

TECHNOLOGICAL ENVIRONMENT FACTORS EFFECT AND ORGANIZATIONAL RESILIENCE OF
SELECTED MANUFACTURING FIRMS IN SOUTH-EAST NIGERIA

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Abstract

Technological factors offers opportunities and threats along with limitations and pressures influencing the structure and functioning of the business. The study was conducted to ascertain the effect of technological environment factors on organizational resilience of selected manufacturing firms in South-East Nigeria. A sample size of 232 was determined from a population of 552 using the Taro Yammeh's formula. The study applied both the descriptive statistics of mean and standard deviation and simple regression analysis at 0.005 significance level for data analysis to ascertain the effect of technological factors on organizational resilience of selected manufacturing firms in South-East Nigeria. Reliability statistics was conducted to determine the level of reliability of the test instrument. Finding shows a significant positive effect of Information and Communication Technology on organizational resilience of selected manufacturing firms in South-East Nigeria. It was recommended among others that firms should provide an enabling information and communication technology environment to enhance resilience in organizations. The study concludes that an improvement in Information and Communication Technology such as production techniques, information and communication resources, production, logistics, marketing and e-commerce, would lead to increase in organizational resilience.

Keywords: *Technology, Information, Technique, Organization, Resilience.*

Introduction

The business environment has always faced transformations that force managers to think of what they need to do to remain competitive (Kissimoto & Laurindo, 2010). Businesses competing in the high-intensity rivalry markets face adverse and high impact situations, most of the times, because of macroeconomic changes such as financial crises, market losses and confrontations with non-traditional competitors, besides of other uncertainties such as the consequences of natural disasters, technological changes, consumer change preferences and

discontinuities (Morales, Martinez, Gomez, Lopez & Arguelles, 2019). To survive in uncertain environments and to foster future success, organizations must be able to handle all of these manifestations of the unexpected. Firms need to develop a resilience capacity which enables them to adequately react to unexpected events and to capitalize on events that could potentially threaten an organization's survival (Vandar, 2021).

Business environments change frequently and require consideration when planning and conducting operations, hence, an organization cannot survive and remain resilient unless there is an effective production and management technology. Technological factors contribute towards supporting the organization's capability to apply and exploit new sciences and ideas that are emerging in various fields of knowledge (Shinn, 2021). Technology is an important element in the areas of enhancing the competitive position of the organization as it works to improve the organization's services or products continuously, hence achieving business sustainability (Shinn, 2021).

Technological changes can bring about advantages and opportunities for businesses. Obviously, new technology can create new products and services, thereby creating entire new markets for a business. Moreover, improvements in technological products and processes can increase productivity and reduce costs (Kissimoto & Laurindo, 2010). Resilience according to Sawik (2013) cited in Rai, et al (2021) refers to a firm's capability to survive, adapt and grow in a dynamic and uncertain environment. This concept refers to its capability of returning to a stable state after facing a disruptive situation. Organizational resilience is a firm's ability to effectively absorb, develop situation-specific responses to, and ultimately engage in trans-formative activities to capitalize on disruptive surprises that potentially threaten organization's survival (Kissimoto & Laurindo, 2010). Sheffi (2007) in Shinn, (2021) maintains that the concept of organizational resilience is the ability of an organization to successfully confront unforeseen events.

Statement of the Problem

Although efficient business environment is one of the most promising avenues for organizational growth, the achievement and maintenance of resilience in organizations is fraught with difficulty for firms and often poses significant barriers to organizational success (Guler & Gullen, 2010) in Obialor, et al, (2022). Achieving resilience in organizations is not a simple task, thus, environmental effects as a source of uncertainty and constraints creates problems for businesses. While some businesses are affected by a large number of environmental factors, others are directly affected by only a few. Consequently, most organizations operate in a defensive manner, so that actions are taken only after some kind of loss has already occurred. Thus, the need for this study.

