

Learning Capability and Operational Efficiency of Manufacturing Firms in Nigeria

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Abstract

This study examined empirically the nexus between learning capability and operational efficiency of manufacturing firms in Nigeria. A survey design was adopted and a population of 13 manufacturing firms in south west, Nigeria were covered. A sample size of ninety-eight (98) respondents were covered. The systematic sampling tech was used. Copies of questionnaire were used in gathering data for the study and the retrieved data was analysed using the spearman rank order correlation coefficient. Based on the analysis, the findings revealed that learning capability in terms of experimentation and participative decision making had a positive and significant relationship with product quality and timeliness. It was concluded that experimentation and participative decision making in organization is relevant in generating novel ideas to improve on the product and services of the firm that are necessary in boosting the firms overall operational efficiency. Among others, the study recommended that the management of the manufacturing firms should invest in enhancing the capability of the employees through giving them opportunity to experiment as such will enable them to effectively develop novel ideas to boost product quality and thus enhance the firm's performance.

Keywords: Learning Capacity; Experimentation; Participative Decision Making, Operational Efficiency

INTRODUCTION

The proliferation of competition among firms, coupled with the imponderable nature of the business domain has made the issue of performance more necessary than ever. It is worthy to note that what determines if an organisation is a market leader, market follower or market litcher in the industry is not a function of how long they have been in business but on how effective and efficient they are in their performance. Drawing from the above, it is paramount that management give high concern on how best to increase their performance so as to stay relevant in the industry. Operational efficiency focuses on the effective use of all properties, including personnel.

Furthermore, enhancing the operational efficiency of manufacturing firms will help boost economic activities in the country, increase gross domestic product and help enhance employment opportunity. An increase in the operational efficiency of organisation, also help increase the shareholders confidence on the organisation. The manufacturing firms serve as the "backbone" in the development of both developed and developing nations of the world [1]. Considering the various benefit of this sector, it is thus necessary to enhance their operational efficiency, so as to boost the

long-term success of the establishment. Ashkenas et al introduced organizational learning capability in this way: "The ability of an organization to learn from its experiences and taking them through times and borders". They said that an organization incapable of learning, tends more to make adjustments to its own solution, than to invest and devote time to make changes and improvements[2].

The first condition for an organization to be learning, is its members' capability of learning. This condition does not guarantee this of learning. This condition does not guarantee formation of such an organization, but there is no learning organization without it[3]. Learning Capability has been believed by academics and practitioners as vital for associations generally due to the fast-changing environment. Firms that are able to discover stand a larger chance of detecting, replacing, and adapting on a vibrant nature [4].

Considered as antecedent factor for organizational commitment, effectiveness and operational efficiency. These learning practices have moderate positive relation with effectiveness and strong positive relation with organizational commitment. Prior scrutiny

suggests that Learning Capability affects product innovation [5]. Akgun et al., (6) noted that Learning Capability build up a hierarchical learning capacity, which shows the capacity of an organization to execute the suitable administration practices, method and structures that encourage and empower learning process. Further, developing the learning capability supports to resolve the business issues, to face the competitor's challenges and to grant the survival and achievement of the organization into the future. Several study has been carried out to examine operational efficiency. However there is a dearth in literature on the impact of learning capacity and operational efficiency, this study seek to bridge this gap

Objectives of the Study

The objectives of the study are to examine the relationship between:

- i. experimentation and product quality of manufacturing firms in Nigeria.
- ii. experimentation and timeliness of manufacturing firms in Nigeria.
- iii. participative decision making and product quality of manufacturing firms in Nigeria.
- iv. participative decision making and timeliness of manufacturing firms in Nigeria.

Research Question

The following research questions are proffered as a guide in the study. What is the relationship between:

- i. experimentation and product quality of manufacturing firms in Nigeria.
- ii. experimentation and timeliness of manufacturing firms in Nigeria.
- iii. participative decision making and product quality of manufacturing firms in Nigeria.
- iv. participative decision making and timeliness of manufacturing firms in Nigeria.

Research Hypotheses

The underlisted hypothesis served as tentative answer to the research question.

Ho₁: There is no significant relationship between experimentation and product quality of manufacturing firms in Nigeria.

Ho₂: There is no significant relationship between experimentation and timeliness of manufacturing firms in Nigeria.

Ho₃: There is no significant relationship between participative decision making and product quality of manufacturing firms in Nigeria.

Ho₄: There is no significant relationship between participative decision making and timeliness of manufacturing firms in Nigeria.

