

Effects of Work Schedule Design, on The Level of Stress and Strain Among Academic Staffs in Lagos State University.

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Abstract: This study examines the effects of work schedule design, on the level of stress and strain among academic staffs in Lagos State University. Descriptive survey research design was adopted. The study population is five hundred and fifty-seven (557) academic staff of Lagos State University, Ojo campus. While a sample size of two hundred and thirty-four (234) was drawn from the population. The study adopted a stratified and purposive sampling techniques in selecting the sample from the population. The study found that, there was a moderate positive relationship between work schedule design, and level of stress and strain with $R = 0.583$ based on the academic environment tested. The study concluded that, the use of such indicators as work schedule, and the level of stress and strain, especially within academic work environments give a new insight to how these factors can also improve the success of an organisation effectively and employee performance. The study, therefore, recommended that management in an academic system would need to develop a policy that would enhance the improvement of work schedule to reduce the level of stress and strain in a knowledge-based environment.

I. INTRODUCTION

Determining the importance of employees to organisations cannot be over emphasised as this have been repeatedly established by researchers and international organisations such as the International Labour Organisation (ILO, 2011). The importance of employees can be identified in the works of researchers like Gabčanová (2011), Golden (2011), Heskett (2006) and ILO, (2011) among others. With the global trends towards automation and project within firms specifically, the output quality depends largely on the caliber of human resource (Gabčanová, 2011). The human resource adds the necessary creativity and innovation to improve the output quality that can give a desirable edge or competitiveness to an organisation. To get the desired competitive edge, management of most organisations identify and implement strategic decision(s) to enhance the performance of the employees (Gabčanová, 2011). Such strategic decision(s) could be designing a work system that makes a job suitable for the human, instead of the human for the job (Computer/Electronic Accommodations Program, 2012). This strategic innovative decision is called Human Factor Engineering also known as Ergonomics.

In ergonomics, the workplace or work environment of the human factor is developed to satisfy the goals of work related well-being, safety and profitability (International Ergonomics Association, 2017). It entails designing of a work system and environment using scientifically human data for the creation a work friendly system for each employee. Thus invariably improving the health, safety and efficiency of the human asset (Ergo Squad, 2012). But recent study from researcher like Sharad & Irfan(2020) have shown that, it invariably enhances the work flow within firms.

Due to the desire to improve the work environment, researches in the field of ergonomics have focused mostly on the physical ergonomics. Hence, most ergonomic products and services fall into this field. But as earlier identified, the rapid migration to the automated workplace and project based system, the fields of cognitive and Organisational Ergonomics (OE) are recently gaining prominence. OE draws components from the fields of both the physical and cognitive ergonomics, and is seen as the most recent of the three fields of ergonomics (Kramer, 2009).

Gomathi & Rajini (2019) believed OE aims to completely improve a work system directly from quality management techniques to cooperation. That is, it integrates the techniques of examining everything within the system for improve work place and work flow. This is similar to the concept of system dynamics as observed by Oyebisi, Momodu, & Olabode(2013). The focus is on the organisation as an entity than on individual work station within the organisation as observed in physical and cognitive ergonomics. Thus researchers like Kramer (2009) and Sharad & Irfan (2020) refer to the concept of OE as macro-ergonomics.

Physical and cognitive ergonomics examine how to improve the wellbeing of employees and invariably performance in work-related musculoskeletal disorders (WMSDs) and mental stress/strain which account for about 33% of workplace injuries and illnesses in 2011 as observed by WellRight (2018) report. But it's equally pertinent to review how work related organisational decision element that impede employees' health and performance within the socio-technical work-system.

This is done with consideration from the OE domain of ergonomics that addresses more subjective aspects of the workplace (Kramer, 2009). Kramer further identifies some elements of OE domain such as Communication, Crew resources and management, Work schedule design, Teamwork, Participatory design, Cooperative work, New work paradigms, Quality management, Virtual organizations and Community ergonomics which most literatures on OE had failed to examine.

This is to determine the rate at which these issues could pose medical threats or possibly decrease performance while cost is increased. Hence, OE focuses on optimisation of socio-technical system(s) and organisational structure(s), policies and processes in order to improve efficiency (Kramer, 2009). This study focused on one of the domain of OE, "Work Schedule Design" identified by Kramer and examined how it affect the level of Stress and Strain within an academic environment. Being an environment that can be easily assessed by the researcher for relevant data.

Hence, the aim of this study is to examine the relationship between work schedule design and level of stress and strain on academic staff of Lagos State University (LASU).

