

Original Research Article

IMPACT OF JOB SPECIALISATION ON OPERATIONAL PERFORMANCE IN THE NIGERIAN MANUFACTURING SECTOR

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Abstract: Job specialization is a key principle of modern manufacturing aimed at improving efficiency and product quality. This study examines the impact of job specialization on operational performance in the Nigerian manufacturing sector. Using a survey design, data were collected from 350 employees across 10 manufacturing firms in Lagos and Ogun States. Correlation and regression were used to analyse the data. Findings revealed that job specialization has a significant positive effect on operational efficiency, product quality and job satisfaction. However, excessive specialization also led to employee monotony and reduced flexibility. The study recommends balanced specialization with job rotation and cross-training. The study concludes that strategic job specialization is critical for the competitiveness of Nigerian manufacturing firms.

Keywords: Job Specialisation, Operational Efficiency, Product Quality, Manufacturing, Job Satisfaction, and Operational Performance.

INTRODUCTION

The Nigerian manufacturing sector contributes about 9% to GDP and employs millions. To compete globally, firms must improve efficiency and maintain high product quality. Job specialization, a core principle of Scientific Management by Frederick Taylor and Division of Labour by Adam Smith, involves assigning workers to specific tasks based on skill. In firms like Dangote, Nestle, Unilever, and BUA, production is broken into specialized units: mixing, packaging, quality control and so on. While specialization increases output, critics argue it causes boredom and rigidity. Thus, understanding its impact on efficiency and quality is critical for Nigerian manufacturers facing high production costs and import competition.

Organizations are constantly considering their options for developing efficiency and performance. One option is work specialization, which means assigning specific tasks to employees based on their expertise. This can result in more efficiency and better flow of work, but at the expense of employee wellness and satisfaction (Laurensius & Trixie, 2025).

Kimani, Gesimba, and Gichuhi (2020) demonstrated that while specialization improved efficiency, in some cases, it also led to boredom and job dissatisfaction due to circular, repetitive work. Excessive specialization produces boredom, fatigue, general depletion, and even stress, which would reduce production. These are termed human diseconomies (Permana et al., 2023).

This study, therefore, seeks to examine the impact of job specialization on operational performance in the Nigerian manufacturing sector with specific reference to operational efficiency, product quality and employee job satisfaction.

Statement of the Problem

Despite the adoption of specialization, many Nigerian manufacturing plants still record high levels of inefficiency, high defect rates, low productivity, and worker turnover. Some firms over-specialize, leading to dependence on a few workers, while others under-specialize, leading to inefficiency.

This study, therefore, seeks to examine: What is the impact of job specialization on efficiency and quality in the Nigerian manufacturing sector?

RESEARCH OBJECTIVES

The Broad Objective of this study is to examine the impact of job specialization on operational performance in the Nigerian manufacturing sector. While the specific Objectives are to:

1. Assess the effect of job specialization on the operational efficiency of manufacturing plants in Nigeria.
2. Determine the effect of job specialization on product quality in the Nigerian manufacturing sector.
3. Investigate the effect of job specialisation on employee job satisfaction and turnover intention in Nigerian manufacturing firms.

RESEARCH HYPOTHESES

The research hypotheses are stated in null form below

1. Job specialization has no significant effect on the operational efficiency of manufacturing plants in Nigeria.
2. Job specialization has no significant effect on product quality in the Nigerian manufacturing sector.
3. Job specialisation has no significant effect on employee job satisfaction and turnover intention in Nigerian manufacturing firms.

LITERATURE REVIEW

Concept of Job Specialization

Oyegun and Omosaye (2024) defined Job specialization as the division of labor, where employees focus on specific tasks or functions. The process of job specialization entails breaking down a task into its most basic components and structuring jobs around each part. This practice fosters specialization, expertise, and heightened quality. In workplaces, job specialization is often evident when a worker concentrates on a specific task and skill set throughout their entire work shift, with the task repeating consistently throughout the day. Job specialization enables the accumulation of significant expertise in a specific task, facilitating faster learning and production speeds. Due to the absence of complex processes, this approach allows for quicker training of new workers. Theoretically, such an approach reduces quality control costs and enhances production efficiency (Thibodaux, 2012). Specialization means assigning specific tasks to employees based on their expertise (Laurensius & Trixie, 2025). However, the drawback of job specialization is that individuals are limited to performing only one task, lacking training in multitasking or handling various areas within a workplace. Consequently, the loss of critical expertise can adversely impact the entire process. Additionally, workers specialized in a particular task often lack a diverse set of applicable skills, making it challenging for them to adapt to new functions or organizational needs (Oyegun & Omosaye, 2024).