Most researchers have precisely focused more on the general effects of external environmental factors on performance, economic sustainability, business environment and scarcely on resilience, especially the work of Duchek (2020), Garmezy, Masten, Tellegen (1984) and Paul, Lawrence, & Lorsch, (1967) cited in Obialor, et al, (2022), Farooq (2022), Shinn (2021), and Rai, Rai, & Singh (2021) among others. Consequently, most of these studies assessed focused mostly on some external environmental factors and used organizational equation modeling approach, structural model and some correlation analysis techniques as predictors of organizational resilience and its effectiveness.

Thus, this present study attempt to be different from all the available empirical studies assessed, and precisely used the standard deviation and Simple regression analysis for data analysis and interpretations. It is for this reason that it is necessary to conduct a study in this area particularly within the Nigerian business environment in order to contribute to an improvement and enhancement of our understanding of this important external environmental variable and determine precisely the factors that significantly affect organizational resilience of selected manufacturing firms in South-East, Nigeria.

Objectives of the Study

The major objective of the study is to ascertain the effect technological environment factors on organizational resilience of selected manufacturing firms in South-East Nigeria. Specifically the study is to:

1. examine the effect of Information and Communication Technology on organizational resilience of selected manufacturing firms in South-East Nigeria.
2. assess the effect of efficient production techniques on organizational resilience of selected manufacturing firms in South-East Nigeria.

Research Questions

1. What is the effect of Information and Communication Technology on organizational resilience of selected manufacturing firms in South-East Nigeria?
2. What is the effect of efficient production techniques on organizational resilience of selected manufacturing firms in South-East Nigeria?

Hypotheses

H0₁: Information and Communication Technology have no significant effect on organizational resilience of selected manufacturing firms in South-East Nigeria.

H0₂: Efficient production techniques have no significant effect on organizational resilience of selected manufacturing firms in South-East Nigeria.

Review of Related Literature

Operational Conceptual Framework

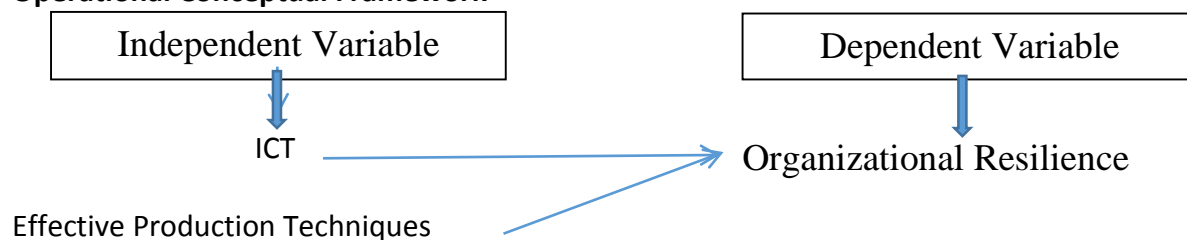


Fig 2.1 Operational Conceptual Framework

Source: Researcher's Desk 2023

Technological Environment Factors and Organizational Resilience

In order for an organization to respond well to its environment, it must be able to monitor and make sense of its environment and have an internal capacity to develop effective responses, exchange influence and power. Technological factors are part of the external environmental factors of business that has a great impact on the functioning of the firm. It offers opportunities

and threats along with limitations and pressures influencing the structure and functioning of the business (Alberti, Ferrario & Pizzurno, 2018).

External environment factors are elements that exist outside of a company's internal environment that can affect a company's operation and thus, constitutes everything outside a firm that might affect the ability of the enterprise to attain its goals (Xiao & Cao, 2017). These outside forces can however, help the business or present further challenges to its current processes. These external environmental factors according to Lui, Chen, Zhou, Zhang & Wang (2021) are important in organizations because they can cause direct and indirect effects on business operations, personnel and revenue. Furthermore, Lui et al (2021) posits that the external environment of an organization changes constantly in ways beyond the organization's control, but executives and managers of organizations can track these changes and minimize their consequence.

