

# **Relationship Modeling between Work Environment, Employee Productivity, and Supervision in the Nigerian Public Sector**

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*Studies have shown that enhanced productivity of organizations either in public or private sector is a function of employees' contribution arising from among others, their perception of supervision in the workplace. Previous studies identified a positive relationship between quality supervisory interventions, job satisfaction and employee productivity outcomes in an organization. This study examines the relationship between supervision, work environment of employees, conceptualized in this paper, as tasks layout, security and safety, infrastructure, regular electricity supply/availability of office equipment and job satisfaction in the Nigerian public sector organizations, as basis for enhanced productivity. In this study, survey method was adopted. The data collected through the self-administered questionnaire to 120 respondents were analyzed using Structural Equation Modelling (AMOS 21). The results showed that the studied variables have strong influence on employee productivity.*

## **INTRODUCTION**

Research has revealed that no matter how well intentioned that may have necessitated the establishment of an organization either by the government or private interests; the goals for establishing such organization may never materialize without the availability of competent and hardworking employees. This is based on the fact that competent employees possess the required skills, experience and knowledge that add economic value in terms of quality and higher productivity to organizational outputs (Rao, 2000a; Riordan, Vandenberg, and Richardson, 2005; Gberevbie. 2010).

Further, Mohammed (2006) argues that the success and progress of an organization either in public or private sector depends on its ability to maximally explore the talent and potential of its workforce for enhanced performance. In this regard, Ejiofor and Mbachu (2001) posit that no other factor is as important as human resource in maintaining corporate stability, development and profitability of an

organization. In the same vein, Olowu and Adamolekun (2005) point out that it is becoming more essential to secure and manage competent human resource as the most valuable resource of any organization either in public or private sector, because of the need for effective and efficient delivery of goods and services for enhanced organizational productivity in the society. In recognition of the importance of the role of competent workforce, it becomes imperative that organizations either in public or private sector must of necessity put in place what will motivate their workforce in terms of quality supervision and work environment in order to induce them for improved performance with a view to achieving the overall organizational goals of higher productivity. According to Ntshangase and Parumasur (2013), “researchers have observed that the top performing organizations are on the top because they know how to keep their employees from crossing the street and taking the best offer available outside the organization.” In addition, they posit that “good people are hard to find, great people are much harder to replace.” This implies that for organizations to have and retain competent workforce for performance, they must make deliberate efforts to put in place measures to procure qualified manpower in terms of necessary experience, skills and educational qualifications to carry out the required tasks for the achievement of improved productivity.

### **Objective of Study**

Previous studies identified a positive relationship between supervisory interventions, job satisfaction and employee productivity outcomes in an organization (Schroffel, 1999; Porter, Wrench and Hoskinson, 2007; Ladebo, Awotunde and Abdulsalaam-Saghir, 2008; Mohammad and Akhter, 2010; Adebayo and Ogunsina, 2011). However, none of these studies addressed the issue of supervision and work environment as they relate to employees’ productivity in the Nigerian public sector organizations such as Nigerian National Petroleum Corporation (NNPC). Therefore, the main objective of this study is to examine the relationship between supervision, work environment of employees, conceptualized in this paper, as tasks layout, security and safety, infrastructure, regular electricity supply/availability of office equipment and employee job satisfaction in the Nigerian National Petroleum Corporation, as basis for enhanced organizational productivity.

## **LITERATURE REVIEW**

### **Supervision and Job Satisfaction**

The importance of job supervision in the workplace as catalyst for the realization of enhanced individual and organizational productivity has been recognized in literature. Some scholars see the supervisor as an agent of the organization, who often interacts with employees on a daily basis, enabling the formal and informal procedures of organized activities and serving as an administrator of reward to subordinates on behalf of the organization (Farh et al, 1990; Chen et al, 2002). However, research has shown that the success of supervision in the workplace for employees’ performance depends on the style of supervisory behaviour employed by the individual supervisor involved (Eseka, 2009; Adebayo and Ogunsina, 2011). Dubrin and Maier (1993) identified supervisory behaviour as ranging from extremely autocratic, with all decisions made at the top to the extremely democratic with most decisions made by employees at the lowest level of the organization. Richmond and McCroskey (2000) identified subordinate perceptions of supervisor credibility and attractiveness in social and task as positively related to employee job satisfaction and motivation for higher productivity in the workplace. In this regard, Shaw and Ross (1985), observe that a sociable supervisor has the ability to enhance subordinates’ job satisfaction and subordinates’ perception of the supervisor’s credibility as catalyst for employees’ productivity in an organization.

