



Job Design Techniques: Integrating Capacity For Sustainable Workforce Productivity

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Abstract: *This research focused on the relationship between job design techniques, and sustainable workforce productivity. The specific objectives of the study, addressed the influence of job design techniques comprising job enrichment, job rotation and job enlargement, on sustainable workforce productivity. The correlational design was adopted in line with a quantitative methodological approach, and data for the study was generated using the structured questionnaire instrument. The findings affirmed to the significance of the influence of dimensions such as job enrichment ($T = 0.310$ and $P = 0.000$) and job rotation ($T = 0.645$ and $P = 0.000$) on sustainable workforce productivity, but with a weak and insignificant influence from job enlargement ($T = -0.042$ and $P = 0.971$). Following these findings, it was concluded that through the adapting of job design techniques such as job enrichment and job rotation, Nigerian manufacturing firms can advance structures and relationships that ensure their sustainability in the long run.*

Keywords: *Sustainable workforce productivity, job design techniques, job enrichment, job rotation, job enlargement.*

INTRODUCTION

Workforce productivity is a relative concept (Armstrong, 2011; Singh & Mohanty, 2012). This is as related concerns of quality and quantity are such that are premised on prevailing norms, activities and established standards which, as Armstrong (2011) observed, are constantly evolving in line with industry practices. Hence to sustain and consistently maintain workforce productivity, organizations must stay ahead of the changes and emerging conditions in their environment, market and industry. Sustainable workforce productivity thus describes the extent to which the organization's human resource, is able to produce or offer services that consistently match the changing dynamics of its market. In other words, it describes the organization's capacity for value and quality, despite evolving market conditions (Ghamari et al, 2018; Rasool et al, 2020).

Research on the Nigerian manufacturing sector (Damaro, 2023; Obi, 2020; Oparanma & Nwaeke, 2015) has continuously, for decades, decried the dilapidation of infrastructure and the lack of skilled and competent manpower. Damaro (2023) posited that despite substantial investments, and the abundance of natural resources, the Nigerian manufacturing sector continues to lag behind, in comparison to those of other economies, especially those of the global North. Adeola (2023) traced this lag to the challenge of inadequate manpower,

particularly the insufficiency of qualified graduates that are constantly churned out from the country's universities. These, as studies report (Odiri et al, 2019; Obi, 2020; Adeola, 2023), fall short of the required knowledge and skills for driving the quality and quantity of production, required in the Nigerian manufacturing sector.

Given these conditions, the onus thus lies on the manufacturing organizations to adapt their structures to be emphatic of skill and knowledge transfer, enabling of a more integrated framework where capacities are dispersed across the workplace or organization (Daft & Weick, 2010; Armstrong, 2011). Parker (2014) described job design as one of the ways through which organizations can not only enrich the experiences of their workforce, but also integrate their skills and knowledge, ensuring that capacities are shared and skills transfer across the workforce. This corresponds with Bloom and Genakos (2012) view that organizations can leverage on job designs in creating engaging and meaningful work, and also achieve social and task support for all members of the organization.

Research on workforce productivity (Singh & Mohanty, 2012; Ekundayo, 2014; Ghamari et al, 2018), offer only a glimpse of the possibilities and benefits accruable from job designs. Related studies appear to have focused more on the use of such in developing more conducive and meaningfully work environment, building healthier relationships and enhancing employee retention within the workplace. However, this paper, in addressing job design technique, as a possible antecedent of sustainable workforce productivity, departs from previous assertions, as it offers a perspective of job design techniques that dwells on the application of such in the strengthening functional performance through shared capacities and knowledge performance across the workplace. The emphasis is on functional performance through shared capacities in imperative for ensuring sustained quality and quantity adherence in workforce productivity.

