

# Organisational Ergonomics and Academic Staff Performance in Nigerian South-South Federal Universities

Inemesit N. Ebito\*, Victoria S. Umana

Department of Business Management, University of Uyo-Nigeria

\*Corresponding author: Inemesit N. Ebito

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## Abstract

This study investigates the link between organisational ergonomics and academic staff performance in federal universities in the South-South zone of Nigeria. It sought to examine the extent of the influences of three organisational ergonomic dimensions (teamwork, job design and effective communication) on the research output- a proxy for academic staff performance. A total of 7,086 academic staff constituted the population of the study. Primary data were collected from a sample of 1,236 respondents that were drawn from the population using the questionnaire. Data obtained were analysed using descriptive statistics, Pearson product moment correlation and multiple linear regression techniques. Results revealed that teamwork had the highest significant level of influence on the research output. This was followed by job design and effective communication. It was therefore concluded that organisational ergonomics has a significant positive influence on the research output of academic staff. Hence, management of Nigerian universities should prioritise the practice of organisational ergonomics and also pay attention to the implementation of policies that would encourage research collaboration among academic staff in their institutions.

**Keywords:** Communication, Job Design, Ergonomics, Teamwork, Research Output.

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## INTRODUCTION

The success of every organisation depends on the performances of their employees. In the opinion of Ali and Aroosiya [1], one of the most effective ways of increasing the performance and profit of a business is to increase the performance of employees, starting from the lowest to the top level of management. Improving the performance of managers is not only a function of a well-functioning system but also dependent on the effective human resource strategies which helps in recruiting and maintaining a committed and motivated workforce [2]. It is the desire of the management of every institution to be surrounded with a workforce that can perform effectively. Such expectation is borne out of the fact that the rate of individual employees' performance is what determines the success or performance rate of the entire organisations. In this regard, Ali *et al.*, [1] had argued that the performance of every employee in an organisation is crucial because, the attainment of organisational goals and objectives is determined by the performance of their employees.

The concern for improved performance of academic staff in Nigerian universities by relevant stakeholders is high. This is so because every university has a mission of being the best amongst its contemporaries. In academic institutions, academic staff

are charged with the responsibility of imparting knowledge which is the primary objective of such institutions. The ranking of universities by concerned organisations has also placed every university on a competitive scale, and academic staff contribution to knowledge is a major factor in such rankings. This explains why management of universities are quite concerned about the performance of their academic staff [3]. The dimension of performance in which an employee is evaluated is known as criteria [4]. According to Ajala [5], information received by managers with regards to the performances of their employees can be of three different types. This information is classified into; Behaviour-based information, trait-based information, and result-based information. Agwu [6] indicated that behaviour-based evaluations of job performance focused on what is included in the job itself, trait-based information identifies a subjective character of an employee such as initiative or creativity and attitude. The result-based information considers the accomplishments of an employee. Thus, for jobs in which measurement is easy and obvious, a result-based approach is recommended [6].

Performance management with regards to academics in higher institutions of learning has not received adequate attention from policy makers and

administrators of tertiary institutions [7]. When considering university lecturers for promotion, much emphasis is placed on the number of research publications, research papers presented, and additional qualifications obtained. The implication is that other assigned duties such as teaching, research supervision, result preparation, among others, are not adequately taken into account when considering the performance of academic staff. In the opinion of Igbojekwe *et al.*, [7], the emphasis on research publications (research output) has resulted in the negligence of the primary assignment of an academic which is excellence in teaching.

For any organisation to be able to achieve a competitive advantage and ensure the attainment of its corporate goals and objectives, the effective performance of its employees is required. This is because the overall performance of organisations depends on the performance of individual employees. In view of this, Oyekan [3] argued that the quality of graduates produced by universities is partly influenced by the quality of their academic staff. As such, it is pertinent for the management of universities in Nigeria and their regulatory body; The National Universities Commission (NUC) to emphasis on having good quality of academic staff, if the expectation of having quality graduates must be a reality. Hellriegel, Jackson & Slocum [8] view job performance as the achievement of an individual's work after having an exerted effort.

