

# Relationship of office design on female employees' productivity: preliminary case study in Chandigarh

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Received: May 13, 2018

Accepted: June 15, 2018

## ABSTRACT

*Productivity is an important factor in every organization. Profit and loss depend to a large extent on productivity of the employees. Productivity is defined in simple words as a ratio of the output quantity to the quantity of inputs. In other words, it quantifies how efficiently a given level of output is being produced by employing production inputs, such as manpower and capital. Major portion of spending of organizations is on employees salaries, very little amount is spent on maintaining and operating office space. As such keeping employees comfortable can lead to betterment in revenue generated by the organization. This can be achieved by spending money on improving office indoor environment. The aim of this research was to investigate the relationship between the office environment and productivity in female employees. A total of 303 female 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 female employees satisfaction with furniture, noise, temperature, lighting, spatial arrangement, window view and presence of indoor plants significantly correlate with productivity. This research contains important information about female employee attitude towards the environment and experiences of self perceived productivity.*

**Keywords:** *gender, female, productivity, environment, performance, comfort*

## Introduction

Occupants uncomfortable with the overall environment reported much lower self-estimated productivity than those who felt comfortable with the overall environment (Leaman and Bordass, 2001). Occupants' satisfaction was shown to be positively correlated to the self estimated productivity of office workers (Leaman et al., 2007; Thomas, 2010). Occupants uncomfortable with the overall environment reported much lower self-estimated productivity than those who felt comfortable with the overall environment (Leaman and Bordass, 2001). Occupants' satisfaction with workspace was also positively associated with job satisfaction (Wells, 2000; Donald and Siu, 2001; Veitch et al., 2007). This may in turn have an impact on job performance: Job satisfaction was also related to frequency and duration of absenteeism (Hardy et al., 2003) as well as intention to quit work (Sagie, 1998; Shaw, 1999; Van Dick et al., 2004), issues which may have financial consequences for employers. Therefore there is much to gain from maximizing occupants' satisfaction.

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 female employees' productivity.

## Methodology

### Sample

A total of 303 female 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.

### Results and Discussions

**Table 1: Coefficients of Correlations between Productivity and Factors/Elements of Office Environment (Female Group)**

S No.	Variable	(r)
1	Furniture	.287**
2	Noise	.427**
3	Temperature	.157**
4	Lighting	.137*
5	Spatial Arrangement	.137*
6	View Window	.191**
7	Nature Plants	.384**

\*\* 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 is noticeably correlated ( $r = 0.287$ , where  $p = 0.01$ ) to satisfaction with furniture of office. When analysis of sample data was done it was found that office employees' productivity is noticeably correlated ( $r = 0.427$ , 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 ( $r = 0.191$ , 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 noticeably correlated ( $r = 0.157$ , where  $p = 0.01$ ) 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 noticeably correlated ( $r = 0.137$ , where  $p = 0.05$ ) to spatial Arrangement of office. When analysis of sample data was done it was found that office employees' productivity is noticeably correlated ( $r = 0.384$ , where  $p = 0.01$ ) to satisfaction with Nature/Plants proximity of office.

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

**Table 2 Descriptive Statistic of Various Factors/Elements of Office Environment (Female Group)**

Variable	Mean	Std. Deviation	N
Productivity	3.7063	.74581	303
Furniture	3.1163	.69610	303
Noise	2.9670	.57556	303
Temperature	2.9893	.42100	303
Lighting	2.8804	.76443	303
Spatial Arrangement	3.1609	.73121	303
View Window	2.9026	.81506	303
Nature Plants	2.5908	.87151	303

Results of present study are in consensus with previous research. Brill et al. (1984) 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. Abid and Tara (2013) 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. Animashaun and Odeku (2014) reported that furniture, equipment, lights and devices are usually put in place to facilitate and

improve work environment. 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. Fjeld and Bonnevie (2002) reported that use of indoor plants may affect productivity, work satisfaction and even absence due to sickness..

## Conclusion

Among female employees satisfaction with furniture, noise, temperature, lighting, spatial arrangement, window view and presence of indoor plants significantly correlate with productivity. This research contains important information about female employee attitude towards the environment and experiences of self perceived productivity

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