

Perceived Influence of Physical Work Environment on Employees' Performance in Selected Tertiary Institutions in Lagos State

¹Bankole Akanji Rafiu, ²Aremo Michael & ³Oderinde Kunle M.

^{1,2&3}*Department of Industrial Relations and Personnel Management
Faculty of Management Sciences Lagos State University, Ojo*

Abstract

The study examined the composite (joint) and relative influence of the physical work environment on employees' performance in selected tertiary institutions in Lagos State, Nigeria. A descriptive survey research design was adopted and a sample of 400 respondents was selected from three government owned tertiary institutions in Lagos State, using multi-stage sampling procedures. Data were collected with the use of questionnaire tagged: Physical Work Environment and Employees' Performance ($r=0.92$). Two hypotheses were tested at 0.05 level of significance with the use of multiple regression. The five (5) elements of Physical Work Environment (Office Space, Ventilation, Lighting, Noise and Furniture), which constituted the independent variables jointly predicted employees' performance of the respondents ($R=0.760$). Specifically, the predictors contributed 57.2% (Adjusted $R^2=0.572$) to the variance of the criterion variable. This contribution is significant ($F=98.093$; $P<0.05$). Also, each of the independent variables significantly ($P<0.05$) predicted the dependent variables with Office Space having the greatest relative contribution ($\beta=0.312$; $r=7.159$; $P<0.05$). Based on the findings, it was suggested among other things that government especially at Federal and State levels should create enabling and conducive work environment for tertiary institution employees' by ensuring that office environment is designed to accommodate the varying tasks and the specific needs of the workforce. Also, offices should be well illuminated and ventilated while ergonomics compliant furniture is put in place and work environment made less noisy by regulating the students' enrolment and activities.

Keywords: Tertiary Institutions, Employees' performance, Physical Work Environment, Office Space, Furniture.

Corresponding Author: Bankole Akanji Rafiu

Background to the Study

Organisations are formed and operated primarily to render quality service and make fantastic profit, but the service which will bring about the profit is a function of individual employee's performance. It goes to show, therefore, that if standard performance is not put up by the employees, the dream or ambition of rendering quality service and make fabulous profit may remain a myth. However, some managers and supervisors hold the impression that the level of employees' job satisfaction and performance is contingent on the size of the employees' pay packet and other motivational tools such as promotion, involvement in decision making process and host of others without recognizing the importance of other factors such as office layout, office furniture, workplace lighting and temperature which constitute the physical workplace environment.

Much as one cannot undermine the potency of financial incentives to boost employees' morale, it is instructive to note that salary increase and bonuses for performance in many occasions have very limited short term (Chandrasekar, 2011). This is because after a short while the extra money being paid to employees will be regarded by them as their entitlement and not as incentives. Thus, defeating the purpose for which it was originally given. Past studies had established that the surrounding in which employees spend their working lives are an important source of job satisfaction and it impacts on employees' motivation and subsequent performance (Public Health England, 2015). In essence, how well employees engage with their immediate physical environment influence very significantly their error rate, level of innovation and collaboration with other employees, rate of absenteeism and ultimately how long they stay in the job (Ollukkaran & Gunaseelan, 2012).

Thus, creating a work environment in which employees are productive is essential to increase profits for the organisation (Chandrasekar, 2011). This is because most employees spend fifty percent (50%) of their lives within indoor environments, which significantly influence their mental status, actions, abilities and also their performance (Sundstrom, 1994; Perveen et'al, 2014). In other words, how employees perceive their physical work environment can affect employees' commitment, motivation and performance and consequently helps organisation to create competitive advantage which will give her a hedge over its rivals.

It is noteworthy that inspite of the growing need for better physical work environment particularly in the public sector, not much attention has been given to the quality of work place environment by stakeholders in the educational sector of Nigeria. This is evidenced by the unsafe and unhealthy work place environment in some of our tertiary institutions, which among others include: poorly designed office layout, unsuitable furniture that are not ergonomics compliant, lack of ventilation, inappropriate lighting arising from erratic power supply, excessive noise due to students' population explosion and insufficient safety measures in fire emergencies. The precarious situations have apparently led to intellectual drain and decrease in performance of employees especially in the tertiary institutions of the country. It is against the foregoing that this study examines the perceived influence of physical work environment (lighting, ventilation, furniture, office space and noise on the performance of employees in selected government owned tertiary institutions in Lagos State.

