

Environmental Turbulence and Organizational Performance of Manufacturing Firms in Rivers State, Nigeria

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Abstract: *The scholar's research was designed to examine the relationship between Environmental Turbulence on organizational Performance in Nigeria. The cross-sectional survey design was utilized and a total population of 150 managers and supervisors of manufacturing firms in Rivers state. A sample size of 144 managers and supervisors were drawn as the sample size of the study. Data were collected using copies of well-structured questionnaire and the simple random sampling technique was utilized in the study. The data was analyzed using the Spearman's Rank Order Correlation. The result of the analysis revealed that the dimensions of environmental turbulence (market turbulence and technology turbulence) have a significant positive relationship with organizational efficiency and profitability. This study concluded that the technological and market turbulence in the business domain do influence the performance level of manufacturing firms. The managers in manufacturing firms should watch out for technological trend in order to make informed decisions that will enhance the performance of the organization*

Keywords: *Environmental Turbulence, Organizational Performance, Market Turbulence Technology Turbulence, Organizational Efficiency, Profitability..*

Introduction

Performance is very important to an organization as it enhances the value of shareholders and generate earnings from the capital invested. Realistically every company seek to increase their performance in every possible way. Elena-Iuliana & Maria (2016) stated that "performance is a subjective perception of reality, which explains the multitude of critical reflections on the concept and its measuring instruments". Business performance is determined by various factors which according to Mamat and Ismail (2011), some of these factors include "competitive advantage, cost reduction capabilities, and enhanced profits". Organisational performance is therefore confused with ideas like productivity, efficiency, effectiveness, economy, earning capacity, profitability, competitiveness etc. (Elena-Iuliana & Maria, 2016). A performing firm gets through turbulence times and thrive. Abbas and Hassan (2017) agreed that organizations are usually more innovative and show better performance where the competition is intense. Business environmental turbulence (BET) may be viewed as a reoccurring and substantial changes in the competitive market surroundings such as consumers' composition or preferences (Hartono and Sheng, 2016). When a company or firm adapt and adopt the ever changing environment, the company has a greater

chances of been ahead of its competitors which is essential for the company's routine (Buganza, Dell'Era & Verganti, 2014).

Impendence and chances coming from a turbulence environment have been established to make an influence on the business performance (Kim, 2018). For organizations to survive, continuing growing and be competitive, they must cope and accept turbulent times while maintain consistency in the services they provide (Dartey-Baah, 2015; Linnenluecke, 2015). "Environmental turbulence includes the unpredictable, frequent and abrupt changes taking place in a given business environment" (Mwiru, 2017). Wren and Bedeian (2009) indicate that a businesses that is successful refer to their strength to adjust to the relevant environment. The intent of an organisation is to thrive but turbulence times are inevitable and ability to perform during those times are what makes a business successful. Several scholars have examined several of the things that will help achieve organization performance in a firm but there is depth of literature on how environmental turbulence relates with organization performance.

Statement of problem

During the Covid-19 outbreak, it caused alterations and uncertainty in a dynamic business environment, which is indicated as environmental turbulence. Indirectly, environmental upheaval had compelled businesses to consider novel opportunities, especially in developing new products and services which enable them to explore (as well as expand) their consumer networks (Farid & Widjaja, 2020). There exists a knowledge gap on the impact of environmental turbulence and organisational performance of manufacturing firms and it is in the light of the foregoing that this study examined the relationship between environmental turbulence and organizational performance manufacturing firms in Port Harcourt.

Objectives of the Study

The specific objectives are to examine the relationship between;

- i. Market turbulence and operational efficiency of Manufacturing Firms in Rivers state
- ii. Market turbulence and profitability of Manufacturing Firms in Rivers state
- iii. Technology turbulence and operational efficiency of Manufacturing Firms in Rivers state
- iv. Technology turbulence and profitability of Manufacturing Firms in Rivers state

Research Questions

The following research questions served as a guide in this study. What is the relationship between;

- i. Market turbulence and operational efficiency of Manufacturing Firms in Rivers state?
- ii. Market turbulence and profitability of Manufacturing Firms in Rivers state?
- iii. Technology turbulence and operational efficiency of Manufacturing Firms in Rivers state?
- iv. Technology turbulence and profitability of Manufacturing Firms in Rivers state?

Research hypotheses

The null hypotheses were formulated as a tentative answer to the research questions;

HO₁: There is no relationship between market turbulence and operational efficiency of Manufacturing Firms in Rivers state

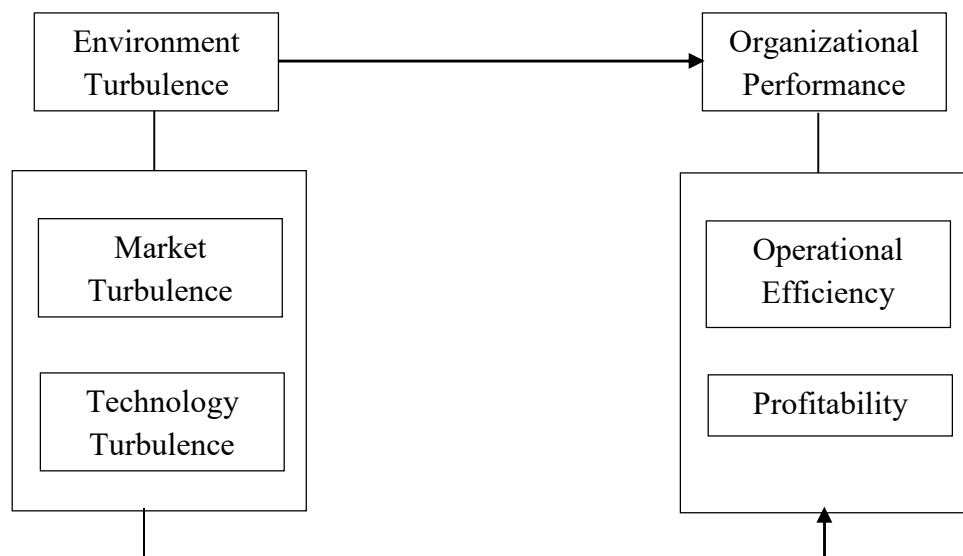
HO₂: There is no relationship between market turbulence and profitability of Manufacturing Firms in Rivers state

HO₃: There is no relationship between technology turbulence and operational efficiency of Manufacturing Firms in Rivers state

HO₄: There is no relationship between technology turbulence and profitability of Manufacturing Firms in Rivers state.