The study thus, tested the hypothesis:

There is no significant relationship between work schedule design and level of stress and strain on academic staff of LASU, in other order to shelled shed light on the study research question:

H₀ Is there a significant relationship between work schedule design and level of stress and strain on academic staff of LASU? Should be a statement so as to be proven positive or otherwise and not a question

II. CONCEPTUAL CLARIFICATIONS

let's have a conceptual framework instead of this which should come after the theoretical framework and rename this area as Literature Review

The study variables-Work schedule design and the level of stress and strain on employees are critically examined in this section;

2.1. Work Schedule Design

Neil, (2018) defines work schedule design as a model that shows the days within the week and times of the day to perform a job. But to stakeholders like Resume.com (2020), it is a model that often dictate peoples' daily or weekly time utilisation or reflect the specific days and hours assigned to an employee(s) to do a paid job. Also to some engineers especially within the construction and production system, it is seen as an instructional lists often design for minor projects or for alteration task. It's seen as an alternative to bills of quantities, permitting the pricing of articles, such as builders' work etc. (Institution of Civil Engineers, 2020).

Relating the above to an ergonomics system, this study defines Work Schedule Design as a model that shows a planned units of time assigned within a planned horizon to perform given task(s) in order to achieve a harmonious work-life balance for employee(s), in physical and cognitive ergonomics, optimal utilisation of time and other resources indirectly-OE.

Totterdell, (2005) opines that, the mental and physical health of employees depend on three scheduling dimensions of work such as; what work is done, when the work is done and how long it is done. Totterdell further noted that, these scheduling dimensions are dependent on organisational management decision(s). However, finding of ILO (1995) as cited by Totterdell(2005) show that these basic dimensions of work schedules design decisions could cause fatigue related problem, as observed in so many organisations where, for example, working at night or for extended hours, are common. Thus, the work schedule design may be a stressor according to ILO, which does not fit the need of the staff and invariably impeded on the optimal utilisation of human resources.

With most of the activities academic guided by institutional policy of time table or work schedule, then this study will examine the relationship between past work schedule designed and its possible stress level on academics in LASU as felt by the staff.

2.2. Stress and Strain

The words stress and strain are so inexorably linked that the two constructs are researched and discussed across a diverse range of fields including: economics, social psychology, sociology, management, and in particular also health and medicine. Irrespective of the divers meaning of these constructs to researchers from diverse backgrounds, this study adapted the concept of Scott (2020). Scott believes stress is a set of physical and psychological reactions to events that challenge or threaten human while strain are the emotional, psychological and/or physical changes that are observed as result of the stress. The events can be things people do, hear, feel, etc. The specific reactions vary amongst individuals but strain is mostly seen in term of the deformation of the system under stress (Carol & Baer, n.d.). This is because Scott believes strain is a long term effect of stress on the body, mind and spirit and are sometimes called toxic stress.

2.3. Theoretical Framework

The hypothesis based on the Job Demands-Resources theory and conservation of resources model as identified by Beutell, (2010) from literature. That was used to evaluate the relationship between work schedules design and the level of stress and strain on staff. The Job Demands-Resources theory assumes that stress and strain within organisations is mostly as a result of job demands and job resources. these are indicators that are dependable on work schedule design as identified in this study operational definition of work schedule design. Beutell defined Job demands as an area of the work which requires substantial effort, and, invariably attracts some costs.

The demands can be physical, psychological, social, or organisational aspects of the job. But this study further noted that the load of demand especially when an academic environment is dependent on the work scheduled design. i.e. the number of time an academic staff is scheduled to lecture on the time table, the time/period of the day the lecture is supposed to take place which is independent of the distance between the staff residence and the institution etc. As further noted by Beutell, a poorly designed work schedule can exhaust an employee's and invariably may raise issues with the level of stress and strain on the employee.

Job resources, involve areas of the work that assist in the attainment of work goals, lower demands, and energized personal growth (Beutell, 2010).

The conservation of resources theory stresses the instinctive employee behavior that attempt to alter the variables-demands and resources-towards achieving a balance work system-Beutell (2010) i.e. academics staff altering the general institutional time table to balance the work load.

III. RESEARCH METHODS

This study adopted descriptive research design. The study population is five hundred and fifty-seven (557) academic staff of LASU, Ojo campus. While using Yamane (1969 as cited by Anokye, 2020). a sample size of two hundred and thirty-four (234) was drawn. The sample was stratified as shown in table 1 such that all the faculties, schools were represented. As identified earlier in the study, scope and limitation, convenience sampling technique was used to choose LASU because of accessibility and proximity and accessibility to where or who and accessibility of what . While purposive sampling techniques was used in each stratum because, experience from research field has shown that not all academic staff are willing to fill questionnaires, and return it within an acceptable time. (WHY)

A five-point Likert Scale questionnaire was designed for data collection to assess how the level of stress and strain on academic staff of LASU' is affected by the work schedule design. Copies of questionnaire was taken to the offices and distributed to the staff with minimal persuasion within two weeks.

Descriptive statistics and inferential statistics with the aid of a statistical software called IBM SPSS (Statistical Product and Service Solution) was used to analysed the data collected.

