To study the impact of age of employees on perceived indoor environment quality and productivity: a case study in Punjab

Dr. Gurkirpal Singh

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

Abstract

Offices are supposed to provide satisfactory indoor environment which facilitates work of office and hence produce revenue and gains for organization. Design of Office may not always facilitate the fittest environment for employee satisfaction and productivity, so a process of review and continuous improvement is required. Building occupants often react in noticeably different ways under the same indoor environment, leading to a presumption that various socio demographic variables beyond environmental parameters influence occupants' perception of the quality of indoor environment. Present study aimed to study the impact of age of employees on perceived indoor environment quality and productivity in Indian population. A total of 500 employees from various offices of Punjab were recruited as sample. The age range of the sample was between 20 to 50 years. In the present study sample was divided into three age groups Group 1 (20 to 34yr) consisted of 266 employees, Group II (35 to 50yr) consisted of 234 employees. The questionnaire was adapted and modified version of already existing scales of occupants' satisfaction with indoor environment quality (IEQ) components of other buildings by different researchers. Findings of present study are in consensus with the previous research. Older respondents were found to be more satisfied with dwellings than younger ones. As employees become older, they may be less likely to struggle to resist or control and becomes more tolerant and accommodating to ones office environment.

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

1. Introduction

Building occupants are recognized more than ever as consumers, where building performance, comfort and usability are among the factors affecting customer satisfaction. For several decades, there has been research interest in how the conditions of indoor environment affect the office workers' productivity. However, indoor environments deemed satisfactory by a certain occupant group may not be satisfactory to another. Building occupants often react in noticeably different ways under the same indoor environment, leading to a presumption that various socio demographic variables beyond environmental parameters influence occupants' perception of the quality of indoor environment. In fact, despite a very large number of indoor environment surveys, only a few specifically address the age related effect.

Zalejska-Jonsson et al., studied the impact of perceived indoor environment quality on overall satisfaction in Swedish dwellings. Results suggest that occupants' age has significant impact on overall satisfaction and that younger occupants are more likely to be dissatisfied[6].

Few studies suggest that older respondents are found to be more satisfied with dwellings than younger ones [3][5][2]. Dekker et al., concluded that satisfaction with the dwelling is higher for the elderly and residents with higher incomes, and in situations where the dwelling has been renovated and is sufficiently large. The presence of children and a longer duration of stay have negative impacts, and renters are generally more negative than owners[3]. Age was also found to be significant and one

of the more powerful predictors in investigations of the relationship between traffic noise exposure and self-reported health status [1]. Research also indicates that there is a difference in thermal sensation and thermal acceptance between age groups [4].

Age diversity is seen most of the work places or organizations in Indian offices. Probe is required into the effect of growing age on various indoor environment variables and their relationship with productivity of employees.

2. Methodology

Sample

A total of 600 employees from various offices of Punjab were recruited as sample. Sample was collected primarily from three main cities of Punjab i.e. Amritsar, Ludhiana and Jalandhar. The age range of the sample was between 20 to 50 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. In the present study sample was divided into two age groups Group 1 (20 to 34yr) consisted of 266 employees, Group II (35 to 50yr) consisted of 234 employees.

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. The items of the questionnaire were related to the occupants' satisfaction of the IEQ components of thermal, acoustic, and lighting conditions. They were rated by the occupants based on a five-point Likert-type scale (1= "very dissatisfied" to 5 = "very satisfied").

Data Analysis

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

3. Results and Discussion

The sample was divided into two age groups Group 1 (20 to 34yr) consisted of 266 employees, Group II (35 to 50yr) consisted of 234 employees. Results of descriptive statistics and t ratio.

Table 1 shows that significant differences were found among two age groups (20 to 34yr, and 35-50 yrs on lighting, spatial arrangement, window view, and nature /plants as their t-values were found to be significant at .01 levels. However, there were no significant differences among three age

groups on other elements of office design and productivity as their respective t-ratios were not found to be statistically significant.

Table 1. Significance of Mean Difference in Scores of Office Design Components between two Age groups

Variable	Group	N	Mean	Std. Deviation	t
Furniture	1	266	3.1890	.61011	-1.75
	11	234	3.1976	.63429	
Noise	1	266	2.8652	.55884	1.2
	11	234	2.8009	.58007	
Temperature	1	266	2.6678	.72342	0.015
	11	234	2.6531	.72118	
Lighting	1	266	2.7637	.75650	-3.48**
	11	234	2.9974	.75786	
Spatial Arrangement	1	266	3.3235	.70329	-2.90**
	11	234	3.4240	.76721	
View Window	1	266	2.9894	.40409	3.51**
	11	234	3.1122	.45033	
Nature Plants	1	266	2.6684	.86604	-2.63**
	11	234	2.8675	.85142	
Productivity	1	266	3.6101	.73114	3.23**
	11	234	3.8224	.73644	

** Significant at .01 level

Findings of present study are in consensus with the previous research. Older respondents were found to be more satisfied with dwellings than younger ones [1][5][2].

Research indicates that there is a difference in thermal sensation and thermal acceptance between age groups [4]. Age was also found to be significant and one of the more powerful predictors in investigations of the relationship between traffic noise exposure and self-reported health status [1]. Although a number of factors may be at play in rising levels of productivity -- including biological and environmental considerations--a tendency towards greater acceptance of oneself and one's life circumstances may play a significant role. As employees become older, they may be less likely to struggle to resist or control and becomes more tolerant and accommodating to ones office environment.

4. Conclusion

It can be concluded that building occupants often react in noticeably different ways under the same indoor environment, leading to a presumption that various socio demographic variables like age are beyond environmental parameters and influence occupants' perception of the quality of indoor environment.

References

[1] Brink, M. "Parameters of Well-being and Subjective Health and their Relationship with Residential Traffic Noise Exposure -A Representative Evaluation in Switzerland," Environ Int, 37(4), (2011),pp. 723-33.

[2] Choi, J.H., Loftness, V., et al., "Post-occupancy Evaluation of 20 Office Buildings as Basis for Future IEQ Standards and Guidelines," Energy Buildings, 46, (2012),pp.167-75.

[3] Dekker, K., de Vos, S., et al., "Residential Satisfaction in Housing Estates in European Cities: A Multi-level Research Approach," Housing Stud, 26(4), (2011),pp. 479-99.

[4] Indraganti, M., and Rao, K.D., "Effect of Age, Gender, Economic Group and Tenure on Thermal Comfort: A Field Study in Residential Buildings in Hot and Dry Climate with Seasonal Variations," Energy and Buildings, 42, (2010), pp. 273-81.

[5] Kamaruzzaman, S.N., Egbu, C.O., et al., "The Effect of Indoor Environmental Quality on Occupants' Perception of Performance: A Case Study of Refurbished Historic Buildings in Malaysia," Energy Build, 43(2, 3), (2011),pp. 407-13.

[6] Zalejska-Jonsson, A., and Wilhelmsson, M., "Impact of Perceived Indoor Environment Quality on Overall Satisfaction in Swedish Dwellings," Building and Environment, 63, (2013), pp. 134-144.