Concept of Operational Performance

Operational Performance is defined as the efficiency and effectiveness of an organization's resources, internal processes, and operations in accomplishing its strategic goals. It reflects how well a manufacturing firm transforms inputs into outputs across key competitive priorities (Adenij, Salau, Joel, Onayemi, & Alake, 2024).

Concept of operational efficiency

Scholars such as Dilshani, Praveeni and Fernando (2019) described operational efficiency simply as the ratio of input to output. However, Lee and Johnson (2012) critically defined operational efficiency in terms of

1. Absolute Operational Efficiency and
2. Relative Operational Efficiency

Absolute Operational Efficiency. Ideal benchmarks to measure efficiency are usually developed in a design laboratory under perfect operating conditions. However, it is not easy to identify the sources of efficiency loss between ideal performance and the best observed performance. For instance, in a manufacturing process operating in perfect conditions, one machine's ideal throughput is 100 units per hour, yet the actual throughput is 80 units per hour due to the operator's skill, scheduling, etc. We can estimate an absolute operational efficiency (AOE) as:

$$AOE = \frac{\text{actual throughput}}{\text{ideal throughput}} = \frac{80}{100}$$

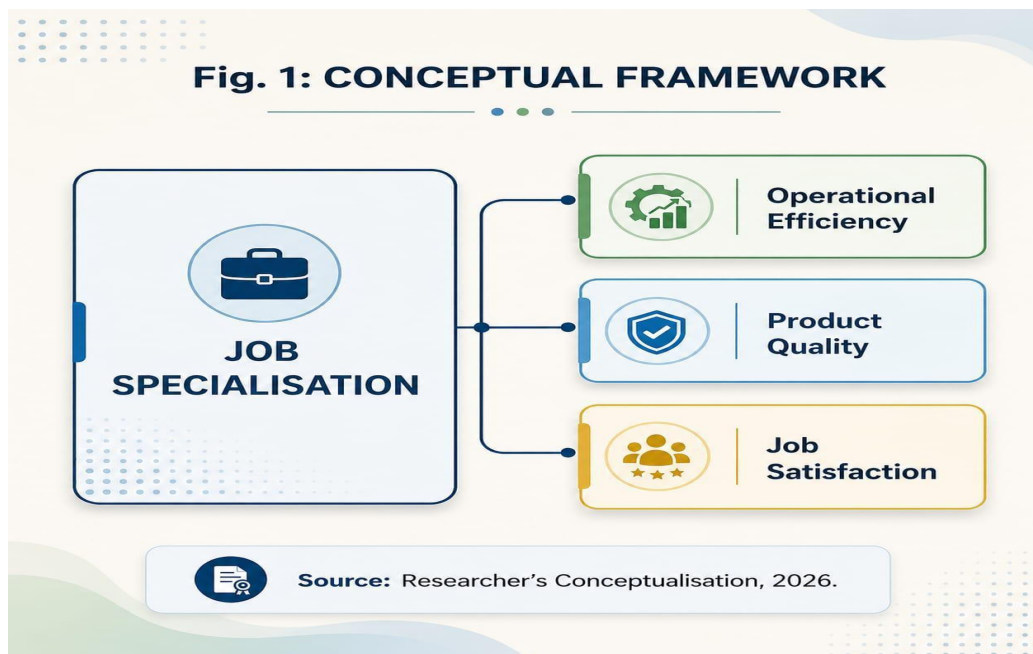
Hence, they noted that the ideal benchmarks can be observed at the machine or process level, but are almost never observed at the firm level. Thus, alternative metrics are beneficial in cases when ideal benchmarks are not observable.

Relative Operational Efficiency (ROE) is the ratio of actual throughput compared to the best observed throughput. Relative benchmarks are often used to measure efficiency because similar or comparable machines, processes, firms, etc., are often easily identifiable. We estimate ROE by identifying the best observed performance in a data set of multiple operations performing the same task, for instance, a data set of multiple machines performing the same manufacturing process. We find that the best observed throughput is 90 units per hour, but machine A produces 80 units per hour. We can estimate the relative operational efficiency (ROE) of machine A as:

$$\text{ROE} = \frac{\text{actual throughput}}{\text{Best observed throughput}} = \frac{80}{90}$$

Hence, they noted that Best observed throughput is often determined by using historical performance data under the assumption that if all conditions are unchanged, actual throughput should be equal to/or close to the historically best performance.

Thus, operational efficiency can now be described as the professional act of reducing operational cost and minimising wastage during the operational process.