Statement of the Problem

Inspite of the clamour for quality and better physical work environment, the situation in our educational sector especially in the tertiary institutions remains precarious. Most of the

government owned tertiary institutions in the country are characterized by unsafe and unhealthy work environment which include grossly inadequate office space, unsuitable furniture and furnishing, lack of ventilation, in-appropriate lighting and excessive noise. This scourge has adversely affected the psyche, intellect and performance of both academic and non-academic employees of the tertiary institutions. This is so because by virtue of their working in such dangerous environment, they are exposed to occupational hazards such as diseases and accidents. It is common to hear lecturers or non-academic staff of our tertiary institutions complaining of back-ache, poor vision, internal heat, insomnia and so on. Even though much has been done on impact of work environment on workers' performance and productivity in other sectors such as manufacturing, oil and gas and banking sectors (Hameed,2009; Akinyele,2010; Chandrasekar, 2011; Leblebici, 2012; Ali et'al, 2013; Jain & Kaur, 2014; Samson et'al,2015), there is still need for further studies to be carried out on the same subject matter in the educational sector particularly at tertiary level. It is based on this gap that this study investigates the perceived influence of physical work environment on employees' performance using three selected government owned tertiary institutions in Lagos State as reference points. The elements of physical work environment isolated for this study are: (Office space, Lighting, Ventilation, Furniture and Noise).

Objectives of the Study

1. To examine the composite influence of physical work environment (office space, lighting, ventilation, furniture and noise) on employees' performance in government tertiary institutions.
2. To ascertain the relative influence of physical work environment (office space, lighting, ventilation, furniture and noise) on employees' performance in government owned tertiary institutions.

Research Hypotheses

1. There is no significant composite influence of physical work environment (Office space, Lighting, Ventilation, Furniture and Noise) on employees' performance in government owned tertiary institutions.
2. There is no significant relative influence of physical work environment (Office space, Lighting, Ventilation, Furniture and Noise) on employees' performance in government owned tertiary institutions.

Conceptual Framework

The concept of **physical work environment** is important when it comes to having optimum performance from employees. A number of scholars had conceptualized physical work environment (otherwise known as office design) in various ways to reflect its significance when it comes to maximizing employees' job satisfaction and performance. According to Awan and Tahir (2015), a working environment is the environment where people work together for achieving organisation goals and objective. It comprises the systems, processes, structures and tools and all those things that interact with employees and affect their performance positively or negatively (Ollukkaran & Gunaseelam, 2012).

Samson, Waiganjo and Koima (2015) affirm that immediate physical work environment plays a significant role in the maximisation of individual employee performance. This lends credence to the assertion of Leblebici (2012) that how well employees engage with their

immediate work environment determines tremendously their error rate, efficiency and innovativeness as well as collaboration with other co-workers, absenteeism and how long they stay in the job. This is so because dis-engaged workers produce mediocre results while highly engaged workers produce extra-ordinary results(Ollukkaran & Gunaseelam, 2012).

In his contribution on the same subject matter, Scrivastara (2008) opined that the achievement of optimal performance is contingent on how well the employees fit with their physical work environment. To corroborate the opinion of Scrivastara (2008), Farh (2012) confirmed that employees would be contented and committed to their jobs when they perceive their immediate environment; both physical sensations and emotional states to be in tandem with their obligations. Stressing the crucial role of physical work environment in employees' performance, Becker (2002) warned that poorly designed workstations, unsuitable furniture, lack of ventilation, inappropriate lighting and excessive noise could dampen employees' morale and ultimately affect adversely their performance. In tandem with the position of Becker (2002), Samson et'al (2015) said enhanced physical work environment reduces the frequency of error rate, employees' complaints and absenteeism and resultantly improve employees' performance significantly.