As technology continues to advance, organizations can benefit from these technological breakthroughs or face challenges in competing with such breakthroughs. Kreitner (1999) defines technology as all the tools and ideas available for extending the natural, physical and mental reach of humankind. Technology according to Ivancevich, Lorenzi, Skinner & Crosby (1994) cited in Roztock, Soja & Weistroffer (2019) is the totality of the means employed by people to provide comfort and human sustenance. It is also the transfer of organizations' inputs into outputs. Technology follows no course, seeks no ends and hold to no values. A central theme in technology is the practical application of new ideas, a theme that is clarified by the following distinction between science and technology: "Science is the quest for more or less abstract knowledge to help solve problems in our society".

Awujo (1997) in Obialor, et al, (2022) states that the implication for managerial performance in business organization among others is that the rapid technological change tend to offer great opportunities as well as serious threats to the corporate bodies. They have opportunities of course, in finding new technical solutions to meet new demands and in identifying existing technologies that they can exploit. Hence, the opportunity to increase volume of output, profit, economic growth and employment through effective and efficient production techniques. The threats are such that a new technology can destroy an existing one or make it obsolete. A new technology can equally make an existing organization to be out of business or become non resilient. The dizzying speed of new advances in technology makes it mandatory for strategies to be on constant alert to re-fashion their strategic approaches if their businesses are to survive, grow, make profit and remain resilient.

Information and Communication Technology, Production Techniques and Resilience

Although conceptualizations and measures of resilience vary across studies, common to this is the idea that resilience rests in the ability of the affected parties to communicate and reorganize across periods of rapid change or chaos. It involves the ability to respond to situations as well as to adapt in terms of creating new solutions (Weick, 1993). Adapting existing routines, including ICT use and efficient production techniques may in turn lead to modifications or even creation of new routines, is one way organizations may enact resilience during crises periods.

Technology-in-practice, - the idea that the utility of a technology lies in the way that it is used rather than the technology itself, can illuminate why an ICT that had no real role in an organization in the past might become the backbone of its technological structures enacted in

practice rather than embodied structures fixed in technologies (Orlikowski, 2000 cited in Chewning, Lai & Doerfel, 2013). According to this view, users do not appropriate technologies, but enact them. They “repeatedly enact a set of rules and resources which structures their ongoing interactions with that technology”. So, using ICTs in context can result in a reinforced sense of traditional communication patterns, or the creation of new organizational communication and technological structures. Therefore, as people respond to the altered conditions created by uncertain and disruptive situations, they constitute and reconstitute both their communication and technological structures by adapting ICTs to access the resources and contacts necessary for recovery towards being resilient (Sutton, Palen & Shklovski, 2008, in Chewning et al, 2013).

There is also evidence that using not only one, but multiple technologies together can help employees communicate effectively and resiliently. Katz & Rice (2002) in Chewning et al (2013) found that in turbulent and crises periods, people develop ad hoc solutions using a variety of media in order to maintain contact with their network. Dutton & Nainoa (2003) in Chewning et al (2013) opine that the interdependence of technology use in crises situations like we are now in Nigeria implies that using multiple ICTs and effective production techniques are more beneficial than using a single device.

However, by adapting the ICT use to fit the circumstances of use, employees and even the outsiders constitute emergent technological structures to enhance resiliency. Arguably, resilience for any organization rests on its capacity to carry on work operations regardless of circumstances. Orlikowski (2000) in Chewning et al (2013) insist that connection, coordination and creating context were the cornerstones of resilience for organizations. While connecting, coordinating and creating context were often accomplished with conventional uses of existing technology, such as email and phone, consistent with Orlikowski’s concept of technology-in-practice, organizational managers also adopts the ICT use to the context at hand, creating new patterns of ICT use that were incorporated into overall ICT usage in organizations.

Production methods are the way to manage how your products or suppliers’ products are produced. Each method is made up of a set of production steps. Production steps are the series of steps involved in producing a product. A technique of production means the factor which influences the supply of a commodity. Businesses providing goods can choose from these types of production process which include job production, batch production, lean production, mass production, just-in-time production, flexible manufacturing system and flow production. However, manufacturing production processes which include; make to stock (MTS) ,make to order (MTO), and make to assemble (MTA) are strategies that have advantages and disadvantages in labour costs, inventory control, overhead, customization, and the speed of production and filling orders (Chen, 2020).