Concept of Product Quality

Khoironi, Syah, and Dongoran (2018) defined product quality as a product or service in its quality to satisfy the stated or implied customer requirement. Product quality is how well a product meets customer needs and expectations through its core features and reliability. Product quality is the set of properties and characteristics of a product that give it the ability to meet established or anticipated needs. The established needs are fixed in legal

norms, standards, orders, agreements, technical conditions of deliveries and other documents. Expected needs are those expectations that the consumer usually does not formulate specifically, but refers to stable wishes (Palona, Bokovia & Serhiienko, 2021).

Concept of job satisfaction

Job satisfaction can be traced back to Frederick Herzberg's two-factor theory of motivation. Job satisfaction is a multifaceted concept encompassing various facets such as intrinsic motivation, work-life balance, organizational support and interpersonal relationships. Satisfied employees are likely to exhibit higher levels of engagement, productivity, and commitment to the organisation (Oyegun & Omosaye, 2024). Newstorm (2017) defined job satisfaction as favourable or unfavourable feelings and emotions with which employees view their work.

THEORETICAL FRAMEWORK

This work is anchored on Adam Smith's Division of Labour Theory 1776 which emphasizes that Specialization increases dexterity, saves time, and enables innovation. The theory is relevant to this study as it empirically discusses how job specialisation affects the operational performance in the Nigerian manufacturing sector.

ENPIRICAL REVIEW

Laurensius & Trixie (2025). This research examines the impact of specialization on productivity, efficiency and job satisfaction, using a quantitative research method and survey with fixed question types, in examining its effects on 134 Indonesian workers. The survey of 134 Indonesian workers found a statistically significant positive relationship between Work Specialization and worker productivity, a positive relationship with job satisfaction, a much weaker correlation to work specialization, and could even help explain how excessive specialization could lead to job boredom and disengagement. Overall, this research indicates that the studies show that specialization is not all bad, and can be seen as a useful rationale for an organization to improve productivity and to improve the atmosphere or overall positivity of the work place/space. The results imply that employee input participation, leadership support, and job rotation can offset the negative impacts of specialization.

Oyegun & Omosaye (2024). This study examines the influence of job specialization on employee satisfaction. Employing a descriptive research design, the study utilized a survey method to gather information from respondents. Fifty questionnaires, comprising 30 structured questions, were distributed among the library staff of Ondo State University of Science and Technology, Okitipupa, Ondo State, with a return rate of 90% (45 questionnaires). The questionnaire focused on respondents' demographics, job specialization, departmentalization, and the effects of these factors on their job satisfaction. Data analysis was conducted based on 42 usable questionnaires, as three were deemed unusable. The findings of this study revealed that a significant proportion of the sampled library staff expressed complete satisfaction with their current areas of specialization.

Kimani, Gesimba, and Gichuhi (2020) determine the influence of work specialization on employee development at Telkom Kenya Nakuru Branch. The study was guided by the Axiomatic Theory of Organizations. It made use of the correlational research design, where all the 51 employees of the Telkom Kenya Nakuru Branch were involved in the census study. Questionnaires were used to collect quantitative data from operational staff, while interview guides were used to gather qualitative data from heads of departments. Quantitative data were analyzed using frequencies, percentages, means, and the multiple regression techniques, while qualitative data were analysed using the thematic content analysis technique. Results showed that work specialization ($\beta = 0.491$, $p = .000$) had a statistically significant and positive influence on the development of employees at TKNB. Based on the findings, the study recommends that the management at TKNB should enhance work specialization by implementing job rotation programs and promoting a match between employees' skills and their jobs.

Adeyoyin, Ajiboye, Isau, and Oluyinka (2013) focused on staff in a Nigerian university library. The majority of the respondents expressed that job specialization enhanced their performance by making their work easier and faster. However, a sizeable proportion of the respondent reported that they were dissatisfied with job specialization because their posting did not match their training. The study has brought the issue of job-skill matching as another determinant of how specialization affects employee outcomes. The findings suggest that specialization is likely to have a negative outcome if the job to which an employee is posted does not match his or her expertise or training. The study, however, used descriptive statistics and thus could not authoritatively infer the existence of a relationship between work specialization and employee outcomes. The current study uses robust inferential statistics to test this relationship.

METHODOLOGY

A descriptive research design was employed for this study with the use of a structured questionnaire on a 5-point Likert scale. A population of Five Thousand, Two Hundred (5,200) employees in 10 selected manufacturing firms in Lagos/Ogun was used. The Sample Size of 350 was determined using Taro Yamane's formula for sampling technique. Validity and Reliability through face validity and Cronbach's Alpha $> 0.73.7$ was used for the study. Descriptive statistics, Pearson Correlation, and Multiple Regression were used to analyse the data with the use of SPSS v26

DATA ANALYSIS, RESULTS, AND DISCUSSION OF FINDINGS

Response Rate and Demographic: Descriptive Statistics

A total of Three Hundred and fifty (350) questionnaires were administered, and three (332) were retrieved and found usable. This gives a 94.9% response rate.