Review of Related Literature

Conceptual Framework



Source: Adapted from Akhigbe and Onuoha (2020)

Environment Turbulence

When used in a business setting, the term "environmental turbulence" describes the unpredictable, uncertain, volatile, and wide-ranging events that take place in the setting in which a particular industry operates (Lau and Wang, 2009; Ko, and Tan, 2012; Omar, 2016). So as to carry on a

competitive edge and achieve the desired results, it is prudent to assess the external environment and implement suitable environmental reactions.

Discrete, prominent, and unpredictable environmental occurrences, such as substantial technological advancements and abrupt transformations, are frequently known as "environmental turbulence" (Dost et al., 2019). Miller and Friesen (1983) and Dess and Davis (1984) defined environmental turbulence as the level of uncertainty, particularly in relation to the rate and predictability of changes in goods, technology, and product demand within a particular market. Additionally, according to Podmetina and Volchek (2016), Market volatility (rapidly changing market demands) and technology turbulence (rapid and radical technological advancements) are incorporated into the meaning of environmental turbulence. Environmental turbulence in the context of business refers to exogenous, unforeseen, and extremely diverse happenings environmental factors that affect the businesses operating in a certain industry (Danneels & Sethi, 2011; Ko & Tan, 2012; Tsai & Yang, 2014; Turulja & Bajgoric, 2018).

Technical, competitive, and market turbulence are three examples of environmental turbulence that have been studied previously in the context of market orientation (Zimuto, et al., 2018). Technological Turbulence (TT) is the rapid and unpredictable pace at which technology is changing an industry (Ottesen and Grnhaug, 2004; Slater and Narver, 1994), while Competitive Intensity (CI) is the degree of competition that a firm must contend with in an industry (Trkman & McCormack, 2009; Chan, et al., 2012) and Market Turbulence (MT) is the size and instability of alterations in the demographics, purchasing patterns (Paladino 2007; Hanvanich, et al., 2006). This study uses the term "environmental turbulence" to refer to external factors that are known to produce unpredictability or variation in an industry's commercial activities (Warner, Fairbank, and Steensma, 2006). It was evaluated by asking respondents about their perceptions of market predictability, innovation rate of change, consumer preferences, and R&D spending (Warner, Fairbank, and Steensma, 2006).

Environmental turbulence is perceived as both a problem and an opportunity by more entrepreneurial organizations, however some businesses view it as a threat to their performance or even existence (Kim, and Atuahene-Gima, 2010; Beckman, Haunschild, and Phillips, 2004). (Lee, 2004). Environmental turbulence presents opportunities for a novel item development, technology mastery, customer engagement, and market expansion, all of which support growth and competitive advantage. On the one hand, it disrupts the status quo, stealing customers and forcing businesses to step outside of their comfort zones and compete with new capabilities and offerings (Meredith, and Francis, 2000; Martin, et al., 2009). The urge to find a way to handle ambiguity and make success and growth out of instability motivates organizations to think and behave entrepreneurially.

Based on the aforementioned discussion, environmental turbulence drives people and businesses to become highly skilled at identifying market risks and opportunities, to develop organizational acceleration and innovation process to seize the opportunity while addressing the uncertainties and threats that turbulence presents, and to channel and harness intrinsic efforts to achieve the goal of converting opportunity into profit.

Market Turbulence

The term "market turbulence" (MT) describes the rate at which a market segment's consumer base and tastes are changing. A quick shift in customer demand and tastes might be seen as market turbulence (Taheri et al., 2019). This degree of change frequently occurs irregularly, which have an effect on alterations in the corporate environment (Chen et al., 2016; Zhou et al., 2019). Systemic environmental changes might also cause market volatility. The environment is undergoing turmoil (Alqatani et al., 2022; Despoudi et al., 2021; Alqahtani & Uslay, 2020).

How quickly the market is changing is known as market turbulence, and it is used to combine client preferences with external market conditions in order to acquire a competitive advantage. The shifts in customer behavior are brought on by ambiguous demand patterns that describe the unpredictability of client demand along with environmental variability. These erratic external conditions are known as environmental turbulence, and businesses find it challenging to deal with them. Furthermore, it is implied by this idea that managers' strategic decisions are influenced by market perceptions of uncertainty. In light of this, managerial decision-making in businesses during periods of market turmoil should place a greater emphasis on operational and relational outcomes of businesses. The company's external environment might include the information flow that it keeps up through paying attention to and building trust with its customers. These perceptions of a company's external surroundings shape its culture and have a bearing on consumer behavior. In supply networks with collaborative supply chain management structures, this might typically occur (Germain, et al., 2008).

Organizational memory is dependent on the operational environment of the business, according to a fundamental tenet of organizational behavior theory. It is believed that managing uncertainty captures the core of business management and demonstrates how well the administration for the company operates. Accordingly, there is a chance that supply chain structure may have a bearing on how a firm collaborates on account of market instability. The outcomes of operations demonstrate dynamic behaviors needed to be competitive during a volatile market. The pressure on businesses to improve their operational features will increase as the rate of external environmental change quickens. As a result, in a volatile market and complicated environment, a company's supply chain should be in line with its strategy for gaining a competitive edge. Due to market volatility and environmental concerns, supply chains have a high level of teamwork that helps them deal with all kinds of challenging situations (Burke, et al., 2012).

Technology Turbulence

The speed of technological change is a general environmental element that influences technological turbulence. The rate of change in product and process technologies utilized to convert inputs into outputs is what causes technological turbulence (Kohli and Jaworski, 1990; Jaworski and Kohli, 1993). Moorman and Miner (1997) are a little more specialized, concentrating primarily on change related to new product technology. Some could claim that technology upheaval is the most crucial factor. For instance, Mason (2007) claims that (environmental) turbulence "is created by changes in, and interaction between, the many environmental elements, notably because of improvements in technology and the confluence of computer, telecommunications, and media industries."

The velocity of change and unpredictability of the technology environment are known as "technological turbulence" (Jaworski & Kohli, 1993). Businesses must react to technological developments within their business in a volatile technological environment, which necessitates risk-taking decisions, a hazy market, and risky investments (Calantone et al., 2003).