Organizational Resilience

Holling (1973) in Shinn, (2021) opine that resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist. Resilience is the system’s ability to adjust, adapt and retain its basic functionality when errors, failures and environmental changes happen, and this also applies to any system, including organizations. Sajko, Boone & Buyl (2020) described resilience as the ability to anticipate, avoid and adjust to shocks occurred from

a crises or a disruption. Moreso, studies carried out by Zehrer & Leib (2019) sees resilience as a reactive attribute. However, organizational resilience is different from adaptability, agility, flexibility, improvisation, recovery, redundancy and robustness. Resilience involves the reaction of the organization under destruction, which emphasizes the ability to recover and develops in a state of uncertainty, discontinuity and emergency.

Organizational resilience is a multidimensional phenomenon related with managing uncertainties. Organizations handle these uncertainties in different ways; by increasing robustness to withstand adverse situations and maintaining focus without operational shutdown or degradation by understanding their operational environment, including threats and opportunities; by responding quickly to unexpected situations and developing a learning culture; by acting fast in order to identify problems, mobilize resources, and prioritize processes, reaching goals according to schedule; by expanding replaceable systems or elements that meet functional requirements in case of operational shutdown or redundancy; and by improving current capacity, which involves greater storage of resources, contributing to future learning among other processes. Thus, Organizational resilience indicates evolution to a new condition, where those involved are consciously prepared for unplanned situations (Ma, Xiao & Yin, 2018).

Theoretical Review

Resource Based-View

This view was published by Wernerfelt and supported by Barney, Hermel & Prahalad in the 1980s and 1990s. Resource-based view (RBV) is a model that sees resources as key to superior firm performance. Resource-based view is also an approach to achieving resilience. The supporters of this view argue that organizations should look inside the organization to find the sources of competitive advantage instead of looking at competitive environment (Barney, 1991). The resource based view as a foundation for the competitive advantage of a firm is rooted primarily in the application of a bunch of valuable tangible or intangible resources at the organization's disposal. The success of a firm in its product market is a result of its advantages in the factor market (or resources). The resource based view is the core competence of the organization (Barney, 1991).

According to RBV proponents, it is much more feasible to exploit external opportunities using existing resources in a new way rather than trying to acquire new skills for each different opportunity. In RBV model, resources are given the major role in helping organizations to achieve higher organizational performance (Barney, 1991). There are two types of resources: tangible and intangible resources. Tangible assets are physical things, while the Intangible assets are everything else that has no physical presence but can still be owned by the company. The two assumptions of RBV are that resources must also be heterogeneous and immobile.

Generally, resilience theory argues that it is not the nature of adversity that is most important, but how organizations deal with it. When organizations are faced with adversity, misfortune, or frustration, resilience helps such organization to bounce back. It helps organizations to survive, recover and even thrive in the face and wake of misfortune (Barney, 1991).

Dynamic Capabilities Theory

In organizational theory, dynamic capability is the capability of an organization to purposefully adapt an organization's resource base. The concept was defined by David Teece,

Gary Pisano & Amy Shuen, in their 1997 paper, *Dynamic Capabilities and strategic management*, as the “firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments” (Teece, Pisano & Shuen, 1997).

The main assumption of this framework is that an organization’s basic competencies should be used to create short-term competitive positions that can be developed into long-term competitive advantage. Nelson & Winter, in their 1982 book; “*An Evolutionary Theory of Economic Change*”, link the growth of the concept of dynamic capabilities to the resources-based view of the firm and the concept of “routines” in evolutionary theories of organization (Nelson, 1982).

The resource-based view of the firm emphasizes sustainable competitive advantage; the dynamic capabilities view, on the other hand, focuses more on the issue of competitive survival in response to rapidly changing contemporary business conditions. Dynamic capabilities theory concerns the development of strategies for senior managers of successful companies to adapt to radical discontinuous change, while maintaining minimum capability standards to ensure competitive survival.