Table 1: Demographic Characteristics of Respondents

Vaiable	Category	Frequency	Percentage (%)
Gender	Male	210	63.3
	Female	122	36.7
Age	20-30 Years	98	29.5
	31-40 Years	145	43.7
	41-50 Years	67	20.2
	51 Years& above	22	6.6
Years of Experience	1-5	110	33.1
	6-10 Years	132	39.8
	11 Years and above	90	27.1
Department	Production	160	48.2
	Quality Control	78	23.5
	Packaging	94	28.3

Interpretation:

The majority of respondents are male (63.3%), within 31-40 years (43.7%) and have 6-10 years' experience (39.8%). Most work in production (48.2%). This shows that experienced production staff were captured.

Descriptive Statistics of the Study

Table 2: Mean and Standard Deviation of Variables

Variable	N	Mean		Decision
Job Specialisation (JS)	332	3.92	0.68	High
Operational Efficiency (OE)	332	3.88	0.71	High
Product Quality (PQ)	332	3.85	0.74	High
Job Satisfaction (JSAT)	332	3.21	0.89	Moderate
Turn Over Intention (TI)	332	3.45	0.92	Moderate

Scale: 1=SD, 2=D, 3=N, 4=A, 5= SA

Decision: Mean $\geq$ 3.50= Agree

Interpretation:

Job Specialisation has a high mean of 3.92. This means specialisation is highly practiced in the sampled firm.

Operational Efficiency 3.88 and Product Quality 3.85 are also high. This suggests respondents agree that efficiency and quality are good.

Job satisfaction, with a mean of 3.21, is only moderate, indicating some level of boredom/monotony. Turnover Intention means 3.45 is equally moderate, showing some workers consider leaving.

TEST OF HYPOTHESES

HYPOTHESES 1: PEARSON CORRELATION ANALYSIS

H01: Job Specialisation has no significant effect on operational efficiency

Table 3: Pearson Correlation between Job Specialisation and Operational Efficiency

Variables		Job Specialisation	Operational Efficiency
Job Specialisation	Pearson r	1	.672**
	Sig.2-tailed		.000
Operational Efficiency	Pearson r	.672**	1
	Sig.2-tailed	.000	

** . Correlation is significant at 0.01 level

Decision: Since $p\text{-value} = 0.000 < 0.05$, we reject H01.

Interpretation: There is a strong positive and significant relationship between job specialisation and operational efficiency ($r = .672$, $p = < .01$). This means that as specialisation increases, operational efficiency also increases.

HYPOTHESES 2: PEARSON CORRELATION ANALYSIS

H02: Job specialisation has no significant effect on product Quality

Table 4: Pearson Correlation between Job Specialisation and Product Quality

Variables		Job Specialisation	Operational Efficiency
Job Specialisation	Pearson r	1	.589**
	Sig.2-tailed		.000
Product Quality	Pearson r	.589**	1
	Sig.2-tailed	.000	

** . Correlation is significant at 0.01 level

Decision: Since $p\text{-value} = 0.000 < 0.05$, we reject H02.

Interpretation: There is a moderate positive and significant relationship between job specialisation and product quality ($r = .589$; $p < .01$). This suggests that Specialisation leads to better product quality and fewer defects.

HYPOTHESIS 3: MULTIPLE REGRESSION ANALYSIS

H03: Job Specialisation has no significant effect on employee job satisfaction and turnover intention

Here, JS is the IV, while JSAT and TI are DVs. We run 2 regressions.

Table 5: Regression of Job Specialisation on Job Satisfaction

Model	R	R square	Adjusted R Square	F	Sig
1	.412	.170	.167	67.843	.000
Coefficients	B	Beta	T	Sig	
(Constant)	2.104		8.112	.000	
Job Satisfaction	0.284	.412	8.237	.000	

Table 6: Regression of Job Specialisation on Turnover Intention

Model	R	R square	Adjusted R Square	F	Sig
1	.378	.143	.140	55.121	.000
Coefficients	B	Beta	T	sig	
(Constant)	2.104		9.021	.000	
Job Specialisation	0.271	.378	7.424	.000	

Decision: Since $p\text{-value} = 0.000 < 0.05$ for both, we reject H03.