According to Perez-Nordtvedt, Mukherjee, and Kedia (2015), technological turbulence refers to the level to which technology changes through time and influences and affects industry conditions. Technological turbulence unleashes a variety of uncontrollable external factors that have a bearing on how the business conducts its operations (Slater & Narver, 1994) and amplifies the complexities associated with markets (Arora, Fosfuri, & Gambardella, 2001). Studies in the past have shown that technological turbulence causes rapid change in how technology is accepted and used (Lee, Chen, Kim, & Johnson, 2008). To maintain effective alignment with market and customer expectations, this necessitates flexibility in the tactics taken as well as a quicker response (Pérez-Nordtvedt et al., 2015).

Organizational Performance

Organisational performance refers to a business's capacity to efficiently use its resources, generate outputs that are consistent with its goals and objectives, and make those outputs pertinent to its customers and other stakeholders (Ezigbo, 2011). Organizational performance is among the most important factors in management research and arguably the most important indicator of organizational performance. Despite the fact that the idea of corporate performance is frequently used in academic writing, there are certainly several definitions that can be used. Due to this, no universally recognized definition of this notion exists (Gavrea, Ilies & Stegorean, 2011). The idea of corporate performance is often built on the assumption that a company is a voluntary association of productive assets, such as human, physical, and capital resources, for the aim of attaining a common goal (Barney, 2001).

Organizational performance is a critical criterion for assessing the manner in which a business runs its operations and for assessing the likelihood and success of the company's existence (Chan, et al. 2017). The study, according to Venkatraman and Ramanujam (2006), considers both monetary and operational performance, which are the key elements in assessing a company's effectiveness. Operational performance is decided by elements like market share, the introduction of new products, product excellence, and value added in manufacturing, among other things, whereas financial performance is gauged by metrics like sales growth, profitability, and earnings per share, among others (Silva & Ferreira, 2017).

Didier (2002) defined performance as the attainment of the goals established during an enterprise's orientation process. He continued by saying that performance is assessed by comparing the actual result to the desired outcome rather than by looking solely at the outcome. However, his perspective contrasts with that of other authors since he sees performance as a contrast between the objective and the outcomes. His definition of "objective," meanwhile, is ambiguous because objectives and outcomes constantly change depending on the type of action taken. Lebas (1995), in contrast, describes performance as being future-oriented, which aims to highlight the exceptionality of each company and is based on a fundamental model connecting the organization's constituent elements and products. He defines a "successful" business as one that will achieve the goals of the management coalition rather than one that must already have done so. According to his interpretation, efficiency is affected by capability and the future.

An organization's performance can be evaluated in reference to internal or external criteria, and it has many different facets. The theories that emphasize organizational performance and effectiveness are the most widely used for evaluating organizations. The former concept is used to evaluate private businesses, whereas the latter is used to evaluate governmental institutions. The majority of organizational literature, however, relates to the evaluation of both private and public organizations as organizational performance (Clegg & Bailey, 2008). The academic literature also discusses some of the terminology, breadth of the study, and philosophical foundations of organizational performance assessment. Financial performance, business performance, and organizational performance are the three categories into which organizational performance has been split (Montes et al., 2003; Chu-Hua, et al., 2001).

Organizational performance is the level to which a company meets its financial goals and market demands (Li, Rao, Ragu-Nathan & Ragu-Nathan, 2005). Organizational performance is the efficiency with which a business achieves both its financial and market-focused goals. According to Maduenyi, Oke, Fadeyi, and Ajagbe (2015), organizational performance is a components of monetary and nonfinancial measurements that show the degree of objective and outcome achievement. Important considerations include an organization's effectiveness and efficiency, along with the quantity and caliber of its work (Olumuyiwa, Adelaja & Chukwuemeka, 2012). Relevant measures that can be used to evaluate an organization's effectiveness include higher revenue, improved costing accuracy, and improved departmental, supplier, and customer coordination.

There are several methods for assessing an organization's performance depending on the assessment's objectives. Kaplan and Norton (2004) categorize organizational performance into financial and non-financial categories using the Balanced Scorecard. Additionally, Demirbag, Koh, Tatoglu, and Zaim (2006) point out that it is possible to evaluate an organization's performance using both financial and non-financial factors. Some examples of the measurements for financial goals include profit, return on investment, sales growth, corporate success, and organizational effectiveness. On the other hand, non-financial criteria measured include market share, resource planning, quality improvement, and innovation (Demirbag et al., 2006). Performance is a synthesis of the amount and standard of work accomplished while taking resource use into consideration. It can be evaluated on an individual, group, or organizational level.

Operational Efficiency

Operational efficiency, according to Picincu (2018), refers to the methods a company, firm, or organization uses to improve its operations so that it can consistently offer customers high-quality goods or services while using the fewest resources possible. A business meets its goals to offer better products or services at lower prices when it is operationally efficient (Picincu, 2018). According to McClay (2019), operational efficiency entails using all resources, including workers and raw materials, to their fullest potential in order to provide high-quality products and services. The definition of operational efficiency employed in this study is adapted from Picincu (2018), who claims that it encompasses measures made to improve an institution's operations and consistently deliver high-quality services while utilizing the least amount of resources possible.

Operational efficiency, according to Appointment Plus (2013), is the evaluation of the output produced from the input, where the output is assessed as income, profit margin, new clients, market differentiation, increased production, innovation, quality, and speed, among other attributes of goods and services. The input is evaluated in terms of money, labor, time, and other resources.

According to Gill et al. (2012), managers need to consider a range of operational efficiency criteria if they want to help a company achieve long-term organizational performance.

Operational effectiveness is necessary for the continued survival of any company or institution, according to Ndolo (2015). Ndolo (2015) goes on to say that an organization's financial and operational performance has an effect on both the wealth of its stakeholders and the market price per share. So, according to Ndolo (2015), on account of increased competition, improved business practices, and technological innovation, the current business environment has grown more interested in operational efficiency. Due to the unpredictable nature of the business environment, institutions must diversify their strategies and increase their liquid holdings so as to lessen the risk of bankruptcy (Goel, 2012). Goel (2012) continues by asserting that in order to preserve a competitive advantage, organizations and enterprises must work toward producing favorable operational results. This is because there is severe competition in the business operation environment. In addition to being cost-effective, increasing operational efficiency is a critical part of every organization, according to Gill et al. (2014), because it directly affects their profit margins.