McCroskey (2006) sees credibility as “the attitude toward a source of communication held at a given time by a receiver.” This means that the more credible a supervisor is perceived by his/her subordinates in the workplace, the more likely the supervisor would be accepted, and also realize his/her goals of a worthy agent, and an administrator of reward for subordinates’ job satisfaction. Job satisfaction is therefore vital for employees’ higher productivity for the realization of the overall goals of an

organization. Scholars see job satisfaction as an affective feeling emanating from the perception of an individual that his/her current job allows for fulfillment of important job values, while job dissatisfaction on the other hand is associated with less organizational commitment, lateness or absenteeism from work and low productivity on the part of employees (Noe Hollenbeck, Gerhart, and Wright 1994; Ladebo, Awotunde, and Abdulsalaam-Saghir, 2008).

The implication of the above position is that though the role of the supervisor is crucial to the realization of organizational goals, yet, for any organization to achieve enhanced productivity of its workforce, there has to be deliberate efforts on its part at attracting supervisors that have the necessary skills to actualize quality supervision required to achieve employees' job satisfaction, or else the importance of the supervisory roles for higher productivity of employees and that of the entire organization would not be realized. This implies that there is a relationship between, not just supervision and employees' job satisfaction, but also, the style of supervisory intervention in an organization as basis for enhanced productivity.

### **Regular Electricity Power Supply and Employees' Productivity**

Several studies have shown that bad lighting or electricity power supply can actually have a significant negative impact on worker's productivity and safety. Improving lighting does not only help to save money on electricity bills, but it also, lower costs on insurance premiums, improve moral, generate more sales, increase productivity, reduce accidents and lower absenteeism (Brown and Leigh, 1996). Even organizations with outstanding safety records still believed there are some rooms for improvement and that better lighting would help achieve it. Brown and Leigh (1996) again in their researches demonstrates that light has a profound impact on people on their physical, physiological, and psychological health, and on their overall performance particularly in the workplace.

Using new technologies to create energy-efficient lighting systems can mean big savings for many organizations. Those savings can be realized through lesser lighting operating costs and increased productivity, which is made possible when lighting quality is improved. Like many other elements we take for granted such as air, we just do not think about lighting/electricity. We assumed it is been designed and planned to provide the best results. Unfortunately, while there have been significant developments in lighting technology, much of it has not been applied to support how people currently work especially in the factory and warehouse environment.

Light has a significant impact on our performance in the workplace. Research shows conclusively that when you get it right, a quality lighting programme can boost productivity and performance, reduce fatigue and eyestrain, and increase an organization's opportunity for success (Schroffel, 1999). The extent to which different lighting designs affect productivity is less measurable than energy savings. A number of studies have been carried out and evidences illustrate correlation between lighting design and productivity (Welch, 1996).

According to the Rocky Mountain Institute's "Greening the Building and the Bottom Line", lighting is a key factor in allowing an organization's main component, its people, to get their jobs done. If the environment is not hospitable, it can have a detrimental impact on the outcome of their endeavors, that is, the product that they produce (Sundstrom, 1994). In a typical business expenditure breakdown, labor accounts for 85 percent of the operating costs while lighting accounts for only one percent. A productivity increase of even one percent can offer savings in excess of an entire electric bill. Higher productivity and lower energy costs make businesses more competitive (Al-Anzi, 2009).

With the ever increasing focus on EVA (Economic Value Added), increasing productivity levels becomes even more necessary and desirable. Representing real profit versus paper profit, EVA underlies shareholder value, increasingly the main target of leading companies' strategies. EVA does three things. First, it focuses on maximizing the wealth of shareholders (shareholder value); second, it calculates a company's true economic profit; and third, it helps managers to create value for shareholders. Lighting has a direct effect on these three issues (Clugston, 2000).