LITERATURE REVIEW

The study is anchored on knowledge-based theory. Prior to Spender (7), few researchers referred to business knowledge using terms such as tacit knowledge, competency, or learning capability. Spender (7), on the other hand, began investigating the market implications of knowledge. A knowledge-based view (KBV) is a perspective on an organisation and its competitive advantage that is founded on knowledge analysis. Knowledge is a company's most valuable asset, and it can be created, saved, and applied. It is, without a doubt, the most significant source of competitive advantage [8].

Grant and Baden-Fuller (8) were the first to draw conclusions: knowledge is a desirable resource because it is a competitive advantage that brings value to the market. Employees learn knowledge, and they are the only repository of implicit knowledge; employees must specialize in knowledge acquisition; and Quality creation requires the application of different forms of knowledge.

According to Nonaka (9), it is important for the organisation to integrate employee knowledge management practices. Employees may possess two types of knowledge: tacit knowledge (difficult to communicate and formalize) and clear knowledge (easy to communicate and formalize) (easy to store and transmit). Their interconnection, the author asserts, can result in a highly useful type of knowledge for the business. Both types of knowledge, and their relationships, contribute to the clarification of outcome criteria and the creation of new management practices for innovation.

Additionally, tacit knowledge may be converted to explicit knowledge and explicit knowledge to tacit knowledge. For instance, a person can learn to ride a bicycle through explicit knowledge and then continue to ride a bicycle through tacit knowledge for years afterwards. Then, when demonstrating how to ride a bicycle to another person, one must progress from tacit to explicit knowledge. As a consequence, a KBV can be seen as an expanded RBV.

Research Hypotheses

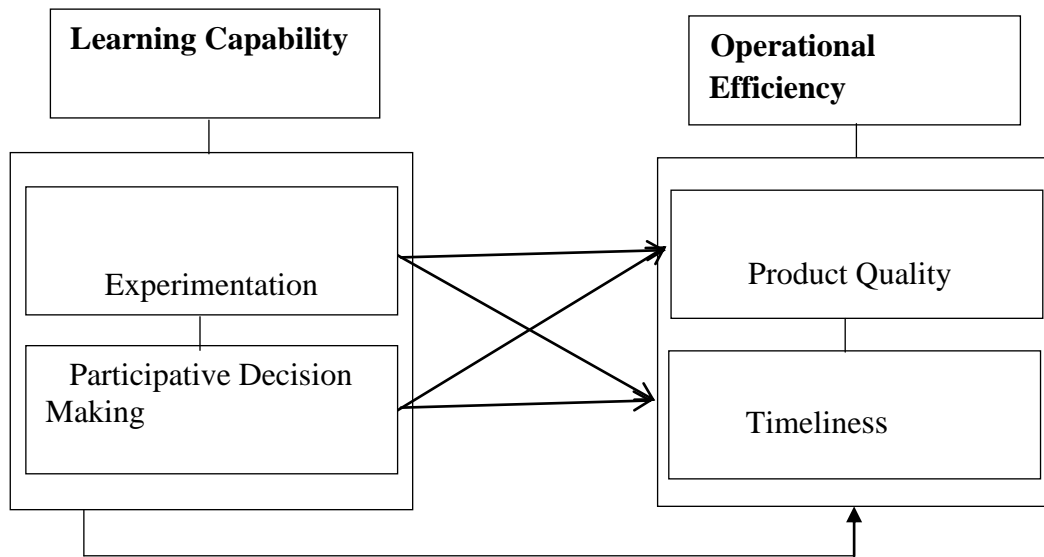


Figure 1: An operational model showing the Link between learning capability and operational efficiency.

Source: Adapted from Wang and Li (2013); Zhou, Zhou, Feng and Jiang (2019); Kotane and Kuzmina-Merlino (2011).

Concept of Learning Capacity

The organisational and managerial characteristics, activities, abilities, or factors that promote organisational learning processes (e.g., creating, obtaining, disseminating, and integrating information/knowledge) or enable an organisation to learn are referred to as organisational learning capability (OLC) [10]. OLC has been the subject of some research as a source of competitive advantage and a path to long-term corporate performance [11]. The managerial and organisational trait or feature that facilitates the organisational learning process or encourages an organisation to learn is described by Goh and Richards (12) as organisational learning capability (OLC). The ability of an organisation to absorb knowledge, i.e., the capacity to develop, obtain, move, and integrate knowledge, as well as the ability to adapt actions to match the current cognitive condition, with the goal of enhancing organisational performance, is known as organisational learning capability [10].