Conventional wisdom holds that strengthening operating efficiency is essential for improving both current and future firm performance. The extent of modifications to the money conversion phase, the operating expenses to sales revenue ratio, the operating cash flow, the total asset turnover, the total debt to total assets ratio, the firm size, and the operating risk have an effect on firm's performance in the future is also referred to as operational efficiency. The concept of "efficiency" is viewed in both industrial organization and strategic management literature as the culmination of company-specific elements including management ability, creativity, cost containment, and market share as predictors of current business performance and its stability (Abuzayed & Molyneux, 2009).

Profitability

A company's ability to effectively and efficiently utilise its resources to produce income determines how profitable it is. Profitability is also seen as a crucial metric for gauging a company's performance because it increases investment returns. Poor profitability, in contrast, denotes subpar performance, which will erode capital, and if this situation persists, the company will eventually fail. The capacity to make a profit is what's known as a company's profitability. Profitability is defined by Liuspita and Purwanto (2019) as the company's attainment of economic success, that is produced following completion of all expenses that are closely associated with income. Profitability is impacted by a variety of both internal and external forces, such as the growth of the product's market, in addition to the product's success.

Profitability was defined by Saptarshi and Tasnima (2018) as the capacity of an organization to generate profits from all of its business endeavors. Profitability shows exactly how well a company's management is utilizing its resources to take advantage of market or marketing opportunities. According to Paul and Agbo (2014), a company's profitability is determined by its capacity to generate returns on assets that have an increase in net current value. Similar to this, Pouraghaljan and Milad (2012) define profitability as the capacity to produce income greater than the cost of producing such income. In essence, the phrase is relative and quantifiable in terms of profit and how it relates to other factors that have an immediate effect on profit. Various metrics, such as Return on Asset (ROA), Return on Equity (ROE), Bank Efficacy, and Profit to Total

Expenses (PER), depict profitability measurements, which imply gauging managerial efficiency. Higher profitability ratios signal improved bank performance (Mangla & Rehman, 2010; Ajlouni & Omari, 2013). The Return on Asset (ROA) metric was applied to this research to determine profitability.

Empirical Review

Faisal, Maarif, Fahmi & Yulianto (2020) carried out a research on Business Environment Turbulence and Industrial Connections Instruments as Determinants of Firm Performance Mediated by an Industrial Connections Climate. The research was conducted in Indonesia. The research designs are inferential and quantitative. The questionnaires were distributed by an online survey conducted from March to June 2022. Collected data were analyzed with a Structural Equation Model using LISREL version 8.70. A two-step analysis approach was used; it included. This research shows that an industrial connections climate has a positive effect on business turbulence and industrial connections instruments. However, industrial connections instruments have a stronger effect on the climate of industrial linkages. This is because the tools used to implement industrial links in organisations are those that support such connections. This study also supports the notion that an environment of industry ties is associated with improved organisational success. The result of the indirect influence (IE) finding indicates that the organisational performance of industrial connections instruments can be moderated by the organisational connections climate.

Yatim (2020) Carried Out A Research On The Factors Influencing Organizational Performance In Metro Specialist Hospital, Sungai Petani, Kedah Darul The research was conducted in Malaysia. An exploratory design was used for this research. A questionnaire was used to obtain data. The study was conducted and a total of 100 questionnaires were distributed to 100 staffs at MSH by hand and only, 82 questionnaires were returned for analysis. The data had been analyzer by using Statistic Package for Social Sciences (SPSS). Analysis of data was obtained using multiple regressions. Research findings revealed there was significant relationship between working environment, training and skill, and management involvement with organizational performance. The multiple regression results had shown that the independent variable which is training and skill, and management involvement are a significant predictor for organizational performance. Therefore, it was recommend that further research should be considered. The finding concluded that staff motivation, working environment, training and skills, and management are influencing the organizational performance. The factor explained the variance in organizational performance by 53.5% (R Square) which indicates that the model is moderated satisfactory

Abas & Hassan (2017) carried out a study on Moderating Impact of Environmental Turbulence on Relationship between Business Innovation and Business Performance. The population of the study was carried out in Pakistan. A quantitative design was used for this study. The research was carried out in Pakistan. A questionnaire was used to obtained data. Responses from 382 respondents were collected through a questionnaire. The analysis was done using Structural Equation Modeling (SEM) through Amos software. It is observed that all the moderating effects on hypothesized relations are statistically significant. In other words, technological upheaval and competitive intensity weaken (strengthen) the relation of CRMe' with business innovation and business performance. While market volatility reinforces (weakens) the said connection. The outcomes of this study will assist participants in comprehending market dynamics and their effects on creativity and company efficiency. in a better way to prepare themselves for the varied challenges of CPEC.

Results showed that the relationship between these variables tend to be stronger in market characterized by high technological turbulence. Comparable results also showed that organizations tend to be more innovative and show better performance where the competition is intense.

Godwin and Victor (2021) studied Environmental Turbulence and Strategic Flexibility of Small and Medium Enterprises in Port Harcourt with a target population of (50) registered small and medium enterprises as listed in SMEDAN and National Bureau of Statistics Collaborative Survey. The reliability of the instrument was achieved by the use of the Cronbach Alpha coefficient with all the items scoring above 0.70. The hypotheses were tested using the Spearman's Rank Order Correlation coefficient. The tests were carried out at a 0.05 significance level. The study concludes that in the unpredictable and competitive world, organizations must have dynamic capabilities one of which is strategic flexibility to compete otherwise, they will move towards annihilation. Strategic flexibility gives the company the chance for a prompt response and compliance with the environment hence, allowing the organization to improve its efficiency.

Demeke & Tao (2020) did an article which reviews the literature on the topic "concept & perspectives of organizational performance measurements" and the paper aims to review the organizational performance definition and measurement perspectives. The author used a secondary source of data for collection. Journals related to organizational performance such as the "Academy of Management Journal, the Leadership & Organization Development Journal, the Journal of Commerce, Administrative Science Quarterly, the Journal of International Business Studies, the Strategic management Journal, and the Journal of Business Venturing sourced as secondary data". The different ideas from the existing definitions in the scholarly literature creates room for doubt rather than clarity in defining performance. As much as the researcher looks for, the author of this article should not find a uniform, unambiguous definition of performance since performance definitions are either too general or too specific.

