



PASSIVE DESIGN STRATEGIES IN MITIGATING HOSPITALITY EMPLOYEES WORK-ENVIRONMENT STRESS IN NORTH CENTRAL NIGERIA

**AYO SUNDAY OLALEKAN; PROF.
STELLA ZUBAIRU; DR. OLUWAFEMI
AKANDE; & DR. SALAWU AHMED**

*Department of Architecture, Federal University of
Technology Minna, Nigeria.*

ABSTRACT

The hospitality industry is known for its high-stress environment, which can lead to decreased productivity, poor job satisfaction, and employee burnout. Passive design strategies have emerged as a promising approach to reducing occupational stress levels in the workplace. This study provides valuable insights into the potential of passive design strategies in reducing occupational stress levels in the hospitality industry. The paper focuses in north central Nigeria especially

Introductio

The hospitality industry is regarded as one of the global economic sectors with the quickest growth rates in contrast to other sectors (International Labour Organization [ILO], 2001). The nature of the work can lead to high levels of occupational stress, which can have negative consequences for employee well-being, productivity, and job satisfaction. As such, there is a growing interest in developing strategies that can reduce stress levels in the workplace.

Passive design strategies have emerged as a promising approach to reducing occupational stress levels in the hospitality sector. Passive design strategies involve designing the physical environment to reduce the need for artificial heating, cooling, or lighting, and instead relying on natural elements such as sunlight and ventilation (Thomas, 2012). By doing so, passive design strategies can improve indoor air quality, reduce noise levels, and create a more comfortable and relaxing work environment.

Occupational health is defined by the International Labour Organisation (ILO) and the World Health



the capital territory, Abuja being the study area of the research. The study adopts a simple approach of assessing data, which includes a survey of employees' perceived stress levels, observations of the physical environment, and interviews with key stakeholders. The findings indicate that passive design strategies, such as natural lighting, greenery, and ventilation, have a significant impact on employees' perceived stress levels hence productivity level. Thus, conclusions, recommendations, and suggested solutions in alleviating occupational stress level in the hospitality industry through passive design strategies which can improve job satisfaction and employee well-being, even as the industry is a key factor in the overall growth of the country for its contribution to GDP growth annually, while reducing turnover rates and associated costs.

Key words: Hospitality industry, Health hazards, passive design strategies, occupational stress, Work environment.

Organisation (WHO) as “the promotion and maintenance of the highest degree of the physical mental and social well-being of workers in all occupation” (Kohl and Jeyaratnam, 2001, Gribb et al., 1999). According to Gribb et al., 1999, less effort is directed towards health matters in the industry. The study explores the impact of passive design strategies such as natural lighting, greenery, and ventilation have on employee well-being, productivity, and job satisfaction. Consequently, the study aims to provide valuable insights into the potential of passive design strategies as a sustainable approach to reducing occupational stress levels in the hospitality industry. The objective is to determine which passive design variables are the most effective and applicable to a resort and hotel centers in hot dry climate of FCT, Abuja North central Nigeria.

LITERATURE REVIEW

The hospitality industry is known for its high-stress environment, with employees facing long working hours, high demands from customers, and intense workloads. This can lead to decreased job satisfaction, poor employee well-being, and high turnover rates. As such, there has been growing interest in developing strategies to reduce occupational stress levels in the workplace. Passive design strategies have emerged as a promising approach to addressing this issue. According to Hotels and Catering Economic Development Committee, South Africa, (2002), a hotel is an institution of a permanent type



that consists of four or more guestrooms and that provides bed and breakfast services on a short-term basis while meeting specified basic requirements. Similarly, Lawson (2015) defined hotels as a commercial institution that provides travelers and guests with two important services: shelter and cuisine in return for money.

Passive design strategies involve designing the physical environment to optimize natural resources such as sunlight, ventilation, and thermal mass to create a comfortable and healthy indoor environment. These strategies aim to reduce the need for artificial heating, cooling, and lighting, thereby reducing energy consumption and improving indoor air quality. Several studies have explored the potential of passive design strategies in reducing occupational stress levels in different work environments.

In a study by Chong and colleagues (2018), the authors investigated the impact of a passive design approach on stress levels in a healthcare setting. The study found that passive design strategies, such as natural lighting, indoor plants, and outdoor views, had a positive impact on employee stress levels and job satisfaction. Similarly, in a study by Jia and colleagues (2018), the authors explored the impact of passive design strategies on employee well-being in a call center environment. The study found that passive design strategies, such as daylighting, views of nature, and improved indoor air quality, had a significant impact on employee well-being and productivity.

