Risk Assessment and the Performance of Manufacturing Companies in North-Central Nigeria

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Abstract
This article is carried out to ascertain the effect of Risk Assessment on the performance of Manufacturing companies in North-Central Nigeria. Risk review was used as the independent variable while performance of selected manufacturing companies was employed as the dependent variable. Survey research methodology was adopted, correlation and Anova were used as estimation techniques to ascertain the relationship between the dependent and independent variable. Findings from the study revealed that risk review has positive and significant effect on the performance of selected manufacturing companies in North-central Nigeria. This means that an increase in the organization's risk review will lead to an increase in its performance. Hence, the study recommends that manufacturing companies in north central Nigeria should intensify effort and resources in identifying the various risks they face or could face in the long run, assessing the severity of the various risks they face or could face.

Keywords: Risk assessment, performance, manufacturing companies, North-central, Nigeria, risk policies.

Introduction

Risk management is an uninterrupted, progressive process that is an important part of business and technical management processes. (Mariana & Fiany, 2020). Enterprise Risk Management (ERM) represents a leading standard, supporting organizations to identify, evaluate, and manage risks at the enterprise level. This holistic approach to managing risk is sometimes described as enterprise risk management because of its emphasis on anticipating and understanding risk across an organization. ERM has added an ideal blow to the risk management domain, encouraging organizations to assess their own risk attitude, to identify risk types they are exposed to, and to rank risky events to which they may be vulnerable in the future, categorizing these risks as

acceptable, moderate or unacceptable (Abeyrathna & Lakshan, 2021). The major contribution of ERM is the way it allows organizations to develop an overall strategy accelerating the adoption of ERM best practices with the discretion of all the relevant stakeholders (The Committee of Sponsoring Organizations of the Treadway Commission, (COSO) 2017). In addition to a focus on internal and external threats, enterprise risk management (ERM) emphasizes the importance of managing positive risk. Positive risks are opportunities that could increase business value or, conversely, damage an organization if not taken. Indeed, the aim of any risk management program is not to eliminate all risk but to preserve and add to enterprise value by making smart risk decisions.

According to the updated COSO document (COSO, 2017), the benefits of ERM include increasing the range of opportunities, identifying and managing risk entity-wide, increasing positive outcomes and advantages while reducing negative surprises, reducing performance variability, improving resource deployment and enhancing enterprise resilience. The main purpose of ERM is to increase firm value and shareholder value. At the point of reaching this basic aim, ERM has the following benefits for firms. ERM benefits for the firms in subjects such as risky danger dimension, demonstrate a proactive management approach to risks, ensuring more efficient use of capital, providing cost advantages through an integrated approach, ensuring sustainability through reduction of operational surprises and losses, provide reasonable assurance that firm objectives will be achieved. Indeed, there is growing support for the general argument that organizations will improve their performance by employing the ERM concept.

Most studies on ERM such as (Senol and Karaka, 2017; Folake and Moruff, 2019) have been based on finding the effect of ERM on the financial performance of firms. Studies such as (Altanashat, Dubai, & Alhety, 2019; Teoh, Lee, & Muthuveloo, 2017) had chosen to measure ERM by constructing questionnaire based proxy, on the eight (8) ERM functions using the COSO 2004 framework. Few works have tried to identify the effect of ERM on the Non-financial aspect of performance using the five components as presented by COSO 2017. Also, studies on risk management are based on financial institutions around the country, Very few to the knowledge of the research have studied the effect of ERM on the non-financial performance of manufacturing companies in North-Central Nigeria using the COSO 2017 framework. This study therefore measures the effect of ERM on the non-financial performance of selected manufacturing companies in North central Nigeria, using the variables of the COSO 2017 ERM model.

Objective of the study

The main objective of this study is to examine the effect of Risk Assessment on the performance of Manufacturing companies in North-Central Nigeria.

Research Hypothesis

Ho$_1$: Risk Assessment has no effect on the performance of manufacturing companies in North-Central Nigeria.