An American Society of Interior Designers (ASID, 1999) established through an empirical study that physical work environment is one of the top three factors, which influence employee's performance and job satisfaction. Also, the scientific research conducted by Roelofsen (2002) yielded a result indicating that improved work environment results in a reduction of number of complaints and absenteeism and an increase in employees' performance.

Ollukkaram and Gunaseelan (2012) expressed their views on the same subject when they reiterated that it is the quality of employee's physical work environment that most impacts on the level of employees' motivation and subsequent organizational performance. In essence, how workplace is designed and occupied affects the employees' feelings, their job performance and commitment as well as their creation of new knowledge in the organisation (Parveen et'al, 2014).

In his input to the subject of discourse, Taiwo (2010) as cited in Perveen et'al (2014) opined that an effective workplace environment management requires making work environment attractive, comfortable, satisfactory and motivating to employees in order to accord them with a sense of pride and purpose in what they do. Meanwhile, one of the major ways of making immediate work environment attractive and satisfactory to employees is by making adequate provision for the five identified physical work environment factors. Noah and Steve (2012) established in their study that a working environment in an organisation enhances level of job satisfaction and employees' performance that ultimately leads to achievement of organisation goals.

Essentially, better and conducive physical work environment tend to boost employees wellbeing and performance and ultimately improve their productivity (Challenger, 2000; Roelofsen, 2002; Akinyele, 2007; Chandrasekar, 2011; Ali et'al, 2013). Stressing further the argument for the need to make physical work environment of employees conducive, Ali et'al (2013) asserted that in organisations where employees are vulnerable to stressful working conditions, productivity will be negatively affected and there will also be a negative impact on

the delivery of service. In the same vein, if working conditions are good and conducive, productivity will be enhanced and there will be a general positive impact on the delivery of service.

The concept of employee performance, on the other hand, has been subjected to myriad of definitions. Sabir et'al (2012) described performance as the key multi character factor meant to achieve planned organizational objectives. In line with this definition, Cascio (2006) viewed performance as the degree of achievement of the mission at workplace that builds up an employee job. In their contribution, Abbas and Yaqoob (2009) defined performance as a major multidimensional construct targeted to achieve organizational goals and objectives. From all the definitions of performance given above, the inference can be made that the achievement of organizational goals is contingent on employees' performance hence the need to research into factors that can enhance employees' performance.

The concept of composite influence refers to the joint effect of the independent variables (office space, lighting, ventilation, furniture and noise) on the dependent variable (employee's performance). In other words, it denotes the percentage change (57.2%) in the dependent variable (employee's performance) that is jointly or collectively accounted for by the factors (office space, lighting, ventilation, furniture and noise) in the independent variables. On the other hand, the concept of relative influence has to do with the separate effect of each of the factors (office space, lighting, ventilation, furniture and Noise) embedded in the independent variables on the dependent variable(employee's performance). It is the relative influence that enables the researcher to know which of the factors is the most potent predictor of the dependent variable. In the case of the present study, Office Space with $t = 7.15$; $B = .249$ emerged as the most potent predictor of employee's performance.

Methodology

The research design adopted for this study was descriptive survey research. The population comprises both academic and non-academic staff of three (3) selected government owned tertiary institutions in Lagos State. They are: University of Lagos; Lagos State University and Lagos State Polytechnic. A sample of 400 respondents was selected from the three tertiary institutions, using multi-stage sampling procedures. At first, purposive sampling method was used to select the three tertiary institutions because they are owned and funded by governments.

Thereafter, stratified sampling procedure was employed to select the respondents based on the two strata of academic and non-academic staff. A 24 items questionnaire tagged Physical Work Environment and Employee's Performance ($r=0.92$) was used as instrument for the study. A total of four hundred (400) copies of the questionnaires were administered, out of which 371 copies were retrieved but only 364 copies were certified valid for analysis. Data collected were analysed with the use of multiple regression to test the hypotheses at 0.05 level of significance.