Mechanisms and activities that encourage or facilitate the development of organisational knowledge should be developed by organisation s. Socialization, internalization, and externalization, as well as all management activities that provide an environment conducive to learning, are examples of these processes [13]. These activities are the foundation of organisational learning capability, which can be described as a collection of management practices that promote learning or a set of processes that enhance an

organisation's ability to sustain and improve performance [2].

Experimentation

The degree to which novel concepts and proposals are implemented and treated in the organisation is referred to as experimentation [3]. Experimentation is linked to the creation and facilitation of progress, as well as the support of innovative proposals and favorable reactions to employee initiatives. It also includes the quest for novel solutions to challenges, which is dependent on the ability to use various approaches and procedures. Experimentation is one of the approaches to institutionalize organisational learning, and it is one of the ways to do so [14].

Experimentation is the practice of testing out novel ideas, becoming curious about how things work, or making modifications to a work process [15]. It entails the quest for novel solutions to problems based on the potential application of various approaches and procedures. Experimentation generates a flood of ideas or proposals that contradict the status quo, and it is viewed as a representation of the artistic climate [2]. Experimentation, according to Thomke (16), is at the core of a company's willingness to invent. Management must promote and endorse employees' ability to experiment with new job practices and processes [17]. Organisation s can benefit from their mistakes by evaluating them and then experimenting. In the workplace, a significant mistake can be seen as a learning opportunity. To improve the learning process,

the team should accept failure and accumulate as many mistakes as possible as soon as possible [18].

According to Thomke (19), ensuring that software implementation works often necessitates experimentation and trial and error to find a solution. Companies that innovate with new innovations are ideally equipped to have a higher rate of innovation than companies that focus only on using current, well-known technologies [20]. According to Precipe (21), understanding technical failure and gaining knowledge from failure would be beneficial for future technology or product growth. New developments minimize the cost and time associated with experimentation, enabling businesses to be more creative [16]. It allows an organisation to analyze the value of technology in more efficient ways through playing with new innovations [22]. Organisations can effectively accelerate their innovation by playing with emerging technologies. This is particularly true of new technology.

Participative Decision Making

Employees have a huge amount of input in the decision-making process when it comes to participative decision-making [23]. The decision-making process is critical for the success of product innovation processes [24]. Participatory decision-making improves commitment and participation, as well as the ability to innovate [25]. Importantly, when a company is going through a significant technical shift, participatory decision-making is the most important mechanism to use [26]. To have a better creative approach, management must include all the actors, which can be accomplished by reducing the organisation's bureaucratic problems. And more people involved in decision-making, there would be less opposition to reform and a higher chance of emerging technologies being adopted [27].

When grappling with changes in the climate, Bahrami and Evans (28) claim that competitive high-technology companies practice decentralized decision-making and a high level of involvement by line managers in decision-making. Furthermore, being able to engage in decision-making is an important aspect of increasing creativity [29]. The importance of participatory decision-making in technical progress cannot be overstated [30]. Via the participation of all members in the company, participatory decision making promotes the outcome, resulting in commitment and satisfaction [31]. And this is one of the reasons that helps organisations learn more effectively. Increased staff engagement, workplace satisfaction, and corporate commitment are all motivating factors that organisations use participatory decision making to achieve. Participatory decision making, according to recent research, has greater access to knowledge and increases

the quality and ownership of decision results. In a fast-paced market setting, it's important to encourage workers to rely on their intuition to stimulate fresh ideas, identify potential possibilities, and effectively engage in the development of new habits that are appropriate for the constantly changing environment. It is not intended to imply that associates can behave in a disorderly manner, disregarding subordination and existing structure. However, in the rapidly evolving market world, where old tactics do not yield optimal results or can jeopardize a firm's competitive advantage, associates of all levels should be interested in and trusted with the advancement of innovative innovations and opportunity sensing, which is highly reliant on individual rules-of-thumb.

Concept of Operational Efficiency

Operational efficiency, according to Kovac (32), is a positive consequence of the comparison between the inputs and the outputs. According to Mandl et al. (33), efficiency is defined as the relationship between inputs and effects; hence, efficiency displays effects regardless of the inputs or resources used to accomplish the goals. According to Robbins and Coulter (34), efficiency refers to getting the most possible output from the least amount of inputs. Different methods of measuring operational efficiency are described in the related literature. According to Mandl et al. (33), efficiency cannot be calculated explicitly, so separate data methods and computational frameworks are employed. Benchmarking and comparative research, according to Koh and Saad (35), are widely used approaches. Rolstadas (36) proposes a comprehensive, iterative method for evaluating and selecting the industry's top organisations.