By balancing efficiencies with effective lighting systems, proper lighting can cut down on the need for supplemental task lighting, error rates and quality control issues. It can affect a factory or warehouse's

bottom line in the form of energy costs, higher productivity, lower absenteeism and smaller insurance premiums (Humphries, 2005).

It is not a common occurrence for those who own plants and other workplaces to invest in an improved lighting system solely to enhance safety. While safety, like energy, is important, if the financial benefits to be derived from improved lighting cannot justify the cost of the improvement, chances are that the improvement will be deferred or not made at all. And this is where knowledge comes in, because if better lighting in a workplace can improve safety, it probably can improve a lot more, and the value of those improvements can be huge compared to the values to be derived from energy savings and safety improvements alone. This might also depend on how one calculates the value of safety improvements.

Better lighting can make a substantial difference in the effectiveness of visual inspection. The right type of lighting, together with flexible fixtures, makes it easier for workers to see what they are assembling or inspecting. With the help of professional lighting consultants, a specific form of lighting can be developed and applied to best illuminate finished goods for the conditions under which they are inspected, and to minimize the likelihood of problem products finding their way to customers. Worthy of note is the fact that better electricity help improve the speed with which workers get their work done. It also improves the accuracy with which workers get their work done. Not only that, it helps workers get their work done more safely and provides a visual environment that is conducive to high morale (Weiss, 2002). Some plant managers pursue lighting-system modifications from a misguided costs-only point of view. They assume that light is light, just as heat is heat (Ghazzawi, 2008).

However, lighting is far more complex than many realize. Certain factors need to be considered among which include:

*The quality and quantity of illumination:* The areas of most concern from a lighting standpoint tend to be workstation or task surfaces, since illumination there has a direct and immediate impact on productivity and error rates. If an insufficient amount of light is provided, poor visibility forces workers to perform more slowly and make more mistakes than they otherwise would. Older workers are far more susceptible to glare and other lighting effects than their younger counterparts, and therefore need better quality lighting to produce at the same level.

*The type of light:* Shadows, glare, and reflections must usually be minimized, but lighting that causes glare might actually be preferred when it comes. In other words, what is needed is lighting designed to deliver the type of light optimally suited for the tasks and workers involved.

*Flexibility of lighting:* Given that multi shift operations may involve different workers performing the same task in the same space at different times of the day, flexible lighting is particularly important. Flexibility can be attained through lighting controls that can easily increase or decrease the amount of lighting from a given luminaire that can be easily moved. Developing a high-benefit lighting system one that provides optimal “seeing conditions” while also consuming the least amount of energy possible for such a system takes time and effort. Plant-management personnel need to inform lighting professionals of the specific goals they want to achieve. Lighting professionals can then identify options for attaining those ends (Ghazzawi, 2008).

Measuring the cost of lighting in terms of the energy it consumes misses the point. Lighting is not installed to consume energy. Lighting is for people, to help them perform their visual tasks at optimal efficiency; i.e., peak productivity. If better lighting in your facility will help prevent accidents, and the many costly side-effects they create, chances are better lighting can do a lot more; for example, help workers improve eye-hand coordination, and thereby improve productivity and lower reject rates (Greenwood and Wolf, 1987).

### **Safety and Job Satisfaction**

Accidents commonly occur in organizational operations, particularly in many manufacturing companies. There are certain recognized factors which affect the occurrence of accidents. Robert Cooke of the University of Illinois at Chicago and The Reliability Group, a Miami, FL-based consulting firm, revealed that some 80 variables have a significant statistical effect upon accident rates (Krieger and Montgomery, 1997). The factors most consistently associated with job related injuries include:

environment, mood among workers, employee selection practice, types of work procedures, role clarity, and job satisfaction and stress, (Krieger and Montgomery, 1997). In a similar study, Sherry (1992) identified five major factors related to potential causes of accidents as psychological, environmental, ergonomic, physical, and stress. Likewise, in a study conducted by Osibanjo, Abiodun, and Adeniji (2013), they described job environment as the physical, geographical, professional surroundings or conditions wherein employees interact with colleagues and equipment in order to carry out some specific activities. Essentially, job environment is expected to be conducive, hazard free, well ventilated because hazardous environment tends to influence employees' performance and their job satisfaction at the long run (Bakotia and Babia, 2013).

