

Relationship of office design on male employees' productivity: case study in Chandigarh

Dr. Gurkirpal Singh

I K G Punjab Technical University, Jalandhar
iit707@yahoo.com

Abstract

Indoor Environmental Quality (IEQ) means the environment existing inside a room, space, building. It lists the entire environmental level of a room space, it comprises of thermal conditions, lighting conditions, acoustic conditions, etc. The aim of this research was to investigate the relationship between the office environment and productivity in male employees. The physical aspects of the work environment do not always receive as much attention as the managerial and interpersonal aspects, even though the office environment has been shown to influence organizational-relevant outcomes. People who are actively involved in the work force will spend a large proportion of their lives in their place of work. It is important that the physical aspect of the workplace and its impact on organizational productivity is studied. There is a need to find out the relationship of office design (in terms of satisfaction with lighting, temperature, spatial arrangement, furniture, plants, window view and noise) on male employees' productivity. A total of 357 male employees from various offices of Chandigarh were recruited as sample. The age range of the sample was between 25 to 60 years. The employees who were working for the last three years in a particular organization were considered for inclusion in this study. Results indicate that among male employees satisfaction with noise, window view and presence of indoor plants significantly correlated with productivity. This research contains important information about male employee attitude towards the environment and experiences of self perceived productivity. Present study also gave recommendation for office design that may be referred by architects and designers to ensure satisfactory indoor environment of offices.

Keywords: environment, gender , perceived satisfaction, correlate, Design, Built environment

1. Introduction

Indoor Environmental Quality (IEQ) means the environment existing inside a room, space, building. It lists the entire environmental level of a room space, it comprises of thermal conditions, lighting conditions, acoustic conditions, etc. Indoor environmental quality in other words refers to the level of quality of building's indoor habitable environment with regard to the comfort, satisfaction, health of those people who use space within it. From years, various offices have considered different techniques and designs to setup different buildings for office use, which may improve employee output and attract potential employees'. Various researchers had discussed that, the arrangement of the office workspace and advanced processes of office management, are performing important role in enabling productivity of employees' and boosting offices performance. But actually, various offices do not give enough weightage to office design.

Brill et al. ranked factors, which impact on productivity according to their significance. The factors are sequenced based on the importance: Furniture, Noise, Flexibility, Comfort, Communication, Lighting, Temperature and the Air Quality[3]. Abid and Tara conducted a study to find out the relationship among the rewards and motivation with mediating role of office design. It was reported that when effective rewards (compensation, promotion and recognition) with amalgamation of prime office design (furniture, noise, temperature, lighting and spatial arrangement), leads to increase in employee motivation which as a results leads to increase in employee loyalty, increase productivity and low turnover in organizations[1].

Animashaun and Odeku reported that furniture, equipment, lights and devices are usually put in place to facilitate and improve work environment[2]. The importance of furniture and infrastructure, the way and manner they are designed and placed, and the environmental conditions of the workplace become crucial when linked to the comfort or discomfort of the user. Poorly arranged

office furniture and infrastructure can definitely be a source of reduction in productivity and output in the workplace.

From years, architects in US and Europe have considered different techniques and designs which may improve employee output and productivity. In reference to India this is a new area of research. In India, office environment and related processes are considerably sidelined. The physical aspects of the work environment do not always receive as much attention as the managerial and interpersonal aspects. There is a need to find out the relationship of office design (in terms of satisfaction with lighting, temperature, spatial arrangement, furniture, plants, window view and noise) on male employees' productivity.

2. Methodology

Sample

A total of 357 employees from various offices of Chandigarh were recruited as sample. The age range of the sample was between 25 to 60 years. The employees who were working for the last three years in a particular organization were considered for inclusion in this study. The minimum educational qualification of the selected subjects was graduation.

Questionnaire

The data collection instrument for this study was a structured questionnaire developed by the researcher with the help of experts. The questionnaire is adapted and modified version of already existing scales of occupants' satisfaction with indoor environment quality (IEQ) components of other buildings by different researchers. The questionnaire items were developed to reflect the satisfaction/comfort/productivity components of the office environment. The questionnaire for the study contained 44 total items pertaining to employees' general demographics and satisfaction with thermal, acoustic, and lighting conditions.

Data Analysis

For result findings and in-depth analysis of the different components of office environment on the productivity of the office employees, correlation has been used. SPSS 16 software as research tool for data analysis was used for this research.

3. Results and Discussion

Table 1: Coefficients of Correlations between Productivity and Factors/Elements of Office Environment (Male group)

S.No.	Variable	(r)
1	Furniture	.075
2	Noise	.289**
3	Temperature	.085
4	Lighting	.000
5	Spatial Arrangement	.085
6	View Window	.137**
7	Nature Plants	.343**

** Significant at 0.01 level (2-tailed)

* Significant at 0.05 level (2-tailed)

When analysis of sample data was done it was found that office employees' productivity was not significantly correlated to satisfaction with furniture of office. When analysis of sample data was done it was found that office employees' productivity is noticeably correlated ($r = 0.289$, where $p = 0.01$) to satisfaction with Noise level of office. When analysis of sample data was done it was found that office employees' productivity is noticeably correlated ($r = 0.137$, where $p = 0.01$) to satisfaction with Window view of office. When analysis of sample data was done it was found that office employees' productivity is not significantly correlated to satisfaction with temperature of office. Office environments factor for space is spatial arrangement, statistical analysis using SPSS software was conducted and it was found that office employees' productivity is not significantly correlated to spatial Arrangement of office. When analysis of sample data was done it was found that office employees' productivity is noticeably correlated ($r = 0.343$, where $p = 0.00$) to satisfaction with Nature/Plants of office.

In Table 2 Descriptive Statistics of Various Factors/Elements of Office Environment (Male group) has been depicted.

Table 2: Descriptive Statistics of Various Factors/Elements of Office Environment (Male group)

Variable	Mean	Std. Deviation	N
Productivity	3.5308	.72507	357
Furniture	3.1429	.73264	357
Noise	2.9769	.57724	357
Temperature	3.0448	.45679	357
Lighting	2.9902	.74970	357
Spatial Arrangement	3.1996	.76661	357
View Window	2.8704	.82055	357
Nature Plants	2.6169	.83031	357

Results of present study are in consensus with previous research. Fjeld and Bonnevie reported that use of indoor plants may affect productivity, work satisfaction and even absence due to sickness[4]. From an economical point of view, it should be of great interest to include plants as a work environment asset, since only small investments are necessary in order to establish a "green" indoor environment. In addition – and probably just as important - the personal well-being and the quality of the everyday working situation may be increased for the employees. Shibata and Suzuki found that peoples' mood may be affected by plants although they concluded that further research was necessary[8]. Wargocki et al. identify a 1.1% productivity increase for every 10% reduction in SBS complaints, suggesting an average 4.3% productivity gain for workers seated near a window[9]. The upper range of these productivity improvements, from 10-15% increased productivity, is achieved in mixed-mode buildings where operable windows are coordinated with mechanical air conditioning strategies [7]. Improving the office sound can lead to increase in employee productivity [6]. According to Dyna sound Collaborative Studies of five major corporations, noise contributes the biggest proportion on the office environment distractions at 71%, followed by air (20%) [5].

4. Conclusion

It can be concluded that among male employees satisfaction with noise, window view and presence of indoor plants significantly correlate with productivity. This research contains important information about male employee attitude towards the environment and experiences of self perceived productivity. Present study also gave recommendation for office design that may be referred by architects and designers to ensure satisfactory indoor environment of offices.

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