Financial performance and operational efficiency, according to Venkatraman and Ramanujam (37), are the most important factors determining a company's effectiveness. While the financial sector looks at things like revenue growth, profitability, and earnings per share, the operational sector looks at things like market share, new product introductions, product quality, and manufacturing value added, among other things. However, there are several different ways to quantify performance.

Product Quality

Quality is known as the capacity to generate a complete product on the first attempt, or a zero error rate [38]. Quality can be described from the customer's (consumer's) perspective as the quality viewed as a result of the consumer's decision on the product's overall excellence or supremacy [39].

The degree to which a produced product meets the customer's needs is described as product Quality. It is dictated by the customer's experience, not by the

product's providers' expectations. Product quality is regarded as a vital factor in determining productivity. Product quality will help a company stand out from the competition and achieve a competitive edge. The path to increased profitability is superior product quality. Products are an integral part of all economies, and as economies grow, they become more and more integrated into daily life. Consumer products are an important factor in attracting loyal retail buyers and, as a result, creating profitable retail companies. Market product is described as an operation that supplements or promotes shop purchases. It involves things like free parking, gift wrapping, the atmosphere, and distribution. Additionally, through their experiences and partnerships with consumers, salespeople have consumer products. The nature and scale of Product Quality are determined by a number of observable variables or dimensions that can be optimized by sound managerial decisions.

Quality must be defined before it can be calculated, but this is complicated by the fact that there is no common concept of quality. At the same time, there are alternative metrics focusing on five major approaches: transcendent, product-based, user-based, manufacturing-based, and value-based [40]. To date, several experiments on product quality have focused on the build and size of product quality [38]. Retailers are more likely to have an effect on product quality than on product quality in a retail environment, especially in retail stores where there is a combination of product and product [41]. The quality of products in retail stores differs from those of most product or product-oriented organisations [42]. This is due to the distinct essence of retail businesses that have all merchandise and services.

Product quality is thought to be an important factor in the customer loyalty with a retail store, which helps the store place the product in the minds of its consumers. Retailers use a variety of product quality assessment methods to determine the precise level of customer satisfaction of their product offerings. Product quality is seen as a mechanism for enhancing the store's brand value and serving as a positioning tool [43]. Customer loyalty, high sales, higher customer engagement, and repeat customer buying quality [44] all contribute to the retailer's market share growth. Kotler and Armstrong (45) defined product as "something that can be sold to a market for attention, purchase, use, or use that would satisfy a desire or need". According to Kotler and Armstrong (45), product quality is Product quality refers to the features of a product or service that influence its ability to meet specified or inferred customer needs. It's important to remember that the product's quality is assessed from the customer's perspective, rather than from the company's. It also brought up two critical factors that influence product

quality, namely the anticipated product quality and the perceived product quality. In more quality, if the perceived product quality matches the consumer's expectations, the customer will consider the product to be a high quality and will be pleased. If, on the other hand, the customer's quality of product quality differs from what is anticipated, the customer's perception of product quality is classified as poor. As a result, the willingness of a business to satisfy customer needs determines whether a product is classified as good or poor. The quality of a product, according to Kotler and Keller (45), is determined by a number of factors, including performance, features, reliability, compliance, longevity, serviceability, aesthetics, and perceived quality.

Timeliness

Responsive goods recognize and respond to the diversity of peoples' needs directly. Rather than taking a "one size fits all" solution, attentive product vendors incorporate customer-segmentation policies and processes, as well as mechanisms that proactively seek and address citizen reviews or concerns. Furthermore, responsive goods ought to be responsive to customer demands, responding as soon as possible and with the least amount of delay as possible. As a result, product delivery timeliness stands out as a responsiveness measure that has a significant impact on consumers' confidence in the capacity of government goods to satisfy their needs [46]. In order to keep consumers happy, customer products must be delivered on time. Making consumers waste time due to a lack of knowledge or a gap in customer product response may be harmful to long-term satisfaction, regardless of how excellent a product or service the business provides. Furthermore, when a customer is in need of help, timeliness will be the deciding factor in whether or not a deal is made [46].