Some researchers have wondered what comes first, job satisfaction or safe work environment? Most safety researchers agree that, job satisfaction often occurs first, that satisfied workers are more frequently safe workers, but safe workers are not necessarily satisfied workers (Blair, 1999). Kniest (1997) posited that ineffective leadership practice; such as lack of caring and supportive supervisors, not considering workers opinions, and employees feeling that their jobs are not important – was a critical employee' safety performance factor.

Recent research by Bigos, (1986); Greenwood and Wolf, (1987); Holmstrom, (1992) concentrated on employee attitudes and their job-related stress, which are significantly related to the occurrence of accidents, health and job safety. According to these studies increasing employees' job satisfaction is as important as eliminating physical hazards in the workplace. They consistently found that job satisfaction was more predictive of lower accident rates than such factors as: demographic, health, psychological, and stress. Safety climate is seen as a coherent set of perceptions and expectations that workers have regarding safety in their organization (Neal, Griffin and Hart, 2000; Griffin and Neal, 2000; and Zohar, 2000). It is considered as a subset of organisational climate (Griffin and Neal, 2000). Workers' perceptions of safety climate have been regarded as a principal guide to safety performance, which provides a potent proactive management tool.

Consistent with this observation, researchers have noted that workers with a negative perception of safety climate (e.g., a high workload, work pressure) tend to engage in unsafe acts, which in turn increase their susceptibility to accidents (Hoffman and Stetzer, 1996; and Salmien, 1995). Similarly, workers who perceive job insecurity, anxiety and stress have exhibited a drop in safety motivation and compliance (Probst, 2001; Probst and Brubaker, 2001) and recorded a higher accident rate (Siu, Philips and Leugh, 2004). On the other hand, workers with a positive perception of their workplace safety have registered fewer accidents (Smith, Silverman, Heckert, Brodke, Hayes and Silverman, 2001). One aspect of organisational behaviour which is likely to affect workers' perceptions of organisational safety climate, and in turn influence safe work behaviours, and accident frequency is the extent to which workers perceive their organisations as being supportive, concerned and caring about their general well-being and satisfaction. In the literature this has been technically referred to as job satisfaction (Rothmann and Coetzer, 2002).

Job satisfaction is defined as the degree to which a worker experiences positive affection towards his or her job (Locke, 1969). In his definition, Locke considers job satisfaction to be "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences and as a function of the perceived relationship between what one wants from one's job and what one perceives it as offering" The general indication, however, is that job satisfaction is more of an affective reaction to one's job, an evaluative measure and consequently an indicator of working conditions. Occupational injuries and industrial accidents are therefore likely to be mediated by organisational climate and job satisfaction.

The relationship between job satisfaction and organisational safety climate relates to the fact that the degree of an employee's job satisfaction derives from meaningful organisational and social organisational values, norms, beliefs, practices and procedures operational at the workplace. In effect, the perceived level of support provided by an organisation will turn out to be closely associated with safety climate and other organisational and social factors which are important for safety. If workers perceive that their organisations are supportive and are satisfied with the organisational structures in place, they are more likely to recognise that the organizations value their safety and general well-being as well.

Thus, it is on record that when workers' basic needs are met consistently and the workers express job satisfaction, they display greater emotional attachment, involvement and express stronger feelings of allegiance and loyalty to their organisations (Rhoades and Eisenberger, 2002). In line with this, a number of studies have consistently found strong and positive relationships between job satisfaction and productive organisational behaviours such as perceived organizational support (Rhoades and Eisenberger; Setton, Bennet and Liden, 1996), organisational citizenship behaviours (Podaskoff, Mackenzie and Paine, 2000; Simous and Robertson, 2003) and fairness perception (Godard, 2001 ; Rhoades and Eisenberger, 2002). Additionally, research reports on the job satisfaction-safety link have indicated that satisfied workers, more than their dissatisfied counterparts, are motivated into safe work behaviours (Probst and Brubaker, 2001; Barring, Kelloway and Iverson, 2003); and register relatively lower accident rates (Godard, 2001; Probst and Brubaker, 2001).