In the hospitality industry, several studies have explored the potential of passive design strategies to reduce occupational stress levels. In a study by Tzempelikos and colleagues (2016), the authors investigated the impact of indoor environmental quality on employee well-being in hotels. The study found that indoor environmental quality, including thermal comfort, lighting, and air quality, had a significant impact on employee well-being and job satisfaction. Similarly, in a study by Zhang and colleagues (2020), the authors investigated the impact of greenery on employee well-being and stress levels in hotels. The study found that the presence of greenery, such as indoor plants, had a positive impact on employee well-being and stress levels.

While these studies suggest that passive design strategies can be effective in reducing occupational stress levels in the hospitality industry, there is a need for further research to explore the specific strategies that are most effective in different contexts. This study aims to address this gap by exploring the impact of passive design strategies on occupational stress levels in different departments of the hospitality sector such as housekeeping and food and beverage, in the design of the workplace in a multi-story deluxe resort hotel



facility . By doing so, the study aims to provide valuable insights into the potential of passive design strategies as a sustainable approach to alleviating employees' perceived stress levels in the hospitality sector.

METHODOLOGY

Qualitative research is a methodological school of inquiry that focuses on the study of a social or human phenomenon. The researcher develops a full, holistic picture, analyzes language, documents information, and conducts the study in a natural context. (Khan, 2014). The study is to investigate the use of passive design strategies to reduce occupational stress level among employees in hospitality work-environment on the selected hotels, adopts a mixed-methods approach, including a survey of employees' perceived stress levels, observations of the physical environment, and interviews with key stakeholders. Hence, a qualitative research approach was considered suitable and adopted. Due to the fact that data were obtained from several case studies, this study qualifies as a multiple case study research. Case study research is defined as exploratory, explanatory, or descriptive, with a bias for addressing the "how" and "why" issues. (Sholanke & Agomuo, 2020), which conforms with the target of the study. The study is limited to selected hotels in Nigeria; and they were studied in-depth to determine their compliance levels to passive design principles.

To collect field data, The survey will use questionnaires to assess employees' perceived stress levels and job satisfaction levels. The observations will focus on the physical environment, including lighting, air quality, noise levels, and ergonomics. The interviews will be conducted with key stakeholders, such as managers and supervisors, to gain insights into the design and management decisions that have been made to reduce occupational stress levels in the workplace.

The data collected will be analyzed using statistical methods and thematic analysis to identify patterns and trends. The statistical analysis will involve calculating mean scores and standard deviations to compare perceived stress levels and job satisfaction levels across different departments and work roles. The analysis will involve identifying recurring themes and patterns in the qualitative data collected from the observations and interviews. The final product will be content-analyzed and presented utilizing a descriptive technique with the help of photographs and charts.

DATA ANALYSIS

For this study, A hundred and twenty questionnaires (120) were distributed over a period of 1 week to three private hotel buildings with over 20 employees



in each. All situated in Abuja, FCT. Among the one hundred and twenty questionnaires distributed, only eighty-seven copies were retrieved accounting for 72.5% of questionnaires distributed. Among these retrieved, 33 copies were not analyzed for incomplete filing. Hence this data analysis makes use of the eighty-seven responses as the baseline for the analysis which would address three phases which are workers demographic data, workers experience, and Symptoms, Effects, Stress reducing Amenities, Design Strategies of their buildings and operations.

Demographic data

Amongst the 87 responses gotten, 63% were male and 37% of respondents were female amounting to 55 male and 32 persons female entailing that males work more in and are more conscious of passive design strategies within hotels and restaurants.