Due to global competition and opportunities, organisations are making extensive use of organisational ergonomics (OE) for improving the performance of their employees as well as that of the entire organisation. Organisational ergonomics is concerned with the process of optimising an organisation's socio-technical systems, including its policies, processes, as well as organisational structures. It aims at improving the commitment and overall performance of employees. The components of organisational ergonomics include communication, crew resource management, work systems, community ergonomics, cooperative work, work design, teamwork and telework [9]. This study is interested in three key dimensions of EO including work design, communication and teamwork. According to Ober [10], managers deliberately engage in designing of works, and also encourage work teams and communicate collaboratively to solve complex problems. In academics, research collaboration (accomplishing research objectives through teamwork) is highly required and commendable. The diverse, complex, and dynamic nature of human problems has made group research more acceptable in tertiary institutions. Scholars believe that writing as a team is now very common amongst lecturers in tertiary institutions all over the world [7, 3]. According to Ober [10], the differing talents, skills, and perspectives of several individuals are often needed in a joint effort to analyse

a given situation and generate proposals or recommendations. He further explained that collective research efforts could impact positively on the quality of research output of academic institutions.

An effectively designed job leads to employees' higher performance but this relationship cannot be generalized since different workers exhibit diverse levels of performance when being assigned with the same tasks and responsibility. This has led to the introduction of psychological perception" as a variable which affects the relationship between job design and employee performance" [11]. Job design has been one of the tools used for optimising employees' performance in business organisations. It is believed that employees perform optimally when facts about their jobs are effectively communicated to them, when they can share their experiences with others and seek support from them, and when they perceive that their jobs have been effectively designed based on their expectations and requirements [12]. Communication would be a very important tool for enhancing academic staff's performance if it is done effectively. In order to achieve this objective, Oyekan [3] suggests that management of tertiary institutions and academic staff members should create conducive environments for communication to achieve the desired goals. Meanwhile, Afolakemi and Joshua [13] argued that there is a decreasing atmosphere of informal and formal scholarly communication (discussions and brain storming) among academic staff in Nigeria. The author further stressed that this situation has impacted negatively on the communication goals of academic staff in Nigeria, and efforts should be made to address this adverse trend.

The benefits of ergonomics in organisations are many, including enhanced employees' morale, quality of work, low rate of employee turnover and absenteeism, decreased health insurance costs and reduced employees fatigue and discomfort [14]. Employees derive great satisfaction in accomplishing goals and objectives when they experience comfort in the course of executing their tasks. Dul [15] believes that employees can only experience such comfort through ergonomics. Similarly, the publication of Health and Safety Executives (HSE) [16] summarises the benefits of ergonomics to include: reducing the likelihood of accident occurrence; reducing the possibility of employees sustaining injuries and falling sick; and improving the performance and productivity of an organisation and their employees. In order to achieve the health and safety goal of ergonomics, ergonomists focus on designing user-friendly and safety guaranteed work places which promotes the easy execution of tasks.

Ergonomic design and practice improves work environment and also enable a safer workplace which is key to improved productivity [13]. Similarly, Hendrick

[17] observed that investment in solving ergonomic problems can offer profitable results by means of increasing productivity, reduction in absenteeism, improvement in product quality, and reduction in injury rate. By implication, both employees and organisations can benefit from the practice of ergonomics by protecting employees' health and ensuring their increased productivity. The value of ergonomics is far beyond safety and health, ergonomics can add value to an organisation's business strategy for the purpose of creating competitive products and services [15].

The current low ranking of Nigerian Universities by notable quality-based organisations clearly exemplifies the decline in the performance quality of tertiary education in Nigeria [18]. In Quacquarelli Symonds 2017 university ranking report, no Nigerian University was included among the best 10 universities in Africa. Academic staff performance, that is, the quality of research output, contribution to knowledge, and the provision of solution to human problems through research and development is one of the major criteria for ranking of universities. This clearly indicates that there is an issue with research output of Nigerian Universities when compared to other best-ranked Universities in Africa and the world at large. Meanwhile, there appear to be a unanimous claim amongst OE practitioners that OE improves the performance of employees in organisations. Despite the suggested low performance of Nigerian universities, there is little or no empirical knowledge on how OE variables, in their single or joint capacity, influences the research output of academic staff in Nigerian Federal Universities. Prior studies have also not offered sufficient guidance on the causal linkages that may exist between EO and academic performance, particularly in the context of academic research outputs.