Workers who perceive a high level of organisational concern and support, and are satisfied with workplace conditions, feel a sense of indebtedness and a need to reciprocate in terms that will benefit their organisations/management (Hoffman, Morgeson and Gerras, 2003). Complementary research findings along this line of argument in both social psychology (Aryce, Budhwar and Chen, 2002) and the organisational literature have confirmed that one type of prosocial behaviour facilitates other types of prosocial behaviours due to the personal values acquired through the socialisation process. Organisational researchers have therefore found satisfied workers to be more actively engaged in activities that are considered as facilitative to organisational goals as their dissatisfied work colleagues (Aryce, Budhwar and Chen, 2002). Thus relative to their dissatisfied colleagues, satisfied workers are more likely to comply with safety-related practices.

In his work, Herzberg (1966) is of the opinion that managers who provide favorable motivators and hygiene factors will affect employees' positive job satisfaction. Effective management and positive job satisfaction, in turn, will motivate positive employee behavior including improved safety performance and that the high safety performance variability may stem from inconsistent job satisfaction in various job-related organizational factors.

### **Task and Job Satisfaction**

As employees spend a large portion of their lives at work, interpersonal relationships and friendships between/among employees at work are often formed. Researchers have consistently reported that workplace friendship (WF) positively affects employees' work-related attitudes and behaviors which, in turn, enhance organizational outcomes. People may gain help, assistance, guidance, advice, feedback, recommendations, or information from workplace friends on a variety of work-related matters such as completing jobs, performing tasks, and handling issues with co-workers, subordinates, supervisors, and/or clients (Lambert, Hogan and Barton, 2001).

The offices are the daily work environments for a majority of the working population in the society. These employees often spend more than 40 hours per week at work in offices; as such the office layout exerts a significant impact on the daily life for a great number of people. Researches have it that over the past years an increasing number of people are absent from work due to stress related diseases. These factors combined make it appropriate to look at the possible relation between productivity and job satisfaction among office employees in relation to office layouts. Through research we know that the work layout does have an impact on the productivity and job satisfaction of employees (Karasek and Theorell, 1990; Siegrist, 1996; Toomingas, 1997).

The employees in cell-offices have a better self-rated health in general compared with those in other office-types. These employees also report higher job satisfaction. The high ranking position of the cell-office with regard to health and job satisfaction is not that surprising, considering it is often referred to as the best office-type from an employee perspective (Sundstrom, 1986; Shah, Jaffari, Aziz, Ejaz, Haq, and Raza, 2011).

Seven different office-types can be identified in office layout, shared-room office, open plan, small, medium and large open plan office, flex-office and combi-office (Ahlin and Westlander, 1991; Duffy, 1999). In terms of job satisfaction, medium open plan and combi-offices showed the highest prevalence

of bad job satisfaction. Best chances for good health and well-being which leads to higher productivity was found among employees in cell-offices and flex-offices.

A major finding with regard to satisfaction with office layout is that there are differences between employees in different office types where employees share workspaces and facilities, i.e. all office-types other than cell offices. It is not surprising that cell-office employees stand out in satisfaction with their office layout, including Design-related factors, since features that allow independence and control over the own workplace in many aspects define this office-type. With regard to Design-related factors the internal differences between the office-types that share workspaces and facilities are very interesting. Except the employees in cell offices, which are most satisfied with these aspects, those in shared-room offices and flex offices are more satisfied than other employees. The employees in shared-room offices report satisfaction in the same field of factors as those in cell-offices, but to a lower extent. The employees in flex-offices, on the other hand, are more satisfied with social aspects of the design, such as the workspace's support of affinity and the office's ability to reinforce interaction as well as good spaces for breaks.

When it comes to dissatisfaction with the office layout and problems with aspects that are highly connected to the physical office environment, medium and large open plan offices stand out as "high risk" with regard to these aspects. Overall these are the office-types where employees report highest degree of dissatisfaction.