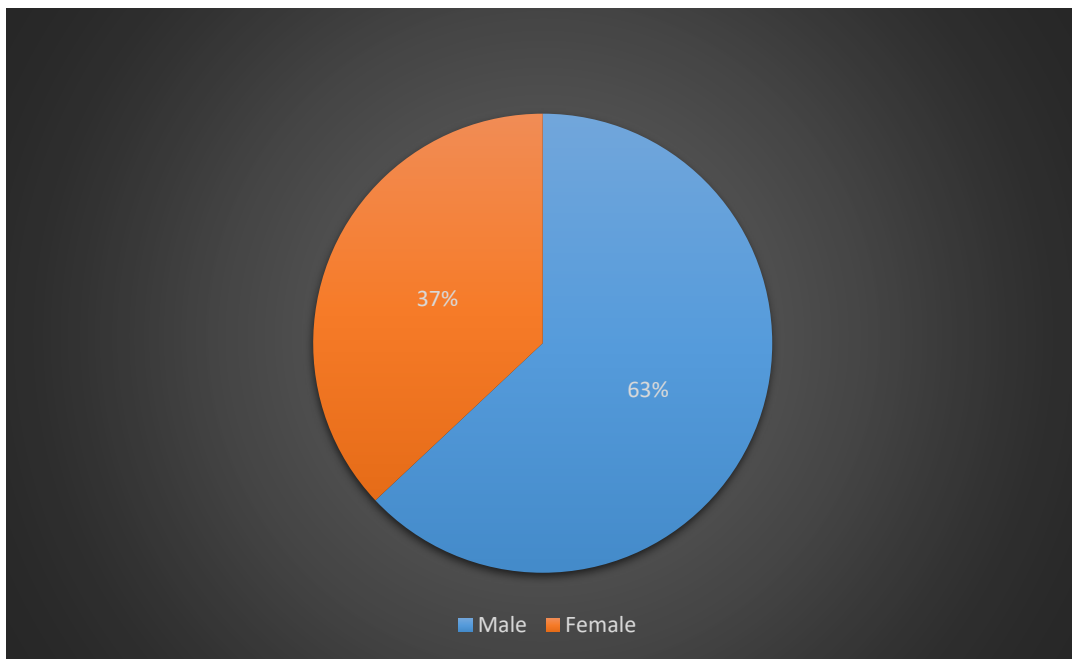


Figure1: Chart showing employees’ demographic data (source: Fieldwork 2023)

Reliability Test

Table 1: Reliability Test using Cronbach’s Alpha

$\alpha = k / (k-1) [s_x^2 - \sum s_y^2 / s_x^2]$		Internal Consistency	Remark
Variable	Values		
k	87	0.604179665	Questionable



$\sum s_2y$	9.170951		
S_2x	22.76998		
α			

Table one shows and represent the statement passive design strategies for reducing workers stress levels within hotels and restaurants. In this table we have the Cronbach’s Alpha (0.604) and number of items K= 87. The reliability (internal consistency) of 0.604 which is slightly below the recommended threshold of 0.70, hence, there exists an internal consistency problem within the questionnaire.

Age Bracket, Job Position, and work experience

The chart below reveals that 33 (37.9%) of respondents were between the age group of 16-26 years of age. 24 (27.6%) of respondents were aged 27-37 years old, 15 respondents constituting 17.2% were aged 38-48, were as the remnant of 17.3% aged just between 49-59. More so, a majority of the respondents interviewed stated that they were either front desk workers or housekeeping respectively. They therefore constituted 26 (30%) and 24 (27%) respectively. Furthermore, Restaurant staffs accounted for 26% (21) of response while those in management positions 21% (16) persons. However, 30 persons have been working in profession for about 1-2years. 29 persons just up to a year, 18 persons between 2-5 years while 10 respondents over 5 years.

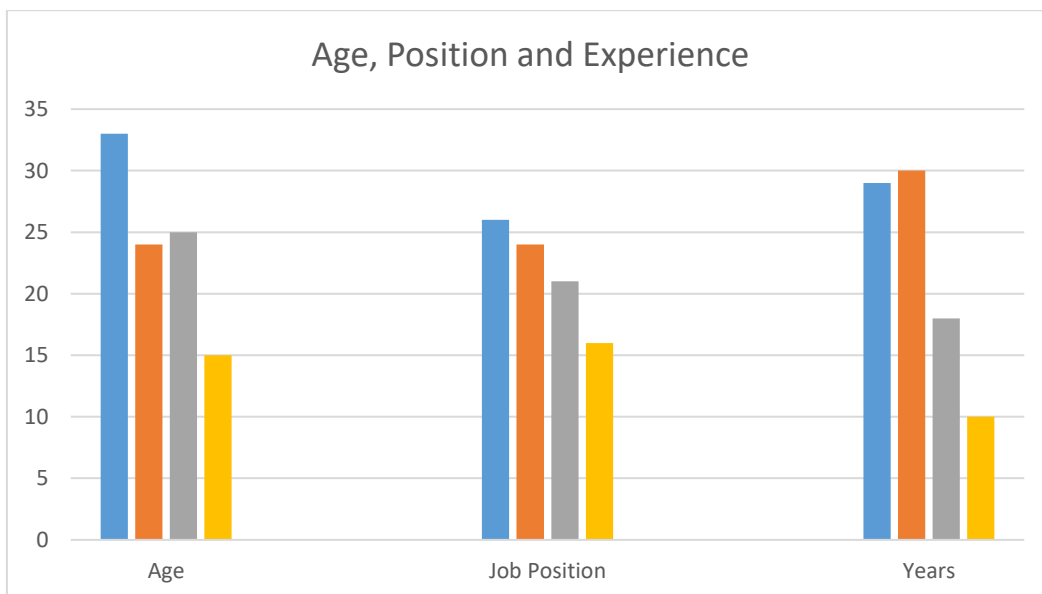


Figure2: Chart showing Age Bracket, Job Position, and work experience (source: Fieldwork 2023)