3.0 Methodology

This study used a cross-sectional survey and the target population was 150 managers and supervisors of manufacturing firms in Rivers state. The sample size was determined using the Krejcie and Morgan (1970) formula for sample size determination. As a result, 144 questionnaires were distributed to managers and supervisors at the thirty firms chosen. In this study, a simple random sampling technique was used. This method was chosen because it provides a true representation of the entire population and reduces the possibility of researcher bias in the sample case selection. Statistical Package for Social Sciences (SPSS) version 21 aided the analyses of the bivariate hypotheses using the Spearman Rank Order Correlation Coefficient statistical tool.

4.0 Result

A total of 144 questionnaires were distributed to respondent, however, only 124 (95%) 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 Market Turbulence and Operational efficiency

Correlations				
			Market Turbulence	Operational Efficiency
Spearman's rho	Market Turbulence	Correlation Coefficient	1.000	.801**
		Sig. (2-tailed)	.	.000
		N	124	124
	Operational Efficiency	Correlation Coefficient	.801**	1.000
		Sig. (2-tailed)	.000	.
		N	124	124
**, Correlation is significant at the 0.01 level (2-tailed).				

H01: There is no significant relationship between Market Turbulence and Operational Efficiency of Manufacturing Firms in Rivers State.

The result of the analysis in Table 1 shows a significant level $p < 0.05$ ($0.000 < 0.05$), $\rho = 0.801$ between market turbulence and operational efficiency. This means that there is a significant relationship between Market Turbulence and Operational Efficiency. The null hypothesis is rejected, and we restate that *there is a significant relationship between market turbulence and operational efficiency*.

Table 2 Market Turbulence and Profitability

Correlations				
			Market Turbulence	Profitability
Spearman's rho	Market Turbulence	Correlation Coefficient	1.000	.712**
		Sig. (2-tailed)	.	.000
		N	124	124
	Profitability	Correlation Coefficient	.712**	1.000
		Sig. (2-tailed)	.000	.
		N	124	124
**, Correlation is significant at the 0.01 level (2-tailed).				

H02: There is no significant relationship between Market Turbulence and Profitability of Manufacturing Firms in Rivers State.

The result of the analysis in Table 2 shows a significant level $p < 0.05$ ($0.000 < 0.05$), $\rho = 0.712$ between market turbulence and profitability. This means that there is a significant relationship between Market Turbulence and Profitability. The null hypothesis is rejected, and we restate that *there is a significant relationship between Market turbulence and Profitability*.

Table 3 Technology Turbulence and Operational Efficiency

Correlations				
			Technology Turbulence	Operational Efficiency
Spearman's rho	Technology Turbulence	Correlation Coefficient	1.000	.731**
		Sig. (2-tailed)	.	.000
		N	124	124
	Operational Efficiency	Correlation Coefficient	.731**	1.000
		Sig. (2-tailed)	.000	.
		N	124	124
**. Correlation is significant at the 0.01 level (2-tailed).				

H03: There is no significant relationship between Technology Turbulence and Operational Efficiency of Manufacturing Firms in Rivers State.

The result of the analysis in Table 1 shows a significant level $p < 0.05$ ($0.000 < 0.05$), $\rho = 0.731$ between technology turbulence and operational efficiency. This means that there is a significant relationship between technology turbulence and operational efficiency. The null hypothesis is rejected, and we restate that *there is a significant relationship between technology turbulence and operational efficiency*.

Table 4 Technological Turbulence and Profitability

Correlations				
			Technology Turbulence	Profitability
Spearman's rho	Technology Turbulence	Correlation Coefficient	1.000	.719**
		Sig. (2-tailed)	.	.000
		N	124	124
	Profitability	Correlation Coefficient	.719**	1.000
		Sig. (2-tailed)	.000	.
		N	124	124
**. Correlation is significant at the 0.01 level (2-tailed).				

H04: There is no significant relationship between Technology Turbulence and Profitability of Manufacturing Firms in Rivers State.

The result of the analysis in Table 4 shows a significant level $p < 0.05$ ($0.000 < 0.05$), $\rho = 0.719$ between technology turbulence and Profitability. This means that there is a significant relationship between technology turbulence and profitability. The null hypothesis is rejected, and we restate that *there is a significant relationship between technology turbulence and Profitability*.

5.0 Discussion of Findings

Market Turbulence and Operational Efficiency

The bivariate hypotheses between market turbulence and operational efficiency reveal a remarkable relationship between the two variables. The spearman correlation coefficient reveals that the p-value of 0.000 was less than 0.05 ($p = 0.000 < 0.05$) which implies that Market Turbulence

has a significant relationship with Operational Efficiency. Thus, the null hypothesis was rejected and the alternate hypothesis was accepted. The result of the correlation coefficient (r) is 0.801. This thus reveals market turbulence accounts for up to 80.1% level of operational efficiency. The first objective of the study which sought to examine if Market turbulence relates with productivity was achieved. This finding agrees with Godwin & Victor (2021) who stated that efficiency in strategy gives the company the chance for a prompt response and compliance with the any turbulence from the environment.

Market Turbulence and Profitability

The bivariate hypotheses between Market Turbulence and Profitability reveal a remarkable relationship between the two variables. The spearman correlation coefficient reveals that the p -value of 0.000 was less than 0.05 ($p=0.000<0.05$) which implies that Market Turbulence has a significant relationship with Profitability. Thus, the null hypothesis was rejected and the alternate hypothesis was accepted. The result of the correlation coefficient (r) is 0.712. This thus reveals market turbulence accounts for up to 71.2% level of profitability. The second objective of the study which sought to examine if Market turbulence relates with Profitability was achieved. This finding agrees with Abas & Hassan (2017) that organizations tend to be more profitable and show better performance where the market competition (turbulence) is intense.