Similarly, Galvin, Rice & Liao (2014) posits that Dynamic Capabilities (DC) theory emerged as both an extension to and a reaction against the inability of the resource-based view (RBV) to interpret the development and redevelopment of resources and capabilities to address rapidly changing environments. Dynamic capability may be considered as a source of competitive advantage (Teece, Pisano & Shuen, 1997).

Dynamic capability theory goes beyond the idea that sustainable competitive advantage is based on a firm’s acquisition of valuable, rare, inimitable and non-sustainable (VRIN) resources. Dynamic capabilities are responsible for enabling organizations to integrate, marshal and reconfigure their resources and capabilities to adapt to rapidly changing environments. These Dynamic capabilities are process that enables an organization to reconfigure its strategy and resources to achieve sustainable competitive advantages and superior performance in rapidly changing environments.

Methodology

This section covers the design procedure and methodology of the work. It presents the steps that were taken by the researcher to arrive at the results of the study. These steps include the survey research design which involves the use of such tools as personal interviews, questionnaires and observations. A sample size of 232 was determined from a population of 552 staff of the selected study firms in South-East, Nigeria using the Taro Yamme’s formula. The questionnaire was subjected to supervisor’s corrections and used a pilot study to determine the validity by selecting a few respondents from the study organizations. The study used the descriptive statistics of mean and standard deviation and Simple regression analysis for data analysis and interpretations.

Data Analysis & Presentation

Presentation of Data

Questionnaire Distribution Outcome

The researcher with the aid of proportionate random sampling method was able to collate the exact sample size from the population studied that were properly filled and returned. With the aid of simple random sampling technique, the researcher was able to gather sufficient

information from the population. The study used the two hundred and thirty (230) questionnaires properly filled and returned for study. This serves to give the data substance and credibility.

Decision Rule: Reject the null hypothesis if $p\text{-value} \leq 0.0005$ significance level

Table 4.1: Mean responses on technological factor

| S/N | Technological Factors | Mean | SD | Remarks |
|-------------------|---|-------------|--------------|------------------|
| 1 | The introduction of Computers, and communication resources greatly affected organizational resilience | 3.18 | .934 | Important |
| 2 | E-commerce, E-procurement and E-payment have greatly affected organizational resilience | 3.12 | .994 | Important |
| 3 | Of what importance is technology to organizational resilience | 3.18 | 1.263 | Important |
| 4 | Technology has tremendous impact on the structure, strategies and operations of various organizations | 2.93 | 1.368 | Less Important |
| 5 | Organizations requires information and communication technology to survive and remain resilient | 2.93 | 1.177 | Less Important |
| Grand Mean | | 3.07 | 1.147 | Important |

Table 4.1 shows the mean responses on technological factor. The result revealed that most items have mean response above the criterion mean value of 3.00. Also, the grand mean value of 3.07 falls within the range of moderate importance. Therefore, it implies that the respondents agreed that technological factor is a moderately important factor. The standard deviation (SD) shows that the respondents are homogeneous in their responses.

Table 4.2: Mean responses on Efficient Production Techniques

| S/N | Efficient Production Techniques | Mean | SD | Remarks |
|-----|---|------|-------|-----------|
| 6 | Businesses are affected by the type and use of inefficient production techniques that could its growth and development towards resiliency | 4.00 | 1.164 | Important |

| | | | | |
|-------------------|---|-------------|--------------|------------------|
| 7 | Organizations with successful products and services evaluate the type of production techniques to ensure continued resilience. | 3.40 | 1.267 | Important |
| 8 | Production Techniques that affect business decisions and processes significantly should be employed . | 3.66 | 1.321 | Important |
| 9 | Production Techniques and resilience are committed to transformative change and not necessarily transactional change to enhance resilience in organization. | 3.80 | 1.139 | Important |
| 10 | Organizations should employ efficient Production Techniques to enhance resilience. | 4.31 | .708 | Important |
| Grand Mean | | 3.83 | 1.120 | Important |

Table 4.2 shows the mean responses on Production Techniques. The result revealed that most items have mean response above the criterion mean value of 3.00. Also, the grand mean value of 3.83 falls within the range of great importance. Therefore, it implies that the respondents agreed that an efficient production technique is a great important factor. The standard deviation (SD) shows that the respondents are homogeneous in their responses.