Reflecting on clients' needs in extension is critical, but even satisfaction extracted in the areas of consistency, importance, and timeliness of service must be seen as an exhausting challenge in order to create trust. Client input on extension advisor satisfaction is critical to the provision of high-quality extension solutions that are based on relevance, consistency, and timeliness of execution. Timeliness is a function of the amount of time required to complete a task in relation to the available capacity.

The number of days suitable for fieldwork within a development cycle multiplied by the working hours of a suitable day will be used to calculate the time required. The vector "working hours per appropriate day" is commonly considered to have a small range of variation [47]. The number of acceptable days within a development cycle, on the other hand, is an unpredictably variable quantity with a wide range.

Empirical Review

Goh and Ryan (48) investigated the relationship between an organisation's learning capability and its possible effect on firm performance. While the literature suggests that learning organisations are also high-performing organisations, there have been no large-scale longitudinal trials to back up this claim. A survey was conducted to assess the learning capability of a sample of for-profit organisations, based on a developed scale to assess an organisation's learning capability. Data on these corporations' financial and non-financial performance was also collected. Other aspects of the organisation, such as scale and formalization, were also taken into account. The study's findings reveal that there is no connection between learning capability and the two financial performance indicators of return on equity and return on assets. However, work satisfaction, a non-financial performance indicator, is closely linked to learning capability. The ramifications of an unusual discovery of a substantial positive association between formalization and financial performance are discussed. It is proposed that in the case of for-profit organisations, formalization may have an encouraging rather than a punitive effect on the organisation.

In the context of small and medium-sized enterprises (SMEs) in Malaysia, Ngui, Songan, and Hong (49) developed and empirically evaluated a model of the relationships between selected organisational variables, Organisational Learning (OL) capability, and performance. Theoretical developments in the OL domain have been focused on the interactions of major western hemispheric organisations. As a result, the analysis examines the OL capabilities of SMEs in a transformative economy, specifically Malaysia. The datasets from 256 manufacturing and services SMEs were analyzed using structural equation modeling. The findings of the statistical analysis revealed that entrepreneurial focus and human-capital growth activities had a significant positive impact on SMEs' OL capability. The interaction between entrepreneurial orientation and OL capability was also discovered to be mediated by human-capital growth activities. This said that, while an entrepreneurial mindset encourages the growth of strong OL capabilities, human-capital development activities are the means by which such capability is developed. Finally, scientific data was presented to back up the claim that OL capability improves SMEs' performance.

Hawass (50) looked at interfirm collaboration, intrafirm collaboration, person, community, and organisational-level learning as determinants of reconfiguration capability from a multilevel organisational perspective. The paper was based on data obtained from 83 British tech companies through a questionnaire survey. To ensure that the applied methods are internally

consistent, reliability and object complete correlation tests have been carried out. To investigate the determinants of reconfiguration capability, a principal component analysis and a multiple regression analysis were used. Interfirm cooperation seems to be favourably related to the introduction of successful reconfiguration, according to the results. Furthermore, the results show that group-level learning is an effective tool for enhancing a company's ability to recombine knowledge sources. Finally, the paper stresses the importance of organisational-level learning in establishing the strategic and structural framework in which reconfiguration capability can function.

Fang, Chang, and Chen (51) investigated the relationship between organisational learning capability and organisational creativity in order to better grasp the moderating role of knowledge inertia in this relationship. A total of 563 eligible questionnaires were obtained for analysis in this report. Nurses, administrators, and managers from a provincial hospital in central Taiwan participated in this research. The findings revealed that organisational learning capability is linked to organisational creativity in a constructive and meaningful way. The relationship between organisational learning capability and organisational creativity was moderated by knowledge inertia.

In Malaysian institutions of higher education, Shoid, Kassim, and Salleh (52) captured the expectations of organisational learning capabilities among information professionals (librarians) and the outcome as knowledge performance. The methodological basis for a report on organisational learning capabilities and knowledge performance as understood by university library information practitioners is discussed in this article. The five key independent variables, according to the structure, are mutual vision and purpose, organisational ethos, collaboration communication, knowledge transfer, and ICT. Knowledge performance is the dependent variable, which was derived from prior models and scholarly literatures. The research is essential for librarians and academic libraries to improve their knowledge acquisition and learning capabilities.