Technology Turbulence and Organizational Efficiency

The bivariate hypotheses between Technological Turbulence and Organizational Efficiency reveal a remarkable relationship between the two variables. The spearman correlation coefficient reveals that the p -value of 0.000 was less than 0.05 ($p=0.000<0.05$) which implies that Technology Turbulence has a significant relationship with Organizational Efficiency. Thus, the null hypothesis was rejected and the alternate hypothesis was accepted. The result of the correlation coefficient (r) is 0.731. This thus reveals technology turbulence accounts for up to 73.1% level of organizational efficiency. The third objective of the study which sought to examine if Technology turbulence relates with organizational efficiency was achieved. This finding agrees with Yatim (2020) who stated that efficiency in organization motivation, working environment and management are influencing the level of turbulence in the performance of the organizational.

Technology Turbulence and Profitability

The bivariate hypotheses between Technology Turbulence and Profitability reveal a remarkable relationship between the two variables. The spearman correlation coefficient reveals that the p -value of 0.000 was less than 0.05 ($p=0.000<0.05$) which implies that Technology Turbulence has a significant relationship with Profitability. Thus, the null hypothesis was rejected and the alternate hypothesis was accepted. The result of the correlation coefficient (r) is 0.719. This thus reveals market turbulence accounts for up to 71.9% level of profitability. The fourth objective of the study which sought to examine if Market Turbulence relates with Profitability was achieved. These findings agree with Pérez-Nordtvedt et al., (2015) who advised that effective technology with market and customer expectations increases the profitability

Conclusion and Recommendation

The business domain is such that will always remain dynamic and unpredictable. Hence, organization need to constantly adjust its operations in an attempt to remain relevant in the business domain. The technological turbulence of the business environment remains a key factor that organization must take note of if they wish to enhance their performance. This implies that the inability of organization to follow the technological trend in the market place may have a devastating effect on the operations of the organization. The unpredictability that characterized the business world have forced organizations to build and integrate dynamic capabilities in their system so as to withstand the turbulence in the environment. In conclusion, the technological and market turbulence in the business domain do influence the performance level of manufacturing firms. It is therefore recommended that;

- i. The managers in manufacturing firms should watch out for technological trend in order to make informed decisions that will enhance the performance of the organization.
- ii. The manufacturing firms should ensure that they device strategy to cope with market turbulence as such will help enhance their performance.
- iii. The managers of organization should adopt recent technology in their operations as such will help enhance their operational efficiency.
- iv. The manufacturing firms should develop resilience capability in order to withstand environmental turbulence and then boost their performance.

Reference

- Abbas, L Mirza , M.K Waseem; U. I Hassan, N. M & Masood H. (2017). Moderating impact of environmental turbulence on business innovation and business performance, *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, ISSN 2309-8619, Johar Education Society, Pakistan (JESPK), Lahore, 11. (2). 576-596
- Abuzayed, B., & Molyneux, P. (2009). Market value, book value and earnings: Is bank efficiency a missing link? *Managerial Finance*, 35(2), 156–179. <http://dx.doi.org/10.1108/03074350910923491>
- Ajlouni, M. M., & Omari, H. O. (2013). Performance efficiency of Jordanian Islamic banks using data envelopment analysis and financial ratios analysis. *European Scientific Journal*, 1(1), 271-281.
- Akhigbe, E. A. & Onuoha, B. C. (2020). Environmental turbulence and organizational performance of food and beverages firms in Rivers State, Nigeria. *Nigerian Academy of Management Journal*, 15(3).
- Alqahtani, N., & Uslay, C. (2020). Entrepreneurial marketing and firm performance: Synthesis and conceptual development. *Journal of Business Research*, 113, 62-71. <https://doi.org/10.1016/j.jbusres.2018.12.035>
- Alqahtani, N., Uslay, C., & Yeniyurt, S. (2022). Entrepreneurial marketing and firm performance: scale development, validation, and empirical test. *Journal of Strategic Marketing*, 1-22. <https://doi.org/10.1080/0965254X.2022.2059773>
- Arora, A., Fosfuri, A., & Gambardella, A. (2001). *Markets for technology: The economics of innovation and corporate strategy*. Cambridge: MIT Press.

- Barney, J. (2001). Is the resource-based view a useful perspective for strategic management research? Yes. *Academy of Management Review*, 26(1), 41-56. <https://doi.org/10.2307/259393>
- Beckman, C.M., Haunschild, P.R. & Phillips, D.J. (2004), "Friends or strangers? Firm-specific uncertainty, market uncertainty, and network partner selection", *Organization Science*, 15(3), 259-275.
- Buganza, T., Dell'Era, C. & Verganti, R. (2014). Exploring the relationship between product development and environmental turbulence: The case of mobile TLC services, *The Journal of Product Innovation Management*, 26(3): 308-321
- Burke, G. J., Arora, A., & Raisinghani, M. S. (2012). Measuring the effect of supply chain collaborations and market turbulence on performance outcomes. In *International Technology Management Conference* (pp. 188-196). IEEE.
- Calantone, R., Garcia, R., & Dröge, C. (2003). The effects of environmental turbulence on new product development strategy planning. *Journal of Product Innovation Management*, 20(2), 90–103. <https://doi.org/10.1111/1540-5885.2002003>
- Chan, M. S., Jones, C. R., Jamieson, K. H. & Albarracín D. (2017). Debunking: A Meta-Analysis of the Psychological Efficacy of Messages Countering Misinformation. *Psychological Science*, 28(11) 1531–1546. <https://doi.org/10.1177/0956797617714579>
- Chan, R.Y.K., He, H.W., Chan, H.K. & Wang, W.Y.C. (2012), "Environmental orientation and corporate performance: the mediation mechanism of green supply chain management and moderating effect of competitive intensity", *Industrial Marketing Management*, 41(4), 621-630.
- Chen, K. H., Wang, C. H., Huang, S. Z., & Shen, G. C. (2016). Service innovation and new product performance: The influence of market-linking capabilities and market turbulence. *International Journal of Production Economics*, 172, 54-64. <https://doi.org/10.1016/j.ijpe.2015.11.004>
- Chu-Hua, K., Madu, C.N. & Lin, C. (2001). The relationship between supply chain quality management practices and organizational performance. *International Journal of Quality & Reliability Management*, 18(8), 864-872. <https://doi.org/10.1108/EUM00000000006031>
- Clegg, S. R., & Bailey, J. (2008). *International encyclopedia of organization studies*. Sage.
- Danneels, E., & Sethi, R. (2011). New product exploration under environmental turbulence. *Organization Science*, 22(4), 1026–1039.
- Dartey-Baah, K. (2015). Resilient leadership: A transformational-transactional leadership mix. *Journal of Global Responsibility*, 6(1), 99-112.
- Demeke, B., & Tao, C., (2020). Concept & Perspectives of Organizational Performance Measurement: Literature Review. *International Journal of Academic Multidisciplinary Research (IJAMR)* ISSN: 2643-9670 Vol. 4 (8)
- Demirbag, M., Lenny Koh, S. C., Tatoglu, E. & Zaim, S. (2006). TQM and market orientation's impact on SMEs' performance. *Industrial Management & Data Systems*, 106(8), 1206-1228. <http://dx.doi.org/10.1108/02635570610710836>
- Despoudi, S., Papaioannou, G., & Dani, S. (2021). Producers responding to environmental turbulence in the Greek agricultural supply chain: does buyer type matter? *Production Planning & Control*, 32(14), 1223-1236. <https://doi.org/10.1080/09537287.2020.1796138>
- Dess, G. G., & Davis, P. S. (1984). Porter's (1980) generic strategies as determinants of strategic group membership and organizational performance. *Academy of Management Journal*, 27(3), 467–488.