### **Furniture and Employees' Performance**

Work environment comprises the totality of forces, actions and other influential factors that are currently and, or potentially contending with the employee's activities and performance. Work environment is the sum of the interrelationship that exists within the employees and between the employees and the environment in which the employees work. Infrastructure includes the physical facilities (roads, airports, utility supply systems, communication systems, water and waste disposal systems), and the services (water, sanitation, transport, energy) flowing from those facilities. According to Cascio, (2006), performance refers to the degree of achievement of the mission at work place that builds up an employee job. Mostly researchers used the term performance to express the range of measurements of transactional efficiency and input and output efficiency (Stannack, 1996).

A poor work environment has proved to be associated with reduced job satisfaction, absenteeism, somatic complaints, burnout and depression phenomena (McCowan, 2001, Osibanjo, Abiodun and Kehinde, 2012). According to Ramlall, (2003) people strive to work and to stay in those corporation that provide good and positive work environment, where employee feel that they are valued mostly and making difference. Selecting and using proper furniture and equipment, the important physical factors in the office is an important factor in enhancing employee productivity (Keeling and Kallaus, 1996; Oluseyi and Ayo, 2009). Selecting appropriate office furniture is an important consideration in which office managers need to pay more attention to make sure that the ergonomic environment is properly maintained. While ergonomic environment is important in increasing employee productivity, adjustable office furniture, such as desks and chairs, which can support employees in generating their work is recommended, to allow the work comfortably throughout the day (Burke, 2000). The office design encourages employees to work a certain way by the way their workstations are built. In doing so, the company is answering the firm's business plan while making sure their employees have everything they need to work with (Al-Anzi, 2009).

Lambert, Hogan and Barton (2001) found that environmental factors are important determinant of job satisfaction. The level of salary, promotion, appraisal system, climate management, relation with co-workers and furniture/ fittings in the office are the very important factors. Huges (2007) surveyed 2000 employees pertaining to various organizations and industries in multiple levels. The reported results of these survey showed that nine employees out of ten believed that a workspace and quality of the furniture affects the attitude of employees and increases their productivity. James (1996) concluded that the type and the comfortability of the furniture and fittings an employee has in the office environment have significant impact on the satisfaction level of employees as it affects their performance. It is essential to

recognize the significance of these factors to boost the satisfaction level in the workforce. How employees perceive their work environment can affect employee's commitment, motivation, and performance and also helps organization to form a competitive edge over its rivals.

Brown and Leigh, (1996) concluded that a motivational and empowered work climate (furniture inclusive) can influence employee's attitudes toward work positively and can improve work performance. Work place survey conducted for steel case described that an effective work environment management entails making work environment (including attractive furniture) creative, comfortable, satisfactory and motivating to employees so as to give employees a sense of pride and purpose in what they do (Taiwo, 2009).

### Summary of Research Hypotheses

Based on the review of the literature, the following hypotheses are proposed in this study:

H<sub>1</sub>: Supervisory intervention is significant explanatory variable of job satisfaction

H<sub>2</sub>: There is a relationship between job satisfaction and the design feature/ office layout in the employee working environment.

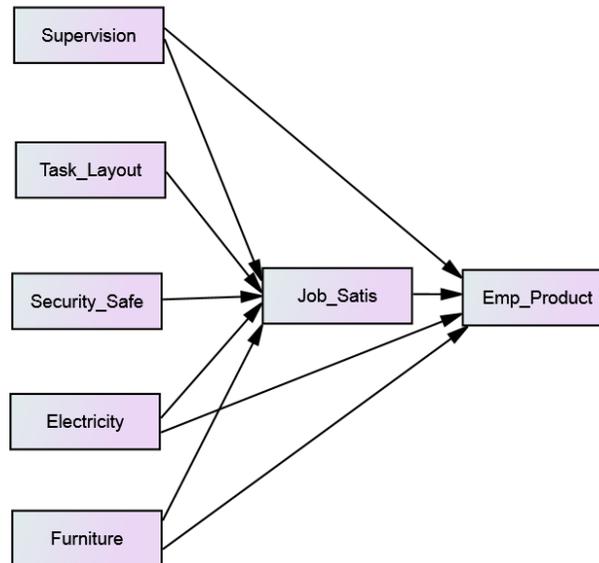
H<sub>3</sub>: The relationship between employee productivity/job satisfaction will be mediated by the electricity/ lighting.

