light, leads to eye strain, and thus causing headaches and irritability. Due to this discomfort, productivity is very much affected resulting overall decrease in employee's performance.

According to the data collected, 37.4 percent respondents were female employees and 62.6 percent were male employees. The overall response according to the gender and the mean and productivity for male and female employees is detailed in Table 2.

Table 2 Overall Responses According to Gender

Factors

Male

Female

Mean

Standard Deviation

Mean

Standard Deviation

Furniture

3.2778

0.7201

3. 3198

0. 6370

Noise

2. 9132

0. 7496

2. 9419

0. 6854

Lighting

2. 5313

0. 8016

2. 4884

0. 7676

Temperature

2. 9375

0. 5810

2. 9186

0. 5167

Spatial Arrangement

2. 972

0. 7128

3. 1686

0. 7652

Over all Mean

2. 9264

2. 9674

According to the results in Table 2, male employees are affected by the furniture in their offices (3. 2778); their productivity is also affected by the furniture they are using at their workplaces. However, the female employees are more affected by the furniture in their work area (3. 3198) resulting poor performance because of uncomfortable furniture. Normally in offices we have standardized furniture, and we do not have separate furniture for male and female staff. Human body anthropometrics of male are totally different as compared to female. Average height and weight of female are less than average height of male. If only the performance of both male and female employees is compared then we can see according to workers' perception that female employees perform less than male employees due to bad furniture, which they use in their workplaces.

While analyzing the mean of Noise obtained from the data, it was revealed that male employees were not much affected by noise (2. 9132) but due to even a little noise their productivity was affected. On the other hand, the female respondents' results show that there are many noise distractions in their workplace (2. 9419) and in their surroundings. Because male employees always speak in louder tone, therefore, they can work in noisy surroundings, where as the female staff does not like loud noise in the environment.

One of the most important features in office design is light. Both natural and artificial lights are needed in a proper and adequate amount to carry out normal activities of everyday office work. This factor was analyzed in research. Results revealed that female employees show a mean (2. 4884), which means that lighting, is not proper in offices. So, the conclusion can be made that due of improper lighting in offices female employees have difficulty in completing and concentrating on their work and their productivity is affected. In the same way when male employees' results were analyzed, and it transpired that they were affected (2. 5313) a little more than female employees, and their performance is also affected by lighting around their workplace. The result indicates that lighting affects both male and female employees more while working in offices.

Temperature also affects the productivity. Female respondents' results show that the temperature conditions of their offices are good (2. 9186) in both summers and winters. Due to the pleasant temperature in summers and win2. 9264ters there is no adverse effect on their productivity. Normally female gets a better place as compared to male staff. Similarly, the mean <https://assignbuster.com/impact-of-office-physical-environment-management-essay/>

value for male employees is (2. 9375), which means that temperature is irregular in their offices. A little irregularity in temperature affects their productivity. Keeping in view the current Power crises scenario, the systems can be operated and run through UPS but the air conditioners are not run on UPS or through generator which directly affects the productivity of employees. According to the results female employees are more conscious about the arrangement of space in their workplaces (3. 1686). In case of male employees, they are far less affected (2. 972) by the spatial arrangements.

The overall mean of all the factors show a low mean of male employees (2. 9264) and a relatively high mean for female employees (2. 972). This means that male employees are more concerned about their workplace surroundings than female employees. Differences are found amongst the responses to different factors in the workplace. Male employees' results show that they are more concerned about the lighting in their offices than the spatial arrangement and other factors.

There is a direct relationship between office Design and productivity. This relationship between office design and productivity was determined by using the Pearson's Correlation in standard statistical software " E Views" Correlation is a measurement of the strength of a linear or straight line relationship between two variables. The Correlation Coefficients indicate both the direction of the relationship and its magnitude (Table 3).

Table 3 Correlation between Elements of Office Design and Employee Productivity

Office Design Elements

Correlation (r)

Correlation (r)

Male

Correlation (r) Female

Furniture

0. 5367

0. 5606

0. 4912

Noise

0. 5118

0. 5238

0. 4907

Lighting

0. 0351

0. 0655

0. 0273

Temperature

0. 2622

0. 2594

0. 2670

Spatial Arrangement

0. 3214

0. 3320

0. 3272

The analysis of the results indicate a positive correlation between furniture and productivity ($r = 0. 5367$). This shows that when the furniture of the office is not comfortable and according to the needs of the employees their productivity is

affected. There is also a positive relationship between noise and productivity which is ($r= 0. 5118$).

The positive relationship between lighting and productivity ($r = 0. 0351$) shows that employees' productivity highly correlates to the lighting conditions in the offices. The temperature also reveals its significant correlation with productivity ($r= 0. 2622$). Spatial Arrangement is the space factor in office design; when the correlation was calculated in E-views, and it gave a positive relation with productivity ($r= 0. 3214$). It means that the

spatial arrangement has a considerable effect on the employees' productivity (Table 3).

Table-4 Regression Results of Model

Regression Statistics

Over all

Male

Female

Multiple R

0. 6512

0. 6596

0. 6643

R Square

0. 4241

0. 4351

0. 4413

Adjusted R Square

0. 3977

0. 3923

0.3658

Standard Error

0.5593

0.5851

0.5375

Observations

115

72

43

Table 5 Analysis of Variance

Model 1 Overall Population

df

SS

MS

F

Significance F

Regression

5

25. 1128

5. 0226

16. 0549

0. 0000

Residual

110

34. 0991

0. 3128

Total

115

59. 2120

The coefficient of determination $R^2 = 0.4241$. This gives us the ratio of explained variation to total variation. On converting the R^2 value to percentage it comes to be approximately 42 Percent. From this percentage it is concluded that 42 percent of the variability of employees' productivity is accounted for by the variables in this model.

The regress