Yamane-Formula.

$$n = N / (1 + N(e)^2).$$

Where,

n = sample size;

N = population size = **557**;

e = level of precision; which is **5%** for the study

Thus, $n = 557 / (1 + 557(.05)^2).$

$n = 232.81 = 233.$

Each faculty/school sample size= n' . This is the fractional contribution of each faculty/school to the population ($N_i = 557$) multiply by the sample size. Thus; $n' = (N_i/N_t) * n$

Where n' = sample size per stratum

N_i = population per stratum

N_t = study population

n = study sample size

The result is approximated to the nearest whole number. For example, in Faculty of Art the sample will be $(83/557) * 233 = 34.72$ this is approximate to 35 as shown in table 3.1.

The final summation of the sample size column resulted in 234. Since this figure is higher than the 233 from the Yamane formula it can represent the system adequately.

Table 1: Samples Distribution

S/N	Faculty/School	Population	Sample
		N_i	n'
1	Art.	83	35
2	Management-Sciences.	77	32
3	Social-Sciences.	71	30
4	School of Communication.	38	16
5	School of Transport.	09	04
6	Law.	68	28
7	Education.	109	46
8	Sciences.	102	43
	TOTAL (N)	557	234

Source: (which organization) Registry office, (2021).

IV. DATA ANALYSIS AND DISCUSSION OF FINDINGS

Test of Reliability

The reliability of the research instrument-the questionnaire was tested for internal consistency using Cronbach's alpha. The reliability statistics table 2 shows an alpha coefficient of 0.884, suggesting a relatively high internal consistency. Note that a reliability coefficient of 0.70 or higher is considered "acceptable" in most social science research situations as identified by Institute for Digital Research & Education (n.d.). This indicates that the research instrument is highly reliable to a significant extent.

Table 2: Cronbach's Alpha Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.884	36

Source: Researcher's Computation (2021)

Analysis of Hypothesis One

Test of Hypotheses

(H_0): There is no significant relationship between work schedule design and level of stress and strain on academic staff of LASU.

To test the hypothesis, linear regression analysis was used as specified in the regression model. work schedule design (WSD) formed the independent variable while level of stress and strain on academic staff of LASU (LSS) formed the dependent variable. The regression test results are presented in Table 3.

Table 3: Model Summary of work schedule design and level of stress and strain on academic staff of LASU.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.583 ^a	.340	.337	.47131

a. Predictors: (Constant), WORK SCHEDULE DESIGN

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.706	.140		19.356	.000
	WSD	.369	.036	.583	10.281	.000

a. Dependent Variable: LEVEL OF STRESS AND STRAIN

Source: Researcher's Computation (2021)

The model summary of the linear regression model for hypothesis one depicted in table 3 above shows that there is a moderate positive relationship between work schedule design and level of stress and strain on academic staff in LASU ($R = 0.583$). The model summary further indicates the extent to which the work schedule design explains the changes in level of stress and strain on academic staff in LASU. The coefficient of determination ($R^2 = 0.340$) suggests that work schedule design explains 34% of the level of stress and strain experienced by academic staff in LASU. This result is statistically significant because the p-value of the result (0.000) is less than $p < 0.01$ level of significance used for the study. Therefore, the research hypothesis one was rejected. This implies that there is a relationship between work schedule design and level of stress and strain on academic staff in LASU.

It was also observed from the table 3 above that an evaluation of the unstandardised coefficient of work schedule design in the coefficient table, and its associated p-value shows that work schedule design ($\beta_{WSD} = 0.369$, $p < 0.01$) is statistically significant and can be used in predicting the level of stress and strain on academic staff in LASU. This, therefore, further strengthens the rejection of the research hypothesis one, which implies that there is a relationship between work schedule design and level of stress and strain on academic staff in LASU.

V. DISCUSSION OF FINDINGS

The results from testing the hypothesis above shows that there exists a moderate and positive relationship (58.3%) between

work schedule design and level of stress and strain among academic staff members of Lagos state university. These findings can be supported by the works of literature of WellRight (2018), who illustrates that in any firm controlled by differs stimulus and motivations that influenced the individual, both at home and work place, the stresses experienced force each employee into a state of anxiety, tension and emotion which affects the duties, functions, and relationship with workers in the organisation and even on their health and safety. Which implies that for an organization to remain productive, it is important to perceive and address indicators/variables that influence job stress such as work schedule design, because its elements significantly affect employee job performance.

VI. CONCLUSION AND RECOMMENDATION

This study has assessed the effect of work schedule design on the level of stress and strain on academic staff in Lagos State University. The results from the study reveal a correlation between work schedule design and the level of stress and strain on LASU academic staff. It also gives a new insight to how these factors can also improve the success of an organisation and employee performance effectively.

Thus, management in an academic system would need to develop a policy that enhance good work schedule design in workplace to reduce the level of stress and strain in a knowledge- based environment like LASU.

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