Therefore, the aim of this paper is to investigate the role of job design techniques in the workforce productivity of manufacturing firms in Rivers State, Nigeria. The objectives of the study are to:

- i. Examine the workforce productivity challenges of the Nigerian manufacturing sector
- ii. Determine the relationship between job design techniques and workforce productivity in the Nigerian Manufacturing Sector
- iii. Proffer evidence-based recommendations suited for addressing the related workforce productivity gaps in the Nigerian Manufacturing Sector

SUSTAINABLE WORKFORCE PRODUCTIVITY

Productivity is central to the performance and growth of any industry or sector. Within the Nigerian manufacturing sector, it is considered core to the development of not only the sector, but also the country's economy as well (Bloom & Van Reenen, 2011). Workforce productivity describes the output capacity of the employees or human resource of the organization, or a group of organizations representing an aspect of the economy with shared economic focus and interest; hence a sector (Muzaffar et al, 2012; Armstrong, 2011). The particular reference to 'workforce' implies a focus on the human factor and the application or engagement of such in the production of goods and services for the organization (Armstrong, 2011). According to Ghamari et al (2018) Workforce productivity is expressed in the quality, and quantity of good and services created by the organization's employees, and the timeliness of the organization's people to offer such in a manner that is efficient and thus profitable to the organization.

Workforce productivity however extends beyond the activities of the worker, channelled toward the creation of goods and services. It also includes the workers disposition toward their superiors and co-workers in the organization (Dobre, 2013; Pankhurst, 2010). That is to say, their engagement in pro-social and supportive behaviour; the kind that contributes to the health and positive climate of the organization and the conditioning of work systems that are allow for trust, effective communication and collaboration. These provide the necessary framework and context for sustaining and consistently advancing workforce productivity (Armstrong, 2011). Such work conditions as Pankhurst (2010) pointed out, facilitate internal harmony, learning and capacity development through knowledge and skills transfer, and also contributes toward internal cohesion and the reinforcement of the organization's systemic approach and disposition to the changes or developments in its environment.

CHALLENGES OF WORKFORCE PRODUCTIVITY IN NIGERIAN MANUFACTURING SECTOR

Reports (Adeola, 2023) show that amongst some of the noted problems and challenges of the Nigerian manufacturing industry, the lack or competent manpower, ranks as one of the highest and most dominant. This falls alongside other concerns or challenges such as poor power supply, insecurity and the lack of infrastructure. These have for decades, contributed to the stagnation of the sector, and the continued dilapidation of the sector. Adeola (2023) noted that the lack of competency in manpower, has crippled the sector in ways that have rendered it weak and unable to compete effectively on a global or international scale. Oparanma and Nwaeke (2015) argued that one of the reasons for the gap in the education or training of manpower and the needs expectations of the manufacturing sector is the lack of content harmonization. Most graduates as Oparanma and Nwaeke (2015) posited, lack the required exposure and knowledge of the realities and demands of the manufacturing industry, and as such are unable to contribute to its productivity.

Obi (2020) traced the organization's capacity to that of its workers. According to () productive organizations are such that not only have the right people, but are also able to apply or engage those people in meaningful ways. Oparanma and Nwaeke (2015) argued that one of the ways organizations can also drive productivity, stems from its application and engagement of capacities. That is in the design, arrangement and structuring of roles and functions, such that address the organizations vulnerabilities and reinforce its functional performance. This as Oparanma and Nwaeke (2015) posited, when poorly addressed could pose as a productivity barrier and problem for the organization, extending across individuals, to departments and even across levels in the organization. One that imposes on the individual and units of the organization; capable of constraining and militating against individual, group and organizational outcomes.

JOB DESIGN TECHNIQUES

Job design describes the organizations structured disposition to work and functions. It is the pattern in which roles and responsibilities are applied. Job design techniques refer to the various methods adopted in facilitating such patterns or arrangements in the organization (Taha & Ismail, 2009; Gensler, 2006). Knapp and Mujtaba (2010) noted that the technique or approach to designing work or jobs, is important as it determines the effectiveness of such. Likewise, Malkanthi and Hussain (2016) posited that job design is often adopted in line with a variety of organizational and functional related concerns, dominant amongst which include the enrichment of roles, through the management of task variety, the enlargement of roles

through increased responsibilities and the support for learning and knowledge sharing through the rotation of roles and responsibilities in the organization. Malkanthi and Hussain (2016) also identified job design techniques as increasingly applied in building workplace rapport and as such, boosting both social and task cohesion in the workplace.