Results and Discussion

HO₁: There is no significant composite (joint) influence of Physical Work Environment (Office space, lighting, Ventilation, Furniture and Noise) on employees' performance in government owned tertiary institutions in Lagos State.

Table 1: Regression analysis of composite influence of Physical Work Environment on employees' performance.

R= .760 R ² = .578 Adjusted R ² = .572 Standard Error of the Estimate = 5.0209					
Source of variation	Sum of Squares	Df	Mean square	F	Sig.
Regression	123.645	5	24.729	98.093	.000
Residual	90.251	358	.252		
Total	213.896	363			

Significant at f = 98.093; P<0.05 (5364)

The result of Table 1 shows that the identified five elements of Physical Work Environment when taken together were effective in predicting the employees' performance of the respondents. This is evidenced by R=0.760 and adjusted R² value of 0.572 which implies that the five elements of Physical Work Environment when put together accounted for 57.2% of the total variance in employees' performance of the respondents. Also, the result established that the joint contribution of the five elements of Physical Work Environment could not have occurred by chance since F-ratio value of 98.093 lends credence to the effectiveness of the five independent variables to predict employees' performance.

H0₂: There is no significant relative influence of Physical Work Environment (Office Space, Lighting, Ventilation, Furniture and Noise) on employees' performance in government owned tertiary institution in Lagos State.

Table 2: Showing relative influence of Physical Work Environment on employees' performance.

Model	Unstandardized Coefficient		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	.777	.148		5.236	.000
Ventilation	.120	.036	.150	3.367	.001
Lighting	.154	.041	.188	3.770	.000
Noise	.090	.037	.108	2.448	.015
Furniture	.164	.036	.211	4.513	.000
Office Space	.249	.035	.312	7.159	.000

Significant at P<0.05

From the result exhibited in Table 2 above, each of the five elements of Physical Work Environment made significant separate contributions to the prediction of criterion variable (employees' performance). The result showed the following data weights which represented the relative contribution of the five independent variables to the prediction: Ventilation ($\beta = .150$, $f = 3.367$; $P < 0.05$); Lighting ($\beta = .188$, $f = 3.770$; $P < 0.05$); Noise ($\beta = .108$, $f = 2.448$;

$P < 0.05$); Furniture ($\beta = .211$, $f = 4.513$; $P < 0.05$); and Office Space ($\beta = .312$, $f = 7.159$; $P < 0.05$). Although all the independent variables made significant relative contribution to the prediction of employees' performance, office space appears to be the most potent predictor of employees' performance.

Discussion of Findings

The result of the multiple regression analysis revealed that office Space, Lighting, Ventilation, Furniture and Noise (which are the identified physical work environment factors) either collectively or independently are potent predictors of employees' performance. The magnitude of the relationship between the independent variables and employees' performance in the selected tertiary institutions is reflected in the values of coefficient of multiple regression $R = 0.760$ and in Multiple R-squared adjusted (0.572) as shown in Table 1. Thus, it could be said that 57.2 percent of the total variance in employees' performance is accounted for by the combination of office space, furniture, ventilation, lighting and noise.

The F-ratio value of 98.093 which is significant at 0.05 further lends credence to the predictive capacity of the independent variables and not that it occurred by chance. This finding of the study conforms to the position of Ollukkaram and Gunaseelan (2012); Akinyele (2007); Chandrasekar (2011) and Taiwo (2010) that it is the quality of employee's physical work environment that most impacts on the level of employee's motivation and subsequent performance.

Also, the result of this present study finds support in the work of Ali et al (2013); Jain and Kaur (2014) and Challenger (2000) that better and conducive physical work environment boosts and ultimately improve employees' performance and productivity. In the same vein, the findings of this study are in agreement with the work of Lelebici (2012); Samson et al (2015); Noah and Steve (2012) and Scrivastara (2008) that achievement of optimal employees' performance is contingent on how well the employees engage with their immediate physical work environment. In essence, employees would be contented and committed to their jobs when they perceive their immediate work environment; both physical sensations and emotional states to be in tandem with their obligations (Farh, 2012).