This study is specifically aimed therefore, at examining the extent of the influence of three OE variables (work design, communication, and teamwork) on the research output of academic staff of Federal Universities operating in the South-South region of Nigeria. By Federal Universities, we imply those universities owned and funded by the federal government of Nigeria. Besides making significant

contributions to OE literature, this study is likely to contribute towards building a framework for characterising organisational ergonomics that may influence subsequent academic policy and practices.

## METHODOLOGY

The survey approach was employed in this study. It was chosen due to the nature of the research problem and the objectives of the study. In practical terms, the survey design has provided an efficient means of obtaining data about the population parameters of academic staff in South-South Nigerian Federal Universities. The population for this study was all 7086 academic staff of select Federal Universities in the South-South region of Nigeria. Given the large population size, a sample of 1751 respondents were chosen using the Yamane model. They were randomly selected from the population distribution to respond to the research instrument. The research instrument for this study was the structured questionnaire which was developed by the researcher. The instrument was made up of the profile of respondents and Likert scale-type questions on organisational ergonomics and the performance of academic staff in the universities under investigation. Inputs were taken from extensive review of relevant organisational ergonomics and job performance literature. Items consisted of statements designed to prompt responses on the association between three dimensions of OE (job design, communication, and teamwork) and staff performance in Universities. The instrument was accordingly evaluated for face and content validity, and research output was taken as a measure of academic staff performance. Data collected from survey were subjected to descriptive and predictive analysis. The multiple regression and Pearson's product moment correlation were used to analysed categorical data at 0.05 level of significance.

## RESULTS AND DISCUSSION

In order to predict the extent of the influence communication, job design and teamwork on academic staff research output, the Pearson product moment correlation and multiple regression analyses were performed as summarized in Tables 1 & 2.

**Table-1: Correlation matrix of communication, job design, teamwork and research output**

Variables	Communication	Job Design	Teamwork	Academic Research Output
Communication	1.00			
Job Design	0.55**	1.00		
Teamwork	0.30*	0.22*	1.00	
Academic Performance	0.24**	0.41**	0.68**	1.00

\* Correlation is significant at  $P < 0.01$  level

\*\* Correlation is significant at  $P < 0.05$  level

Results in Table-1 revealed a significant positive influence of communication on academic staff

research output ( $r = 0.24$ ,  $P < 0.01$ ), job design and academic staff research output ( $r = 0.41$ ,  $P < 0.05$ ), and

teamwork and academic staff research output ( $r = 0.68$ ,  $P < 0.05$ ). However, the influence of communication and academic staff research output was moderate. Given the results, it can be inferred that all three variables have positive influence on staff research

output with teamwork yielding the highest positive and significant influence. Thus, the higher the rate of teamwork, job design and communication, the greater the research output of academic staff in the under-studied universities.

**Table-2: Multiple Regression Estimates of Academic Staff Research Output**

Predictors	Beta ( $\beta$ )	Std. Error	T-statistics	P- value
Intercept ( $\alpha$ )	3.748	1.636	2.291	0.000
Communication	0.163*	0.043	3.791	0.001
Job Design	0.223**	0.085	2.634	0.000
Teamwork	0.270**	0.078	3.462	0.000
R <sup>2</sup>	0.701			
Adjusted R <sup>2</sup>	0.688			
Std. Error	2.620			
F- value	52.825			
D. Watson	1.882			

N/B: Dependent Variable: Academic Staff Research Output  
Regression coefficient ( $\beta$ ) is significant at \* $P < 0.05$ , \*\* $P < 0.01$

From Table 2, the value of R<sup>2</sup> (0.701) signifies a strong influence of the dependent variables on the independent variable. However, the 0.688 adjusted R<sup>2</sup> value implies that 68.8% of variance in staff research output was due to the three predictor variables (communication, job design and teamwork). It further implies that holding other exogenous variables constant, at any given time, about 68.8% of improvement in academic staff research output can be achieved by the combination of the three variables; communication, job design, and teamwork. The regression model appears fit with F-value of 52.825 which is significant at 5% level and a Durbin Watson value of 1.882. In other words, the regression model is a robust predictor of the influence of organisational ergonomic and academic staff research output in the universities under study.