JOB DESIGN TECHNIQUES AND SUSTAINABLE WORKFORCE PRODUCTIVITY

Related studies (Ali & Zia-ur-Rehman, 2014; Morgeson et al, 2010; Gibbs & Levenson, 2010) identify the design of work as critical to the well-being of the employee, and as such, significant to their ability to produce and meet up with expected production quotas and quality standards. The design of roles, occasions the effective application and engagement of the worker, in ways that address the personal as well as professional considerations or concerns of the worker. That way, it ensures the worker is not only motivated to perform, but is also able to draw on the support and shared competence of others in the organization (Morgeson et al, 2010). Gibbs and Levenson (2010) further noted that job design techniques can be used in the creation and strengthening of internal networks, through rotational activities that acquaint staff with co-workers from other units, and with organizational processes that are carried out or applied in other sections or departments.

Earlier identified approaches comprising job enlargement, enrichment and rotation, have been identified by empirical research (Oparanma & Nwaeke, 2015; Knapp & Mujtaba, 2010; Taha & Ismail, 2009) as useful in harnessing workers capacities and creativity in the organization. These techniques are considered most popular in human resource management practice and research and are considered effective in engaging the workers mentally, physically and emotionally. As such, they not only help in motivating the workforce, but such techniques have also been revealed (Oparanma & Nwaeke, 2015; Taha & Ismail, 2009) to drive support actions, collaborations and learning in the organization. This research, thus extends the focus on the role of job design techniques to sustainable workforce productivity, specifically with regard to manufacturing organizations in Rivers State, Nigeria. Hence, the following hypothetical statements are put forward:

HO₁: There is no significant relationship between job enrichment and sustainable workforce productivity in manufacturing firms in Rivers State, Nigeria

HO₂: There is no significant relationship between job rotation and sustainable workforce productivity in manufacturing firms in Rivers State, Nigeria

HO₃: There is no significant relationship between job enlargement and sustainable workforce productivity in manufacturing firms in Rivers State, Nigeria

METHODOLOGY

This research is designed as a correlational study, in line with its purpose of ascertaining the nature and direction of the relationship between job design techniques and sustainable workforce productivity in Nigerian manufacturing firms. Manufacturing firms included for this research were selected following three criteria: membership and listing with the Manufacturers Association of Nigeria (MAN), operations for not less than 15 years in Rivers State, Nigerian indigeneity of the ownership of the firm, and a workforce of at least 50 full-time employees. Thus, the population of the study was 271 employees from four indigenous manufacturing firms in Rivers State, Nigeria. A sample size of 162 was adapted from the Krejcie and Morgan (1970) sample size determination table. The research adopted the structured

questionnaire instrument as its tool for generating primary data for the study. Instrumentation for the variables was based on existing research. A 12-item instrument was adapted for job design techniques, with four items adapted in the measurement of each dimension (job enrichment, rotation and enlargement) of job design techniques (Oparanma & Nwaeke, 2015; Taha & Ismail, 2009); while a 4-item instrument was adapted to measure sustainable workforce productivity (Rasool et al, 2020; Singh & Mohanty, 2012; Ghamari et al, 2018).

PRESENTATION OF FINDINGS

The presentation of the findings detailed the findings on the univariate distribution for the variables, as well as the findings on the bivariate distributions. A total of 162 questionnaire copies were distributed to the manufacturing companies identified in the population frame for the research, however, from the 162 copies distributed, only 154 copies were retrieved from the field.