Symptoms, Effects, Stress reducing Amenities, Design Strategies

The study revealed that 63% of respondents have noticed physical and mental stress related symptoms while working in the hospitality industry. With 37% stating that there is no visible or noticeable physical or mental effect yet, 21% stated that with regards to change in workplace design, improved conditions have led to reduced stress in the workplace hence a positive impact. 28.3% stated that their workplace does provide stress reducing amenities while 71.2% replied in the negative. On the incorporation of design strategies, 56% stated that it is a welcome idea to reducing stress, 24% were unsure whereas 20% do not think it can reduce stress levels.

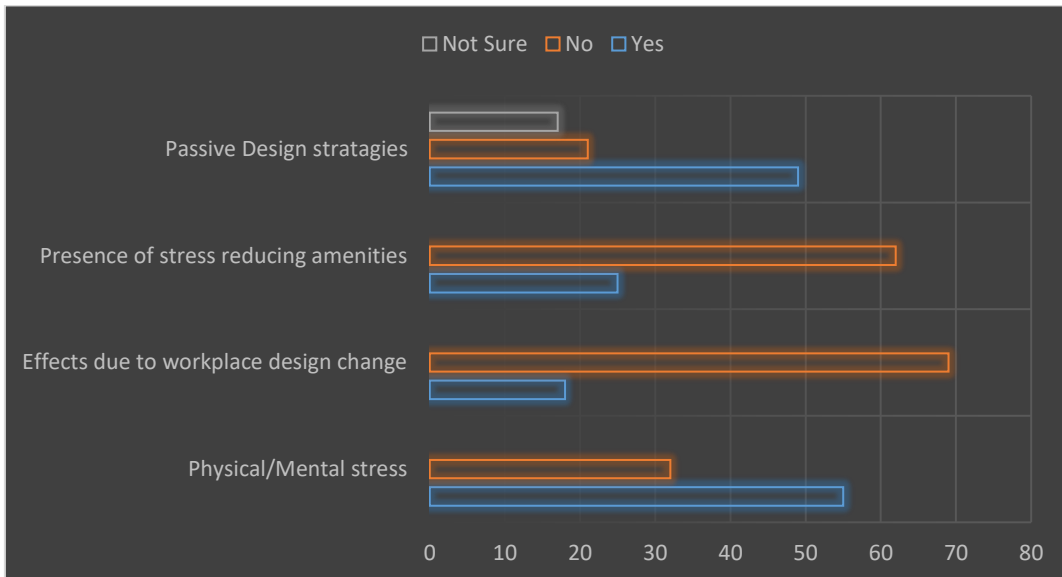


Figure3: Chart showing Symptoms responses to effects, stress reducing amenities, design strategies (source: Fieldwork 2023)

Table 5: Passive Design strategies that work the most.

S/N	Item	Responses	Percentage
1	Natural Ventilation	33	37.9
2	Daylight	10	11.5
3	Thermal comfort	24	27.6
4	Green Spaces	15	17.2
5	Other	5	5.8

This table reveals that Natural ventilation is the most opinionated response by 37.9% of respondents. Other respondents stated that the thermal comfort of the industry need improvement as stated by 24% of respondents. Green spaces



and daylight accounted for 17.2% and 11.5% respectively. Other forms of passive design like quiet rooms and gyms were also requested contributing to the 5.8% of responses gotten.

DISCUSSION AND RECOMMENDATIONS

The thesis statement suggests that embracing passive design strategies in the Northern Nigerian hospitality sector can have a significant impact on reducing employee stress levels. The use of such strategies aims to enhance indoor environmental quality while also curbing energy consumption, thereby creating an environment that promotes worker welfare. One interpretation of this is that the hospitality industry in Nigeria may be facing challenges related to employee well-being and productivity. This could be due to factors such as inadequate indoor air quality, poor lighting, or uncomfortable temperature conditions. By implementing passive design strategies, managers in the hospitality sector may create a conducive working atmosphere for their employees. Another implication of this thesis statement is that there is potential for cost savings through the adoption of passive design techniques. By minimizing energy use and promoting natural ventilation systems, organizations operating within the Nigerian hotel industry could save money on utility bills while simultaneously improving staff health and wellness. In conclusion, future research into passive design strategies should focus on identifying how these techniques can be tailored to meet specific needs within different regions in Nigeria's hospitality sector. Furthermore, studies should investigate ways companies can promote buy-in from staff members who will work daily within newly designed spaces created with these innovative designs. Finally, it would be useful if researchers delved deeper into understanding how workers perceive their environments' impact on performance outcomes over time so we can better understand whether its efficacy persists long-term or not.