Interpretation:

Job specialization explains 17.0% of the variation in job satisfaction. Beta = .412, $p < .01$. The relationship is positive but moderate. This means specialization increases satisfaction to a point, but excessive specialization may reduce it.

Job specialization explains 14.3% of the variation in turnover intention. Beta = .378, $p < .01$. The positive beta suggests that higher specialization slightly increases intention to quit, likely due to monotony.

DISCUSSION OF FINDINGS

On Efficiency: The strong correlation $r=.672$ confirms Adam Smith and Taylor's theory. Specialization improves speed, reduces waste, and increases output per worker. This aligns with the MAN 2022 report.

On Quality: The moderate correlation $r=.589$ shows that when workers focus on one task, errors reduce and quality standards are better met. This supports the need for specialized QC units.

On Job Satisfaction & Turnover: The regression shows a double-edged effect. While specialization creates expertise and pride $Beta=.412$, it also increases boredom, leading to higher turnover intention $Beta=.378$. This supports Oyegun and Omosaye (2024), who found a positive relationship between Job specialisation and employee satisfaction.

SUMMARY OF FINDINGS

This study examined the impact of job specialization on efficiency and quality in the Nigerian manufacturing sector using data from 332 employees across 10 manufacturing firms in Lagos and Ogun States. Descriptive statistics, Pearson Correlation, and Multiple Regression were used for analysis.

The major findings of the study are summarized below:

- 1) **Extent of Job Specialization:** Job specialization is highly practiced in Nigerian manufacturing firms, with a mean score of 3.92. Most firms have clearly defined roles, with workers assigned to specific tasks such as mixing, packaging, and quality control.
- 2) **Effect on Operational Efficiency:** There is a strong positive and significant relationship between job specialization and operational efficiency $r = .672$, $p < .01$. The result shows that specialization increases output per worker, reduces production time, and lowers the cost of production.
- 3) **Effect on Product Quality:** There is a moderate positive and significant relationship between job specialization and product quality $r = .589$, $p < .01$. Specialization helps reduce product defects, rework, and customer complaints, thereby improving overall quality standards.
- 4) **Effect on Job Satisfaction and Turnover Intention:** Job specialization has a significant effect on employee job satisfaction $Beta = .412$, $R^2 = .170$, $p < .01$ and turnover intention $Beta = .378$, $R^2 = .143$, $p < .01$. While specialization increases expertise and pride at work, it also contributes to boredom and monotony, which slightly increases workers' intention to quit.
- 5) **In summary,** all 3 null hypotheses were rejected. Job specialization significantly impacts efficiency, quality, job satisfaction, and turnover intention in Nigerian manufacturing firms.

CONCLUSION

Based on the findings of this study, it is concluded that job specialization is a critical factor for improving performance in the Nigerian manufacturing sector.

Specialization enhances operational efficiency and product quality, which are key for Nigerian firms to compete locally and under AfCFTA. Workers become more skilled and faster at their assigned tasks, leading to cost savings and better customer satisfaction.

However, the study also concludes that excessive specialization without variety can lead to employee boredom, reduced job satisfaction, and higher turnover intention. Therefore, for sustainable results, manufacturing firms must balance specialization with strategies that keep employees engaged.

Job specialization, when strategically managed, remains a vital tool for achieving efficiency, quality, and competitiveness in the Nigerian manufacturing sector.

RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are made:

- 1) **Adopt Balanced Specialization:** Manufacturing firms should combine job specialization with job rotation and job enrichment. Rotating workers across related tasks every 6-12 months will reduce monotony while retaining the benefits of expertise.
- 2) **Invest in Cross-Training Programs:** Firms should train employees to handle 2-3 related specialized tasks. This will reduce over-dependence on a few specialists and increase workforce flexibility during absences or peak periods.
- 3) **Strengthen Quality Control Units:** Since specialization improves quality, firms should create specialized QC teams and provide them with modern tools. Regular quality audits should be done to sustain low defect rates.
- 4) **Address Employee Wellbeing:** To tackle boredom and turnover, management should introduce incentives, team-based production, regular breaks, and employee involvement in decision-making. This will improve job satisfaction despite repetitive tasks.
- 5) **Government and MAN Support:** The government and Manufacturing Association of Nigeria should provide grants and training for firms adopting lean manufacturing and automation to support specialized operations. Policies that encourage "Made in Nigeria" should also consider worker welfare.

SUGGESTIONS FOR FURTHER STUDY

Future researchers can examine the moderating effect of technology and automation on the relationship between job specialization and performance. A comparative study between Nigerian and foreign-owned manufacturing firms is also suggested.

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