Concerning the extent to which each of the independent variables contributed to the prediction of employee's performance, it could be seen on table 2 that office space is the strongest predictor of employees' performance among employees of the selected tertiary institutions in Lagos State. This finding is in consonance with the work of Chandrasekar (2011) which established that office space is one of the leading physical aspects that influence the employees' performance at the workplace. Also, the findings of this study presented furniture as the next in rank to office space in terms of predictive capacity on employees' performance. This discovery is in sync with the findings of Springer (1986); Hameed (2009); and Chandrasekar (2011) that the best ergonomic furniture improved employees' performance tremendously at least by 10 to 15 per cent.

The present study similarly ranked lighting as the third leading physical aspect of work environment that influences employees' performance. This result interface with the work of Hameed (2009) and Public Health England (2015) that the quality and comfort levels of lighting can impact employees' wellbeing and performance and that both natural and artificial light is very essential in any office environment because it gives a sense of energy that affects the

mood of the employees. Suffice it to say that working in an office with poor lighting levels requires eye strain which often times results in headaches, irritability, fatigue and discomfort that invariably affect adversely employees' performance. Thus, accomplishment of daily assignment at workplace where there is poor illumination may be extremely difficult for employees (Hameed, 2009). Research had shown that employees who perceived their office lighting as being of a higher quality, compared to those who perceived it as lower quality, rated the space as more attractive, had a more positive mood and reported higher levels of wellbeing at the end of a working day (Veitch et'al, 2008). The result of Hawthorne studies led by Elton Mayo is the best example of benefit of lighting to employees' performance and productivity.

Another physical work environmental factor that was discovered to be a determinant of employees' performance is ventilation. This finding finds support in the work of Yesufu (1984) as cited in Ali et'al (2013) that offices and factories that are too hot and ill-ventilated are debilitating to employees' effort; hence they could impair employees' performance. An ideal office temperature was found to be 22-26 degrees Celsius, with those outside this range associated with worse employees' performance and motivation (Public Health England, 2015).

Noise is the last factor that exerts least influence on employees' performance in the selected tertiary institutions in Lagos State. The reason for its insignificant influence on employees' performance could be due to the fact that the respondents are used to noisy environment because they operate in the midst of students, the bulk of whom are in their teen age. Nevertheless, the result is in synergy with that of Hammed (2009).

Conclusion and Recommendations

The study has been able to establish that physical work environment factors such as office space, furniture, ventilation, lighting and noise have the capacity to influence employees' performance. In other words, total absence or inadequacy of some of the factors could dampen the morale of employees and consequently impair their performance. Out of the five factors of physical work environment identified in this study, office space was found to be the strongest predictor of employees' performance in the selected tertiary institutions. It is closely followed by furniture, lighting, ventilation and noise sequentially. The insignificant influence which noise as a factor exerts on employees' performance was attributed to the fact that the respondents comprising academic and non-academic staff, relate and operate in the midst of students, the bulk of whom are teenagers who are known for their youthful exuberance and noisy activities.

Based on the findings of the study and in order to ensure that the physical characteristics of the work environment do not have a detrimental effect on employees' engagement, wellbeing and performance, the following recommendations are offered:

1. Office environments should be designed to accommodate the varying tasks and the specific needs of the workforce.
2. Considering the impact that furniture may have on musculoskeletal disorders, which are found to be largely responsible for work related absence, it is suggested that an ergonomic compliant chairs that are rotational and have adjustable height of 38-54cm which allows sufficient leg space and the ability to flex the knees by 90 degree with a backrest of 50cm be provided for employees of tertiary institutions.

3. To complement the erratic power supply by PHCN, it is suggested that noise less and functional generators be made available to power each of the faculties in the tertiary institutions; and where possible, lighting levels should be made adjustable.
4. To maintain an ideal office temperature of 22-26 degrees Celsius, it is suggested that modern split air conditioners be installed in every office, accompanied by a standing or ceiling fan to circulate the humidity.
5. Due to the fact that students' population explosion is implicated for the noisy environment in our tertiary institutions, it is advised that available facilities be expanded to accommodate the large students' population while step should be taken regulate the students' enrolment in the subsequent years.