- Didier N. (2002). *Manager les performances [Managing Performance]*. Insep Consulting Editions, Paris
- Dost, M., Pahi, M. H., Magsi, H. B., & Umrani, W. A. (2019). Effects of sources of knowledge on frugal innovation: moderating role of environmental turbulence. *Journal of Knowledge Management*, 23(7), 1245–1259. <https://doi.org/10.1108/JKM-01-2019-0035>
- Ezigbo, C., (2011). *Advanced management theory and applications*. Immaculate Publications Ltd.
- ELENA-IULIANA, I., & Maria, C., (2016). Organizational performance – a concept that self-seeks to find itself. Annals of the „Constantin Brâncuși” University of Târgu Jiu, Economy Series, Issue 4
- Faisal, M.; Maarif, M.S.; Fahmi, I.; Yulianto, B. (2022) Business Environment Turbulence and Industrial Connections Instruments as Determinants of Firm Performance Mediated by an Industrial Connections Climate. Sustainability, *Journal of Business Management* .14, 12150. <https://doi.org/10.3390/su141912150>
- Farid, A., & Widjaja, A.W. (2020). Firm survival in environmental turbulence: digital start-up response to Covid-19. Paper presented at the 4th International Conference on Family Business and Entrepreneurship.
- Gavrea, C., Ilies, L. & Stegorean, R. (2011). Determinants of organizational performance: The case of Romania. *Management and Marketing Challenges for the Knowledge Society*. 6(2), 285-300.
- Germain, R., Claycomb, C., & Dröge, C. (2008). Supply chain variability, organizational structure, and performance: the moderating effect of demand unpredictability. *Journal of operations management*, 26(5), 557-570.
- Godwin, P., and Victor, A., C., (2021). Environmental turbulence and strategic flexibility of small and medium enterprises in port harcourt, nigeria. *International Journal of Small Business and Entrepreneurship Research*, 8(4), 93-108
- Hanvanich, S., Sivakumar, K. & Hult, G.T.M. (2006), “The relationship of learning and memory with organizational performance: the moderating role of turbulence”, *Journal of the Academy of Marketing Science*, 34(4), 600- 612.
- Hartono, R., & Sheng, M. L. (2016). Knowledge sharing and firm performance: the role of social networking site and innovation capability. *Technology Analysis & Strategic Management*, 28(3), 335-347.
- Jaworski, B.J. and Kohli, A.K. (1993), “Marketing orientation: antecedents and consequences”, *Journal of Marketing*, 57(3), 53-71.
- Kaplan, R.S. and Norton, D.P. (2004), "The strategy map: guide to aligning intangible assets", *Strategy & Leadership*, 32(5), 10 – 17. <https://doi.org/10.1108/10878570410699825>
- Kim, J. (2018). A study on the effect of environmental turbulence on the agility of government agencies and the effect of agility on the organizational performance. *Journal of Product Research*, 36(1), 19-27.
- Kim, N. & Atuahene-Gima, K. (2010), “Using exploratory and exploitative market learning for new product development”, *Journal of Product Innovation Management*, 27, 4,
- Ko, S., & Tan, B. (2012). Knowledge transfer, perceived environmental turbulence and innovation in China. *Journal of Chinese Entrepreneurship*, 4(2), 104–116. <https://doi.org/10.1108/17561391211242726>
- Kohli, A. and Jaworski, B.J. (1990), “Market-orientation: construct, research propositions, and managerial implications”, *Journal of Marketing*, 54, 1-18