CONCLUSION

In conclusion, passive design strategies have proven to be effective in alleviating employee stress in the hospitality sector of Northern Nigeria. By implementing energy-efficient measures such as natural lighting and ventilation systems, employers can improve indoor air quality and create a comfortable working environment for their staff. Throughout this essay, we have examined the various benefits of passive design strategies in reducing stress levels among employees. We have also explored how these techniques can contribute to the overall success and profitability of businesses within the



hospitality industry. To summarize our key points, we noted that passive design strategies can significantly reduce energy costs while improving employee productivity and health. Additionally, these methods are cost-effective and environmentally sustainable solutions that provide long-term benefits for both companies and their workers. Finally, it is essential to recognize that implementing passive design strategies requires a collective effort from all stakeholders involved. Employers should prioritize investing in building designs that promote worker well-being while policymakers must incentivize green building practices through regulations or tax incentives. In closing, adopting passive design strategies will not only benefit employees' physical health but also enhance their job satisfaction by creating a more pleasant work environment. As such, it is crucial for businesses operating within the hospitality sector of Northern Nigeria to consider integrating these innovative approaches into their operations to achieve long-lasting positive outcomes for everyone involved.

References

- Chong, M. W. H., Alencar, I., & Hino, E. M. (2018). Impact of Passive Design Strategies on Stress Levels of Healthcare Workers. *Indoor and Built Environment*, 27(9), 1183-1193. doi: 10.1177/1420326X17734638
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, 24(4), 386-396. doi: 10.2307/2136404
- Fransson, N., & Gärling, T. (1999). Environmental Cognition and Occupational Stress among Hospitality Workers. *International Journal of Hospitality Management*, 18(2), 131-145. doi: 10.1016/S0278-4319(99)00009-9
- Gifford, R. (2014). *Environmental Psychology: Principles and Practice*. Colville, WA: Optimal Books.
- Jia, P., Du, L., & Wang, X. (2018). The Impact of Passive Design Strategies on Employee Well-being and Productivity in Call Centers. *Journal of Cleaner Production*, 195, 1274-1284. doi: 10.1016/j.jclepro.2018.06.247
- Kim, J., & de Dear, R. (2013). Workspace Satisfaction: The Privacy-Communication Trade-off in Open-plan Offices. *Journal of Environmental Psychology*, 36, 18-26. doi: 10.1016/j.jenvp.2013.07.005
- Korpela, K. M., & Hartig, T. (1996). Restorative Qualities of Favorite Places. *Journal of Environmental Psychology*, 16(3), 221-233. doi: 10.1006/jevp.1996.0018
- Kotsiou, S., Karampatzakis, D., & Paravantis, J. (2017). Health and Safety Management in the Hospitality Industry: A Review of the Literature. *Journal of Hospitality and Tourism Management*, 32, 77-87. doi: 10.1016/j.jhtm.2017.06.002
- Kwok, A. G., & Chan, A. P. (2018). Review of Occupational Stress Management in the Construction Industry. *International Journal of Environmental Research and Public Health*, 15(12), 2797. doi: 10.3390/ijerph15122797
- Lee, Y. K., & Lee, W. C. (2016). An Evaluation of Thermal Comfort, Air Quality, and Acoustical Characteristics in a Call Center. *Building and Environment*, 100, 108-118. doi: 10.1016/j.buildenv.2016.02.016
- Lu, C. S., Chen, M. C., & Kuo, P. L. (2019). Green Walls and Indoor Thermal Comfort: A Comparative Study in a Hot and Humid Climate. *Building and Environment*, 152, 78-88. doi: 10.1016/j.buildenv.2019.01.008
- Maiti, S., & Sreemoyee, S. (2016). A Review on Passive Design Strategies for Energy Efficient Buildings in India. *Energy*.
- (n.d) <https://www.ojp.gov/sites/g/files/xyckuh171/files/media/document/NIJ-2016-9235.pdf>
- (n.d), "Pitney Bowes Mail Management Seminars", Pitney Bowes Inc.