A metaanalysis of a subset of published academic research papers that quantify learning capability and relate it to organisational performance was proposed by Goh, Elliott, and Quon (48). It also aims to look at both financial and non-financial performance. The authors found 33 papers that meet the criterion for inclusion in the metaanalysis after conducting a search of published literature on learning capability and organisational performance. Organisational performance was judged to be satisfactory using both quantitative and subjective metrics. Hunter and Schmidt metaanalysis tools was used to look over the results. The findings support a

connection between learning capability and organisational performance, with nonfinancial performance outperforming financial performance. This has important consequences for justifying an organisation's commitment in developing a learning capability. Managers will benefit from recommendations such as the use of learning capability metrics and the need to track performance.

Ona, Tepeci, and Başalp (49) examined the degrees and dimensions of Organisational Learning Capability (OLC) and Organisational Innovativeness (OI), as well as the impact of OLC on OI. The information was gathered from managers at the entry and middle levels of businesses who are part of the Manisa Chamber of Commerce and Industry. The information was gathered by a survey of 143 managers (by web page and by personal visits). Knowledge sharing, dialogue, participatory decision making, managerial commitment, competence and openness, knowledge transfer, and risk taking were discovered to be seven factor aspects in the OLC. Behavioral, product, operation, market, and strategic innovativeness were all factors considered when calculating the OI. OLC dimensions had a major impact on OI, according to the findings.

Gomes and Wojahn (53) investigated the role of corporate learning capability in the performance of small and medium-sized businesses in terms of innovation and organisational performance. The study was carried out using a quantitative approach, descriptive and causal analysis, and a cross-sectional survey. A total of 92 textile-related businesses were included in the survey. The data was studied using the Structural Equation Modeling methodology. The findings indicate that organisational learning capability has an effect on small and medium-sized enterprises' creative performance; however, the impact of learning capability on organisational performance was not important. The study offers support for these relationships and indicates that they are important and constructive in the form of small and medium-sized textile businesses, a sector with a dearth of analytical literature

The impact of organisational learning capability as a mediating element in the relationship between green intellectual capital and market sustainability in the manufacturing sector was investigated by Omar, Yusoff, and Zaman (54). The study's inspiration stemmed from the fact that green intellectual capital and market sustainability are both relatively recent concepts in Malaysia. The established hypotheses were put to the test using data collected via a mail survey of SMEs in Malaysian manufacturing. The Smart PLS 3.0 computational methods were used to interpret the data obtained from 168 managers. There were three major

results announced. To begin with, green systemic and relational capital have a strong association with corporate learning capability, while green human capital does not. Second, corporate learning capability has a strong link to long-term market viability. Finally, corporate learning, unlike green human capital, mediates the interaction between green institutional capital and green relational capital and market sustainability.

In the Nigerian banking industry, Amangala and Wali (55) investigated the relationship between market focus, consumers' perceptions of firms' service quality (SQ), and customer loyalty. To form this analysis, the Expectancy Confirmation Theory (ECT) was used. Employees and customers of Nigerian money deposit banks made up the study's population, and the quantitative paradigm was used to conduct the survey. They used a basic random sampling method to choose employees and customers from each of the 21 banks, totaling 594 samples, and then circulated questionnaires to customers and employees in the banking hall with approval from the banks. To test our hypothesis, we used simple linear and hierarchical regressions, and the research review discovered a strong and meaningful association between market orientation and customer SQ expectations. In addition, market focus has been shown to have a favorable and important impact on customer loyalty (CSAT). The association between market orientation and SQ expectations was found to be influenced by market-sensing capabilities, which had a major but minor impact. The association between market orientation and customer satisfaction was found to be unaffected by market-sensing capabilities. In other words, market-sensing capabilities were discovered to be a non-moderator of the interaction between market orientation and customer satisfaction.

METHODOLOGY

The cross-sectional survey which is a type of the quasi experimental design was used in this study. The accessible population was the 13 selected manufacturing firms in south west, Nigeria. The Taro Yamene formula for sample size determination was used to arrive at a sample size of 98. Thus, a total of 98 questionnaires were distributed to managers and supervisors in the 13 selected firms. The systematic sampling technique was used in this study. This technique was used because it gives a true representative of the entire population and reduces the tendency for researcher bias in selecting the sample case. The independent variable (Learning capability) was measured in terms of experimentation and participative decision making. 9 items were used in experimentation (e.g. My company is quick in understanding new opportunities to serve our client better), 7 items will be used in measuring participative

decision making(e. g, In my organisation , we share new knowledge across the organisation internally). Also, the dependent variable (operational efficiency) was measured using, product quality and timeliness. 7 items will be used in measuring product quality(e.g. Our brand stands us out from competitors) and 6 items will be used in measuring timeliness(e.g.My organisation is able to deliver product before deadline). Items were rated on a 4-point Likert scale ranging from 1-strongly disagreed, 2-disagree, 3-agree and 4-strongly agreed. The spearman rank order correlation coefficient statistical analysis was used in analysing the

bivariate hypotheses through the help of Statistical Package for Social Sciences (SPSS) version 21.