H<sub>4</sub>: Employee's perception of attractive furniture and fittings in their work place is positively related to their productivity.

H<sub>5</sub>: There is a positive relationship between job satisfaction and organizational safety climate.

The proposed research model is depicted in Figure 1.

**FIGURE 1  
PROPOSED RESEARCH MODEL**



### MATERIALS AND METHODS

Survey research design was adopted for this study because of its features amongst which include; feasibility and economical in nature. The survey data was obtained from one hundred and twenty (120) respondents from Pipelines and Product Marketing Company (PPMC): A subsidiary of the Nigerian National Petroleum Corporation, Headquarters (NNPC) Abuja. The choice of this study location is based essentially on the fact that it is solely owned by the Nigerian government, and since one of the

employment policies into Nigerian government owned organizations is based on quota system or federal character principle, therefore, the respondents tend to represent the six geopolitical zones within Nigeria.

Structured questionnaire was utilized as research instrument in collecting data for this survey. The first path sought to establish the demographic status of the respondents while the remaining items focused on essential research variables in the study. However, these variables were developed having reviewed literature and supported by empirical evidences; supervision (Eseka, 2009, Adebayo and Ogunsanya, 2011); Task-layout (Karasek and Theorell, 1990; Siegrist, 1996); Security\_safety (Probst and Brubaker, 2001); Electricity (Welch, 1996); furniture (Quible, 2000). Each of the items of the questionnaire was scaled on 5-point Likert scale. The survey instrument sought to identify, amongst others, relationships that exist between job supervision and job satisfaction; task layout and job satisfaction; security/safety and job satisfaction; electricity and job satisfaction; and furniture and employee productivity. Data analysis procedure was carried out using IBM SPSS AMOS 21. Responses were analyzed in SPSS data format, while Structural Equation Modeling (SEM) was adopted in order to identify the relationships that exist between variables studied.

## RESULTS AND DISCUSSION

As depicted in Table 1, the sample for the survey comprises of eighty one (81) males, indicating that 67.5 percent of the respondents were males; and thirty two (32) females, indicating that 26.7 percent of the respondents were females. The demography of the sample indicates that 69 respondents are 38 years and above, which shows that 57.5 percent of the respondents belong to this category. Significant proportions of the respondents are married (76.7 percent), while insignificant had been married at a time (10 respondents are divorcees) with 14.2 percent of the respondents been unmarried. Similarly, 69 respondents had been on the payroll of this organization between 11 and 15 years, representing 57.5 percent of the sample. With reference to the respondents' demography, the sample may be considered as a rich data for this survey.

As cited in Adeniji, Osibanjo, and Abiodun (2013), various indicators of goodness-of-fit are adopted in research models (Bentler and Wu, 2002; Kaplan, 2000). However, it is argued that the greater number of the indices, the assured probability of a good fit. Therefore, for a model to be accepted, the Normed Fit Index (NFI)  $\Rightarrow$  .90; while the Comparative Fit Index (CFI) cut-off value  $\Rightarrow$  .90 (Bentler and Bonett, 1980). Essentially, in order to avert the disagreement and illogical results of chi-square tests, other indices of model fit such as Root Mean Squared Error of Approximation (RMSEA) and CFI are argued to be informative measures of how close the model corresponds with the data. The model fit summary for the survey is illustrated in Table 2.