- Lau, K.H. and Wang, Y. (2009), "Reverse logistics in the electronic industry of China: a case study", *Supply Chain Management: An International Journal*, 14(6), 447-465.
- Lee, H.L. (2004), "The triple-A supply chain", *Harvard Business Review*, 82(10), 102-112.
- Lee, R. P., Chen, Q., Kim, D., & Johnson, J. L. (2008). Knowledge transfer between multinational corporations' headquarters and their subsidiaries: Influences on and implications for new product outcomes. *Journal of International Marketing*, 16(2), 1–31.
- Li, S., Rao, S. S., Ragu-Nathan, T. S., & Ragu-Nathan, B. (2005). Development and validation of a measurement instrument for studying supply chain management practices. *Journal of Operations Management*, 23(6), 618-641. <https://doi.org/10.1016/j.jom.2005.01.002>.
- Linnenluecke, M. K. (2015). Resilience in business and management research: A review of influential publications and a research agenda. *International Journal of Management Reviews*, 19(1), 4-30.
- Liuspita, J., & Purwanto, E. (2019). The profitability determinants of food and beverages companies listed at the Indonesia stock exchange. *International Journal of Scientific & Technology Research*, 8(9), 197-202.
- Maduenyi, S., Oke, A. O., Fadeyi, O. & Ajagbe, A. M. (2015). Impact of Organizational Structure on Organizational Performance. Malaysian Companies, Paper Presented at the Fourth Asia Pacific.
- Mamat, M & Ismail, A. (2011), Market orientation and business performance. The study of Bumiputera furniture industry in Kelantan. *American International Journal of Contemporary Research*, 1(2): 88-98
- Mangla, I. U., & Rehman, R. U. (2010). Corporate governance and performance of financial institutions in Pakistan: A comparison between conventional and Islamic banks in Pakistan. *Pakistan Development Review*, 49(4), 461- 475.
- Martin, J.H., Martin, B.A. and Minnillo, P.R. (2009), "Implementing a market orientation in small manufacturing firms: from cognitive model to action", *Journal of Small Business Management*, 47(1), 92-115.
- Mason, R.B. (2007), "The external environment's effect on management and strategy: a complexity theory approach", *Management Decision*, 45(1), 10-28.
- McClay, R. (2019). Operations management theory. Available at: <https://www.investopedia.com> Accessed on 23rd November 2019.
- Meredith, S. and Francis, D. (2000), "Journey towards agility: the agile wheel explored", *The TQM Magazine*, 12(2), 137-143.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, 29(7), 770–791.
- Montes, L., Verdú Jover, A., Miguel, M. & Fernández, L. (2003). Factors affecting the relationship between total quality management and organizational performance. *International Journal of Quality & Reliability Management*, 20(2), 189-209. <https://doi.org/10.1108/02656710310456617>
- Moorman, C. and Miner, A.S. (1997), 'The impact of organizational memory on new product performance and creativity', *Journal of Marketing Research*, 34(1), 91-106.
- Mustaffa, Y. (2020) The Factors Influencing Organizational Performance In Metro Specialist Hospital, Sungai Petani, Kedah Darul. University of uturu Malaysia
- Mwiru, D., P., (2017). Influence of perceived environmental turbulence on market orientation of service firms in Tanzania. *Business Management Review* pp. 26-38

- Ndolo, P.S. (2015). The relationship between operational efficiency and Financial Performance of firms listed at the Nairobi Securities Exchange. Nairobi: Nairobi University.
- Olumuyiwa, O. S., Adelaja, A. S. & Chukwuemeka, E. O. (2012). Effective planning and organizational productivity. *IOSR Journal of Humanities and Social science (JHSS)*, 5(5), 2279-0837.
- Omar, K. M. (2016). The Moderating Roles of Selling Skills and Knowledge on the Customer Satisfaction and the Organization Performance. *American Journal of Economics*, 6(3), 158-170.
- Ottesen, G.G. and Grønhaug, K. (2004), “Exploring the dynamics of market orientation in turbulent environments: a case study”, *European Journal of Marketing*, 38(8) 956-973.
- Paladino, A. (2007), “Investigating the drivers of innovation and new product success: a comparison of strategic orientations”, *Journal of Product Innovation Management*, 24(6), 534-553.
- Paul A., A., & Agbo, A. (2014). Impact of Working Capital on the Profitability of the Nigerian Cement Industry. *European Journal of Accounting Auditing and Finance Research*, 2(7), 17-30.
- Pérez-Nordtvedt, L., Mukherjee, D., & Kedia, B. L. (2015). Cross-border learning, technological turbulence and firm performance. *Management International Review*, 55(1), 23–51.
- Picincu, A. (2018). *Describe the Advantages and Disadvantages of Project Management*. Retrieved from biz fluent: <https://bizfluent.com/info-8774906-describeadvantages-disadvantages-project-management.html>
- Podmetina, D., & Volchek, D. (2016). *The role of market expansion, environmental turbulence and cost-saving strategies on cooperation on innovation in Russia*. 10.
- Pouraghaljan, A., & Milad, E. P. (2012). Impact of working capital management on profitability and market evaluation: Evidence from Tehran Stock Exchange. *International Journal of Business and Social Science*, 3(10), 311-318.
- Saptarshi, D., & Tasnima, A. (2018). Empirical analysis on the impact of working capital management on EPS: A panel observation on the cement companies in Bangladesh. *Pacific International Journal*, 1(2), 21-28.
- Silva, A. A. & Ferreira, F.C. (2017). Uncertainty, flexibility and operational performance of companies: modelling from the perspective of managers. *RAM. Revista de Administração Mackenzie*, 18(4), 11-38. <http://dx.doi.org/10.1590/1678-69712017/administracao.v18n4p11-38>
- Slater, S. F., & Narver, J. C. (1994). Does competitive environment moderate the market orientation-performance relationship? *Journal of Marketing*, 58(1), 46–55.
- Taheri, B., Bititci, U., Gannon, M. J., & Cordina, R. (2019). Investigating the influence of performance measurement on learning, entrepreneurial orientation and performance in turbulent markets. *International Journal of Contemporary Hospitality Management*, 31(3), 1224-1246. <https://doi.org/10.1108/IJCHM-11-2017-0744>
- Trkman, P., & McCormack, K. (2009). Supply chain risk in turbulent environments—A conceptual model for managing supply chain network risk. *International Journal of Production Economics*, 119(2), 247-258.
- Turulja, L., & Bajgoric, N. (2018). Innovation, firms’ performance and environmental turbulence : is there a moderator or mediator ? <https://doi.org/10.1108/EJIM-03-2018-0064>

- Venkatraman, N. & Ramanujam, V. (2006). Measurement of business performance in strategy research: A comparison of approaches. *Academy of Management Review*, 11(4), 801-814. <http://dx.doi.org/10.5465/AMR.1986.4283976>
- Warner, A.G., Fairbank, J.F. and Steensma, H.K. (2006), "Managing uncertainty in a formal standards-based industry: a real options perspective on acquisition timing", *Journal of Management*, 32(2), 279-298.
- Wren, D.A. & Bedeian, A.G. (2009). *The Evolution of Management Thought*, New Jersey: Wiley, Hoboken.
- Zhou, J., Mavondo, F. T., & Saunders, S. G. (2019). The relationship between marketing agility and financial performance under different levels of market turbulence. *Industrial Marketing Management*, 83, 31-41. <https://doi.org/10.1016/j.indmarman.2018.11.008>
- Zimuto, C., Sandada, M., Chuchu, T., & Ndoro, T. (2018). The Impact of Environmental Turbulence on Product Innovation in Small to Medium Enterprises in Harare, Zimbabwe. *Journal of Economics and Behavioral Studies*, 10(6A (J)), 56-63.