RESULTS

The study utilised a total of 98 copies of a structured questionnaire which was distributed to the respondents, however, only 85 (87%) copies were returned and used for the study. The hypotheses test was undertaken at a 95% confidence interval implying a 0.05 level of significance. The decision rule is set at a critical region of $p > 0.05$ for acceptance of the null hypothesis and $p < 0.05$ for rejection of the null hypothesis.

Table 1: Experimentation and Product quality

			Experimentation	Product Quality
Spearman's rho	Experimentation	Correlation Coefficient	1.000	.517**
		Sig. (2-tailed)	.	.000
		N	85	85
	Product Quality	Correlation Coefficient	.517**	1.000
		Sig. (2-tailed)	.000	.
		N	85	85

** . Correlation is significant at the 0.01 level (2-tailed).

Ho₁: There is no significant relationship between Experimentation and Product quality of manufacturing firms in Nigeria

The outcome of the study in Table 1 demonstrates that the rho = .517 between Experimentation and Product

quality is significant at $p < 0.05$ ($0.000 < 0.05$). This suggests that Experimentation and Product quality have a moderate association. The null hypothesis is rejected, and the alternative hypothesis is accepted and restated that *there is significant relationship between Experimentation and Product quality.*

Table 2: Experimentation and Timeliness

			Experimentation	Timeliness
Spearman's rho	Experimentation	Correlation Coefficient	1.000	.423**
		Sig. (2-tailed)	.	.000
		N	85	85
	Timeliness	Correlation Coefficient	.423**	1.000
		Sig. (2-tailed)	.000	.
		N	85	85

** . Correlation is significant at the 0.01 level (2-tailed).

Ho₂: There is no significant relationship between Experimentation and Timeliness of manufacturing firms in Nigeria

The study in Table 2 demonstrates that the $p < 0.05$ ($0.000 < 0.05$), rho = 0.423 between Experimentation

and Timeliness was significant. This suggests that the interaction between Experimentation and Timeliness is important. The null hypothesis is rejected and we reiterate that *there is a significant relationship between Experimentation and Timeliness.*

Table 3: Participative decision making and Product quality

			Participative Decision Making	Product Quality
Spearman's rho	Participative Decision Making	Correlation Coefficient	1.000	.306**
		Sig. (2-tailed)	.	.004
		N	85	85
	Product Quality	Correlation Coefficient	.306**	1.000
		Sig. (2-tailed)	.004	.
		N	85	85

** . Correlation is significant at the 0.01 level (2-tailed).

Ho₃: There is no significant relationship between Participative decision making and Product quality of manufacturing firms in Nigeria

Table 3 showed significant $p < 0.05$ ($0.004 < 0.05$), $\rho = 0.306$ between Participative decision making and

Product quality. This suggests that Participative decision making and Product quality are significantly linked. The null hypothesis is rejected and we reaffirm that *there is a significant relationship between Participative decision making and Product quality.*

Table 4: Participative decision making and Timeliness

Correlations

		Participative Decision Making		Timeliness
Spearman's rho	Participative Decision Making	Correlation Coefficient	1.000	.475
		Sig. (2-tailed)	.	.002
		N	85	85
	Timeliness	Correlation Coefficient	.475	1.000
		Sig. (2-tailed)	.002	.
		N	85	85

Ho₄: There is no significant relationship between Participative decision making and Timeliness of manufacturing firms in Nigeria

The results of the Table 2 study demonstrate a significant level $p < 0.05$ ($0.002 < 0.05$), $\rho = 0.475$ for Participative decision making and Timeliness. This suggests that Participative decision making and Timeliness are significantly linked. The null hypothesis is rejected, and we reaffirm that *there is a significant relationship between Participative decision making and Timeliness.*

two variables. The fact that the p-value was lower than the threshold of significance ($p = 0.000 < 0.05$) explains the existence of this association. As a result, the null hypothesis was rejected, and the alternate hypothesis was accepted. Furthermore, the spearman correlation coefficient demonstrated a 0.423 link between Experimentation and Timeliness. This demonstrates that Experimentation and Timeliness have a moderate significant association. As a result, improving the Experimentation will improve the Timeliness of product delivery. This finding is supported by Precipe (41), who opined that understanding technical failure and gaining knowledge from failure would be beneficial for future technology or product quality. New developments minimize the cost and time associated with experimentation, enabling businesses to be more creative.