Table 4.3: Mean responses on organizational resilience

| S/N | Organizational Resilience | Mean | SD | Remarks |
|-----|--|------|-------|----------------|
| 11 | Organizations can adapt to their environments in different ways | 2.52 | 1.189 | Less Important |
| 12 | To what extent do organizations directly influence their external environments? | 3.21 | 1.116 | Important |
| 13 | External environmental factors pose serious threats to the performance of corporate organizations | 2.31 | 1.331 | Less Important |
| 14 | External environmental factors cause organizations with appropriate characteristics to survive and others without the characteristics to fail. | 2.55 | 1.340 | Less Important |

15 Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes. 2.55 1.283 Less Important

Grand Mean 2.632 1.252 Less Important

Table 4.3 shows the mean responses on organizational resilience. The result revealed that most items have mean response below the criterion mean value of 3.00. Also, the grand mean value of 2.63 falls within the range of less importance. Therefore, it implies that the respondents agreed that organizational resilience is of great importance. It means that the organizations under study have significant moderate capacity to withstand or recover quickly from difficulties. Thus, the standard deviation (SD) shows that the respondents are homogeneous in their responses.

Research Question One

What is the effect of Information and Communication Technology on organizational resilience of selected manufacturing firms in South-East Nigeria?

Table 4.4: Simple regression result on Information and Communication Technology and organizational resilience of selected manufacturing firms

| Variables | R | R-square | Effect size (%) |
|---|-------|----------|-----------------|
| Information and Communication Technology | 0.111 | 0.012 | 1.20 |
| Organizational Resilience | | | |

The result in Table 4.3 shows a weak positive relationship between Information and Communication Technology and organizational resilience of selected manufacturing firms in South-East Nigeria. This implies that an improvement in Information and Communication Technology such as information and communication resources, logistics, marketing and e-commerce, would lead to increased organizational resilience. It also revealed that Information and Communication Technology contributed 1.2% to the variance observed in organizational resilience. This indicates that 1.2% of the variation in organizational resilience of selected manufacturing firms in South-East Nigeria can be explained by the Information and Communication Technology. The rest (88.8%) can be explained by others factors.

H0₁: Information and Communication Technology have no significant effect on organizational resilience of selected manufacturing firms in South-East Nigeria.

Table 4.5: Regression Result for Information and Communication Technology and organizational resilience

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|-------------------|----------------|----|-------------|-------|------|
| Regression | 18.881 | 1 | 18.881 | 2.843 | .000 |

| | | | |
|-----------------|----------|-----|-------|
| Residual | 1521.050 | 229 | 6.642 |
| Total | 1539.931 | 230 | |

From the regression analysis shown in Table 4.5, the statement of the null hypothesis is rejected; implying that Information and Communication Technology have significant effect on organizational resilience of selected manufacturing firms in South-East Nigeria. This is because the P-value (Sig. = .000) is less than 0.05 alpha level of significance.

Research Question Two

What is the effect of efficient production techniques on organizational resilience of selected manufacturing firms in South-East Nigeria?

Table 4.6: Simple regression result on Efficient Production Techniques and organizational resilience of selected manufacturing firms

| Variables | R | R-square | Effect size (%) |
|------------------------------|----------|-----------------|------------------------|
| Production Techniques | 0.992 | 0.984 | 98.4 |

Organizational Resilience

Table 4.6 presents the relationship between production techniques and organizational resilience of selected manufacturing firms in South-East Nigeria. The result shows a strong positive relationship between production techniques and organizational resilience of selected manufacturing firms. This implies that an increase in efficient production techniques would lead to increased organizational resilience. It also revealed that production techniques contributed 98.4% to the variance observed in organizational resilience. This indicates that 98.4% of the variation in organizational resilience selected manufacturing firms in South-East Nigeria can be explained by the production techniques. The rest (1.6%) can be explained by others factors.