Table 1.1: Construct Reliability and Validity

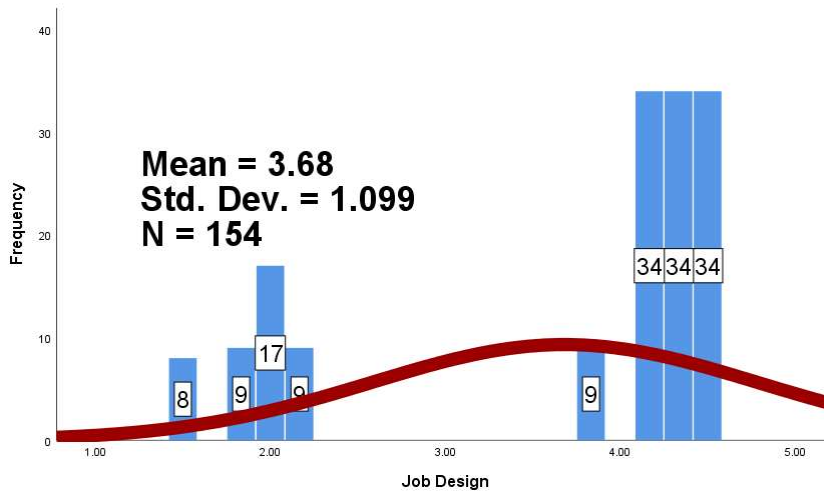
	Cronbach Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
Job Enlargement	0.910	0.954	0.935	0.784
Workforce Productivity	0.920	0.947	0.944	0.809
Job Enrichment	0.949	0.950	0.963	0.868
Job Rotation	0.972	0.975	0.979	0.923

Source: Survey Data, 2024

Univariate Analysis

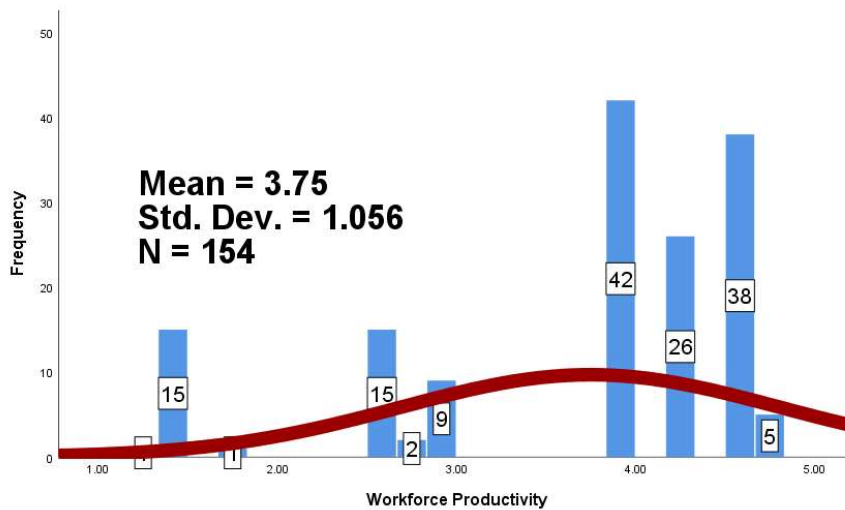
The summary distributions for the variables (job design and workforce productivity) are presented in this section of the paper. The analysis for job design involved the aggregates of its dimensions, job enrichment (x = 3.6347 and SD = 1.04324), job rotation (x = 3.6964 and SD = 1.36302) and job enlargement (x = 3.7159 and SD = 1.04282). The distributions for the dimensions, reflect positions on the extent to which such practices characterize the workplace of the manufacturing firms. The summary distribution for job design is shown in Figure 1.1 where at a mean of x = 3.68, and SD = 1.099, the manufacturing organizations in Rivers State can be affirmed to engage in moderate levels of job design practices.

Figure 1.1: Histogram summary for job design



The summary distribution for workforce productivity is presented on Figure 1.2. The distribution detailed the assessment of response rate for its related indicators, providing the aggregate ($\bar{x} = 3.75$ and $SD = 1.056$) for the distributions as presented in the Figure 1.2.