References

- Abbas, Q. & Yaqoob, S. (2009). Effect of leadership development on employee performance in Pakistan. *Pakistan Economic and Social Review*, 47(1):269-292
- Akinyele, S. T. (2007). A critical assessment of environmental impact on workers productivity in Nigeria. *Journal of Business Management*, 1(1): 50-61
- Akinyele, S. T. (2010). The influence of work environment on workers productivity: a case of selected oil and gas industry in Lagos, Nigeria. *African Journal of Business Management*, 4(3): 299-307
- Ali, A.Y.S., Ali, A. A. & Adan, A. A. (2013). Working conditions and employees' productivity in manufacturing companies in Sub-Sahara African context: case of Somalia. *Educational Research International*, 2(2): 67-77.
- American Society of Interior Desidners (1999). *Increasing office productivity through integrated acoustics planning and noise reduction strategies*. USA: Dynasound and Milliken & Co.
- Backer, F. (2002). Improving organizational performance by exploiting workplace flexibility. *Journal of Faculty of Management Sciences*, 1(2):154-162
- Challenger, J. A. (2000). 24 trends reshaping the workplace. *The Futurist*, 2(4):35-41
- Chandrasekar, K. (2011). Workplace environment and its impact on organizational performance in public sector organizations, *International Journal of Enterprise, Computing and Business Systems*. 1(1) 65-69.
- Farh, C. C. (2012). Emotional intelligence, teamwork effectiveness and job performance: the moderating role of job context. *Journal of Applied Psychology*,
- Hameed, A. (2009). Impact of office design on employees' productivity: a case study of banking organisations of Abbottabad, Pakistan. *Journal of Public Affairs, Administration and Management*, 3(1):1-13

- Jain, R. & Kaur, S. (2014). Impact of work environment on job satisfaction. *International Journal of Scientific and Research Publication*, 4(1):1-8.
- Leblebci, D. (2012). Impact of workplace quality on employee's productivity: case study of a bank in Turkey. *Journal of Business, Economics and Finance*, 1 (1): 38-49.
- Noah, Y. & Steve, M. (2012). Work environment and job attitude among employees in a Nigerian work organisation. *Journal of Sustainable Society*, 1(2): 79-90
- Ollukkaran, B. A. and D. R. Gunaseelan, (2012). A study on the impact of work environment on employee performance. *Samex International Journal of Management Research* 2(2): 71-85
- Perveen, S., Sohail, M. M., Naeem, F., Azhar, Z., & Khan, S. H. (2016). Impact of office facilities and workplace milieu on employees' performance: A case study of Sargodha University. *Asian Journal of Empirical Research*, 2(4):96-117
- Public Health England (2015). The impact of physical environments on employee wellbeing. Retrieved on 16/11/2016 from sam.haskell@phe.gov.uk
- Roelofsens, P. (2002). The impact of office environments on employee performance: The design of the workplace as a strategy for productivity enhancement. *Journal of Facilities Management*, 1 (3):247-264.
- Samson, G. N., Waiganjo, M., & Koima, J. (2015). Effect of workplace environment on performance of commercial banks employees in Nakuru town. *International Journal of Managerial Studies and Research*, 3(12):76-89
- Springer, T. (1986). *Improving productivity in the workplace: Reports from the field*. St. Charles, IL: Springer Associates, Inc.
- Taiwo, S. A. (2010). The influence of work environment on workers productivity: A case of selected oil and gas industry in Lagos, Nigeria. *African Journal of Business Management*, 4(3): 299-307.
- Veitch, J. A., Newsham, G. R., Boyce, P. R., & Jones, C. C. (2008). Lighting appraisal, wellbeing and performance in open-plan offices: A linked mechanisms approach. *Lighting Research and Technology*, 40(2): 133-151