H0₂: Efficient production techniques have no significant effect on organizational resilience of selected manufacturing firms in South-East Nigeria.

Table 4.7: Significant determinant of efficient production techniques on organizational resilience

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|-------------------|-----------------------|-----------|--------------------|----------|-------------|
| Regression | 1515.519 | 6 | 252.587 | 2317.753 | .000 |
| Residual | 24.411 | 224 | .109 | | |
| Total | 1539.931 | 230 | | | |

From the regression analysis shown in Table 4.7, the statement of hypothesis 2 is rejected; implying that efficient production techniques have positive significant effect on organizational resilience of selected manufacturing firms in South-East Nigeria. This is because the p value (Sig. = .000) is less than 0.05 alpha level of significance.

Discussion of Result

From the results of the study, it showed that there is a significant positive effect of technological factors on organizational resilience of selected manufacturing firms in South-East Nigeria. This implies that an improvement in technological factor such as, information and communication resources, production techniques, logistics, marketing and e-commerce would lead to increased organizational resilience. It also revealed that technological factor contributed 1.2% to the variance observed in organizational resilience. This indicates that 1.2% of the variation in organizational resilience of selected manufacturing firms in the study area can be explained by the technological factor. The rest (88.8%) can be explained by others factors. This by implication goes to show that technological factor has moderate but positive effect on organizational resilience. From the regression analysis result, the null hypothesis was rejected and the alternative accepted and thus, conclude that technological factor significantly affect organizational resilience of selected manufacturing firms in South-East Nigeria. This is because the P-value is less than the alpha 0.005 level of significance.

The result of the second variable shows a strong positive relationship between production techniques and organizational resilience of selected manufacturing firms which implies that an increase in efficient production techniques would lead to increased organizational resilience. It also revealed that production techniques contributed 98.4% to the variance observed in organizational resilience. This indicates that 98.4% of the variation in organizational resilience selected manufacturing firms in South-East Nigeria can be explained by the production techniques. The rest (1.6%) can be explained by others factors. Also, the regression analysis of the second statement of hypothesis is rejected; implying that efficient production techniques have positive significant effect on organizational resilience of selected manufacturing firms in South-East Nigeria. This is because the p value (Sig. = .000) is less than 0.05 alpha level of significance.

Recommendations

1. Firms should provide an enabling information and communication technology environment to enhance resilience in organizations.
2. There should be regular training, workshops and conferences for organization members on the effect of technological factors on organizational resilience to enhance organizational resilience.
3. Managers of businesses should consistently assess the technological factors that effect organizational resilience of manufacturing firms. Proper assessment of these factors will help to cushion negative effect of these external environmental factors on manufacturing firms.

Conclusion

Technological factors are important external environmental factors that affect organizational resilience of selected manufacturing firms in South East, Nigeria. A technological factor offers opportunities and threats along with limitations and pressures influencing the structure and functioning of the business. Production methods are the way to manage how your products or suppliers' products are produced. Each method is made up of a set of production steps. Production steps are the series of steps involved in producing a product. A technique of production means the factor which influences the supply of a commodity. The study reviewed literature in the areas of information and communication technology and resilience supported

by two theories: Resource Based View and Dynamic Capabilities theories. The study applied both descriptive statistics and Simple regression analysis to examine the effect of technological factors on organizational resilience of selected manufacturing firms in South East, Nigeria. The study revealed that P-value .000 is less than 0.05 alpha significance level and technological factor contributed 1.2% to the variance observed in organizational resilience which indicates that 1.2% of the variation in organizational resilience of selected manufacturing firms in the study area can be explained by the technological factor. Hence, the rest of the 88.8% can be explained by others factors.

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