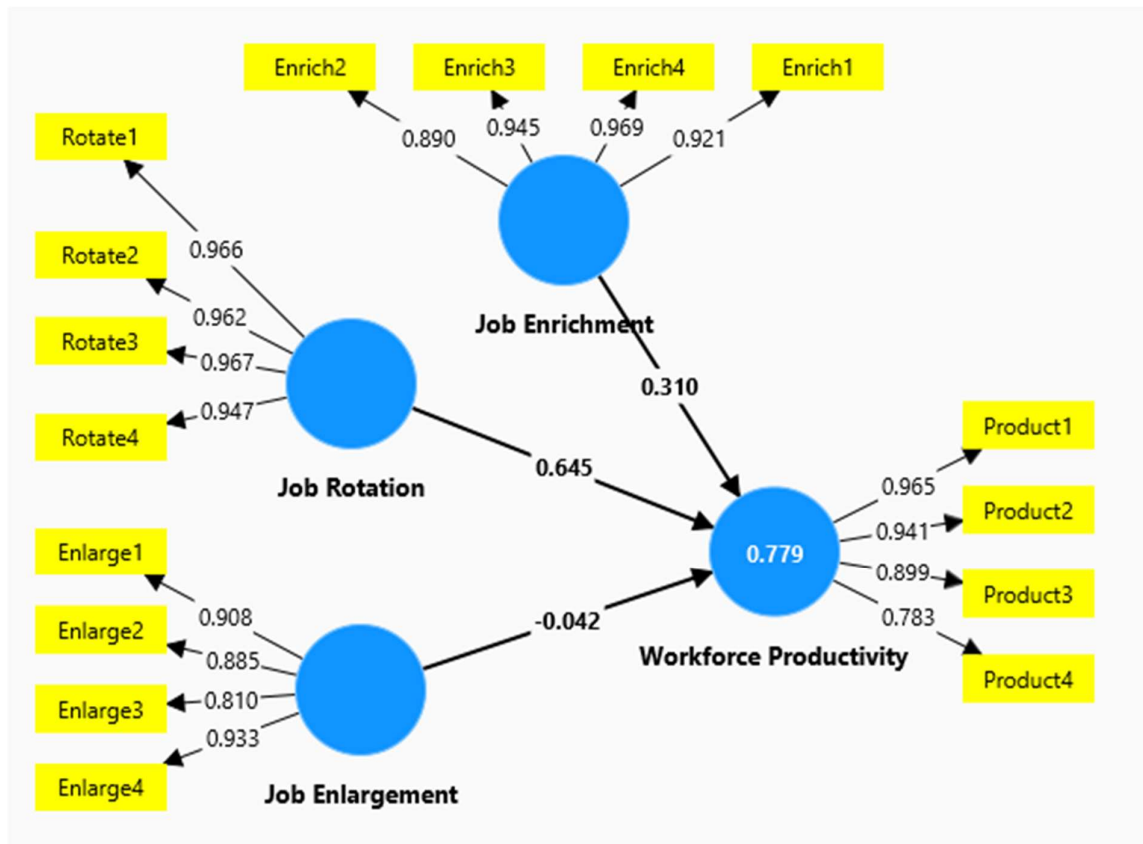
Figure 1.2: Histogram summary for workforce productivity



Bivariate Analysis

The assessment of the bivariate relationship between the dimensions of job design (job enrichment, job rotation and job enlargement) was carried out using the Partial Least Squares Structural Equation Modelling (PLS-SEM) technique using the SMARTPLS (version 4) software.