DISCUSSION OF FINDINGS

Based on the above findings, the study realized:

Experimentation and Product Quality

The result on Experimentation and Product quality show that $p = 0.000 < 0.05$. This implies that a positive and significant relationship exist between the two variables. Experimentation and Product quality had a substantial link. The fact that the p-value was lower than the threshold of significance ($p = 0.000 < 0.05$) explains the existence of this association. As a result, the null hypothesis was disproved, and the alternate hypothesis was accepted. Furthermore, the spearman correlation coefficient demonstrated a 0.517 link between Experimentation and Product quality. This demonstrates that Experimentation and Product quality have a strong significant association. As a result, an increase in Experimentation will lead to a corresponding increase in the organization's Product quality. This conclusion aligns with that of Goh and Ryan (48) that management that promote and endorse employees' ability to experiment with new job practices and processes obtain better product quality and achieve better business outcomes.

Participative Decision Making and Product Quality

Results of hypothesis three demonstrates that Participative decision making and Product quality have a substantial link. The p-value of 0.004 was less than 0.05 ($p = 0.004 < 0.05$), indicating that Participative decision making has a significant link with Product quality. As a result, the null hypothesis was rejected, and the alternate hypothesis was accepted. The correlation coefficient (r) has been calculated to be 0.306. As a result, it is clear that Participative decision making and Product quality have a weak connection. As a result, improving the Participative decision making will aid Product quality. As a result, the study's third aim, which was to see whether Participative decision making had anything to do with Product quality, was achieved. This result is informed by the argument of Damanpour (25), that participatory decision-making improves commitment and participation, as well as the ability to innovate. Kotler and Armstrong (45) believed product quality to be features of a product or service that influence its ability to meet specified or inferred

Experimentation and Timeliness

The results on the relationship between Experimentation and Timeliness revealed a substantial link between the

customer needs, and the products that meet the customer requirements is dependent on the employees participation in the decision making process.

Participative Decision Making and Timeliness

The study of hypothesis four demonstrates that Participative decision making and Timeliness have a substantial link. The p-value of 0.002 was less than 0.05 ($p=0.002<0.05$), indicating that Participative decision making has a significant link with Timeliness. As a result, the null hypothesis was disproved, and the alternate hypothesis was accepted. The correlation coefficient (r) has been calculated to be 0.475. As a result, it is clear that Participative decision making and Timeliness have a weak connection. As a result, improving the Participative decision making will aid Timeliness. As a result, the study's third aim, which was to see whether Participative decision making had anything to do with Timeliness, was achieved.

CONCLUSION AND RECOMMENDATION

Putting a searchlight in the business environment is relevant for firms to easily sense relevant opportunities that are necessary in enhancing their product quality and competitive edge in the industry. Enhancing experimentation and participative decision making will subsequently result in higher level of product quality and timeliness of product delivery. Acquiring knowledge about technological and market trends will help organization to be abreast with recent happenings which will thus inform their decisions and actions towards boosting the fortune of the organization. Experimentation and participative decision making of organizations enhances the firms knowledge about various industrial trend and what best to do in order to deliver products efficiently. When organizations lack adequate experimentation and participative decision making, such will negatively affect their ability to deliver quality products and on time. Generating useful ideas and making existing knowledge more accessible to all departments will help boost the organizational performance. Furthermore, experimentation and participative decision making in organization is relevant in generating novel ideas to improve on the product and services of the firm that are necessary in boosting their performance. The following suggestions are made based on the results and conclusions of this research:

1. The management of the manufacturing firms should invest in enhancing the capability of the employees through giving them opportunity to experiment as such will enable them to effectively develop novel ideas to boost product quality and thus enhance the firm's performance.
2. The management of the manufacturing firms should effectively promote their employees capability to experiment with different

technologies to ensure proper redesign of the existing working process and procedures in order to boost the timeliness of product delivery.

3. The management of the manufacturing firms should ensure participative decision making as such will go a long way towards improving the quality of their products, thus increasing the performance of the organization.
4. The processes and products of the manufacturing firms should be constantly improved by the management in order to satisfy customers maximally and timely and as such enhance the performance of the firms.

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