**TABLE 1  
RESPONDENTS' DEMOGRAPHY**

	Frequency	Percentage
<b>Gender:</b>		
<i>Male</i>	81	67.5%
<i>Female</i>	32	26.7%
<i>Missing Cases</i>	7	5.8%
<b>Total:</b>	<b>120</b>	<b>100.0%</b>
<b>Age:</b>		
<i>18 – 22 years</i>	2	1.7%
<i>23 – 27 years</i>	6	5.0%
<i>28 – 32 years</i>	14	11.7%
<i>33 – 37 years</i>	24	20.0%
<i>38 years and above</i>	69	57.5%
<i>Missing Cases</i>	5	4.2%
<b>Total:</b>	<b>120</b>	<b>100.0%</b>
<b>Marital Status:</b>		
<i>Single</i>	17	14.2%
<i>Married</i>	92	76.7%
<i>Separated/Divorced</i>	10	8.3%
<i>Missing Cases</i>	1	0.8%
<b>Total:</b>	<b>120</b>	<b>100.0%</b>
<b>Work Experience:</b>		
<i>0 – 5 years</i>	18	15.0%
<i>6 – 10 years</i>	33	27.5%
<i>11 – 15 years</i>	69	57.5%
<b>Total:</b>	<b>120</b>	<b>100.0%</b>

*Source: Survey, 2013*

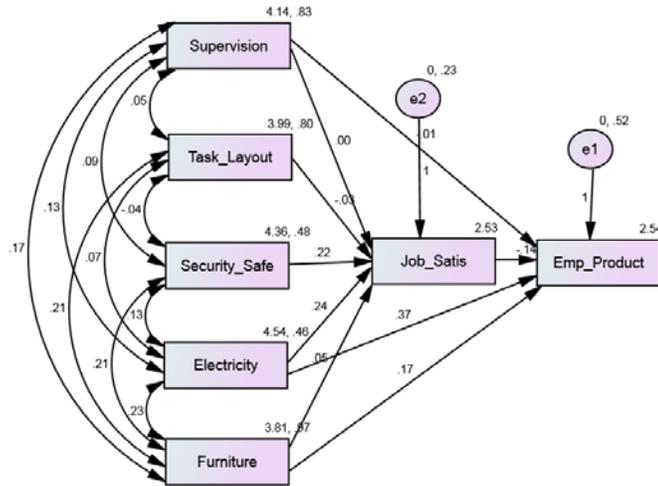
**TABLE 2  
MODEL FIT SUMMARY**

Model-fit Index	Score
<b>Chi-square/Degree of Freedom</b>	.217
<b>Goodness-of-fit (GFI)</b>	.987
<b>Comparative Fit Index (CFI)</b>	1.000
<b>Normed Fit Index (NFI)</b>	.996
<b>Root Mean Square Error of Approximation (RMSEA)</b>	.000

*Source: Survey, 2013*

The goodness of fit of a model explains the degree in which it fits the observed and expected values. In comparing the scores obtained from the analysis with the recommended cut-off value, it could, therefore be concluded that the research model is perfect and acceptable fit.

**FIGURE 2**  
**RESULTS OF STRUCTURAL MODEL OF THE SURVEY**



The model described in Figure 2 adequately fits the full dataset and is clear and easily interpretable. Path coefficient scores of the study variables as depicted in Figure 2, employee productivity appears to be strongly and positively influenced by electricity (.37); furniture (.17); while job satisfaction appears to be positively influenced by electricity (.24); security-safe (.22); furniture (.05); task-layout (-.03). It is evident that among all the tested variables, electricity tends to be one of the best determinants of employee productivity and job satisfaction. Evidently, close relationship exists among the variables studied under independent construct (supervision, task-layout, security-safe, electricity, and furniture). As shown in Figure 2, the path coefficient value between furniture and electricity is .23; furniture and security\_safe; is .21.

### CONCLUSION AND MANAGERIAL IMPLICATION

The survey examined the modelling relationship between supervision, work environment and employee productivity in the Nigerian public sector, using PPMC, Abuja as the location of the survey. Essentially, the proposed variables in the model were analyzed using Structural equation modelling and it was observed that strong positive association exists among the proposed variables.

Further, it was discovered that electricity a major determinants of employee productivity, safety in the workplace increases employee quality of work; task layout tends to increase the degree of efficiency, and also, adequate supervision is an important factor in increasing employee productivity.

It can therefore, be concluded, based on the findings that adequate supervision and work environment (task layout, security, safety, electricity, and furniture) are important factors in determining the degree at which employees are satisfied on their jobs and thereby increase their productivity level. Managers and policy makers should take these factors into consideration while formulating their employment policies in order to have formidable, efficient, and productive workforce.

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