Figure 1.3: Partial Least Square Structural Equation Model (PLS-SEM) for the study



The findings on the relationship between job design dimensions (job enrichment, job rotation and job enlargement) and sustainable workforce productivity in the manufacturing firms in Rivers State, offer a mixed outcome. While job enrichment ($T = 0.310$ and $P = 0.000$) and job rotation ($T = 0.645$ and $P = 0.000$) show significant and positive influence on sustainable workforce productivity, the relationship between job enlargement and sustainable workforce productivity ($T = -0.042$ and $P = 0.971$). The evidence affirms to the insignificant role of job enlargement in sustained productivity of workers in manufacturing firms in Rivers State. On this basis, both hypotheses 1 and 2 are rejected as the hypothesis 3 is accepted in line with the evidence presented. Findings also indicate stronger influence from job rotation as compared to job enrichment on sustainable workforce productivity, suggesting that practices of job rotation, have higher tendencies to motivate and drive the sustainability of the workforce productivity in the manufacturing firms in Rivers State.

DISCUSSION

The findings of this research, affirm to the significance of job design techniques such as job enrichment and job rotation in the structuring of roles and functions in ways that advance and ensure sustainable workforce productivity. This finding reiterates the observations of Oparanma and Nwaeke (2015) on the significance of role arrangement and meaning, in the engagement and productivity of workers. Oparanma and Nwaeke (2015) identified job rotation as important in expanding workers understanding and knowledge of roles, through their acquaintance with and exposure to the various functions, attributes and characteristics of the organization. This research, by nature of the outcome of its investigation, reinforces the

imperatives of job design in the motivation and effective channelling of staff capacities toward the actualization of objectives, such as productivity.

Despite the significance of the influence of dimensions such as job enrichment and job rotation, on workforce productivity, job enlargement is revealed to have an insignificant impact on the productivity of the workforce in the manufacturing firms in Rivers State. This finding identifies job enlargement as insignificant and as having a low or weak influence on the extent of the productivity of the company's workforce. This finding contrasts with those of existing research (Ali & Zia-ur-Rehman, 2014; Gensler, 2006; Knapp & Mujtaba, 2010), suggesting the role of possible modulating factors, particular to the industry or environment. Oparanma and Nwaeke (2015) affirmed that design techniques such as rotation, have closer and more direct links to employee learning, and the fostering of a more collaborative work system. Such could be considered as explaining the more dominant relationship between job rotation and sustainable workforce productivity, as compared to that of job enrichment and sustainable workforce productivity in the manufacturing firms in Rivers State.

CONCLUSION

This research, following the findings reported on the relationship between job design techniques and sustainable workforce productivity, affirms to the significance of job design dimensions of job enrichment and job rotation in enabling work systems conducive to the workers learning, role meaning, positive relationships and as such, sustainable workforce productivity. The findings of this study thus identify the need for such practices to be reemphasized in the organization, and that way, advancing work features that position workers for learning, integration and also collaboration. It is on this basis concluded that the adapting of job design techniques comprising job enrichment and job rotation, to the expectations and conditions of the organizations, enables conditions where workers are able to apply themselves in more productive ways.

INDUSTRY-BASED RECOMMENDATIONS

The following recommendations align with the particular challenges of the Nigerian manufacturing industry, from the lens advanced by the focus and findings of this research. They are as follows:

- i. It is important that the leadership of the manufacturing firms develop work formats and approaches that allow for new experiences and quality work through the occasioning of work variety. This is necessary as it motivates workers, offering them meaning through the depth of their work and the extent to which they are inspired and driven, based on their level of engagement, to be more productive in the organization.
- ii. The management of manufacturing firms should formulate and reinforce policies on the rotation of roles or workers in the organization, such that emphasize on workers exposure to other departments and units of the organization and their acquaintance with the various functions and operations of other units. This is essential in advancing effective collaboration, and the transfer of skills and competencies across the workers in the organization.
- iii. It is necessary that the management or leadership of the Nigerian manufacturing organizations build on identifying how their vulnerabilities can be effectively managed, and also how such organizations can drive and sustain their productivity,

through the structuring and adapting of job design techniques in line with the peculiar features and characteristics of the environment of the manufacturing organizations.

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