Also, evident in Table 2 is the result that academic staff research output is dependent on the three expected variables, namely: communication ( $\beta = 0.163$ ,  $t = 3.791$ ,  $P < 0.05$ ), job design ( $\beta = 0.223$ ,  $t = 2.624$ ,  $P < 0.01$ ), and teamwork ( $\beta = 0.270$ ,  $t = 3.462$ ,  $P < 0.01$ ). This implies that teamwork, with beta coefficient of 0.270 was the highest significant predictor of academic staff research output. The result also showed that a unit increase in teamwork activities would lead to 27% increase in academic staff research output in Nigerian Federal Universities. By implication, management of universities could achieve significant increase in academic staff research output by combining organisational ergonomics components in the proportion shown in the regression equation as follows:

$$ASP = 3.748 + 0.270 (\text{teamwork}) + 0.223 (\text{job design}) + 0.163 (\text{communication}) + \mu.$$

The results also imply that a percentage increase in teamwork among academic staff would lead to about 27% increase in the research output of academic staff of Federal Universities in the South-

South region of Nigeria. It also depicts that a percentage increase in job design would eventually lead to about 22.3% increase in academic staff research output of select universities. The coefficient values in the model also revealed that a percentage increase in communication would lead to about 16.3% in the research output of academic staff in Federal Universities within the South-South geopolitical region of Nigeria. Notably, the influence of communication among academic staff on academic staff research output was the least amongst the three organisational ergonomic variables (communication, teamwork, and job design) used in this study. This finding supports the opinion of Afolakemi and Joshua [13] who earlier noticed that there is a decreasing atmosphere of informal and formal scholarly communication (discussions and brain storming) among academic staff and this has impacted negatively on the communication goals of academic staff in Federal Universities within the South-South geopolitical region of Nigeria. The findings on job design ergonomics appear to support the work of Al-Ahmadi [2] on the impact of job design on the performance of employees in the public service of Kalmunai Zone in Sri Lanka. It further implies that academic staff research output would improve significantly when jobs are designed in such a way that knowledge could be gotten from others and also transferred to others as the case may be.

The highest influence of teamwork on the research output of academic staff seem to suggest that respondents depend on research collaboration (teamwork) for knowledge sharing, increased research output, timely and frequent research output, enhanced research capability and research skill acquisition. This finding supports the opinion of Kyvik and Reymaert [19] on collaboration in groups and networks: differences across academic fields. The finding in this study showed that membership in a research group, and participating actively in international networks could

enhance publication productivity and the quality of research. The implication of is that academic staff who engage in research collaboration are most likely to enjoy such benefits as identified by Katz and Martin [20], and Lee and Bozman [21] including; knowledge sharing, tacit knowledge and skills transfer, and ideas cross-fertilization which could generate new ways of thinking that may not have occurred, when an individual works alone. In sum, the findings and their implications appear to confirm that there is a significant influence of organisational ergonomics variables (teamwork, job design and communication) on the research output of academic staff in the South-South geopolitical zone of Nigeria.

## CONCLUSION AND RECOMMENDATIONS

This study examined the extent of the influence of three organisational ergonomics variables (Teamwork, job design and communication) on the research output of academic staff in Federal universities within the South-South geopolitical region of Nigeria. Based on the results obtained, this study offers three important conclusions: 1). Teamwork, job design and communication are the key variables for the enhancement of academic staff research output in Federal universities particularly within the South South region of Nigeria. 2). Academic staff research output is a major deciding factor in the promotion of lecturers, universities ranking, and also one of the determinant factors for students' academic success. Therefore, the research output must undoubtedly remain a priority of the management of every university in Nigeria. If this is ensured, it is evident that management of universities will achieve their academic goals, lecturers and other stakeholders will derive satisfaction. 3). The study underscores the fact that performances of employees of organisations that are ergonomically designed are likely to be enhanced through such practice. This is because; the extent of relationship established by the three predictors of organisational ergonomics used in this study has proven that organisations could benefit extensively from the practice of organisational ergonomics.

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