Conceptual Review

Enterprise Risk Management

Phan et al, (2020), defined enterprise risk management as the set of practices that address the overall risk profile of the enterprise, reducing both the likelihood of and costs from negative events, and taking advantage of the benefits of positive events. (ERM) is an effective agency-wide approach to addressing the full spectrum of the organization's significant risks by understanding the combined impact of risks as an interrelated portfolio, rather than addressing risks only within silos. ERM provides an enterprise-wide, strategically-aligned portfolio view of organizational challenges that provides better insight about how to most effectively prioritize and manage risks to mission delivery. ERM is defined as a process influenced by the Board of Directors, management, and other personnel of the entity, applied to the establishment of a strategy and on all parts of the company, designed to identify potential events that could affect the entity, and manage risks aligned with entity risk appetite, to provide reasonable assurance towards achieving the objectives of the entity (COSO, 2017). Meanwhile, International Organization for Standardization (ISO) defines the risk management process as "coordinated activities to direct and control an organization with regard to risk". It also provides a definition of the risk management framework as "set of components that provide the foundations and organizational arrangements for designing, implementing, monitoring, reviewing and continually improving risk management throughout the organization (ISO, 2018). The term enterprise risk management (ERM) in its simplest term is aggregate approach to treating all the organization's risk which is developed as a result of the failure of the conventional traditional risk methods, which treats risk in a piecemeal or the departmental based approach.

Risk assessment

Risk assessment refers to the evaluation of factors that may have an inherent possibility of affecting the attainment of the organization's objectives. The risk assessment process enables the organization to actively analyze all the relevant risk facing the organization (Karagiorgos, et al. 2009). The risk assessment function is important for it focuses on identification of internal and external sources of risks that could have detrimental implications on the operational effectiveness and efficiency of reporting performance matters and degree to which laws and regulations could be (Inusah and Abdulai, 2015). According to NIST 800-30 (2020), risk assessment is a "key component" of the risk management process and is primarily focused on the identification and analysis phases of risk management. Risk assessment is a meso-level process within risk management. It aims to breaks down threats into identifiable categories and define all the potential impact of each risk.

Risk assessment is the combined effort of; identifying and analyzing potential (future) events that may negatively impact individuals, assets, and/or the environment and making judgments "on the tolerability of the risk on the basis of a risk analysis" while considering influencing factors (Manuele 2016). Put in simpler terms by (Rausand 2013), a risk assessment determines possible mishaps, their likelihood and consequences, and the tolerances for such events. The results of this

process may be expressed in a quantitative or qualitative fashion. Risk assessment is an inherent part of a broader risk management strategy to help reduce any potential risk-related consequences.

According to (UNDP 2015), risk assessment is the iterative process of risk identification, analysis, and evaluation. The objective is to provide sufficient information at appropriate intervals for risk-informed management decisions. High quality risk assessments enable greater acceptance of risk-taking opportunities (e.g. innovation) while ensuring rigorous due diligence, treatment, monitoring and control. Berman (2022) sees risk assessment as a prioritization of potential business disruptions based on severity and likelihood of occurrence. The risk assessment includes an analysis of threats based on the impact to the institution, its customers, and financial markets, rather than the nature of the threat. Gul and Fatih (2018) argued that risk assessment is the process of assessing the risks associated with each of the hazards identified so the nature of the risk can be understood. This includes the nature of the harm that may result from the hazard, the severity of that harm, and the likelihood of this occurring. The usual risk assessment process consists of four main phases called identifying hazards, assessing associated risks, controlling risks, and reviewing control measures.

Yoe (2019) sees risk assessment as a systematic process for describing the nature, likelihood, and magnitude of risk associated with some substance, situation, action, or event that includes consideration of relevant uncertainties. Risk assessment can be qualitative, quantitative, or a blend (semiquantitative) of both.

Abdel-Basset et al (2018) suggested that for prioritizing and addressing risks, enterprises will need to determine criteria for identifying what may cause a risk to its operations. After identifying risks, the enterprise should perform a risk assessment process which contains risk identification, risk analysis, and risk evaluation. The risks which should be involved in risk management process and those which should not must be distinguished in risk assessment process. Risk identification may require using a list of external risks and internal risks. Risk assessment which ends at risk group classification, can help the management to reach the goal which is to change the perspective from general to be more detailed about how the risk is caused and can affect the growth value from the company (Ismawati, 2019).

Growth

Starbuck (2019) defines growth as change in an organization's size when size is measured by the organization's membership or employment, and it defines development as change in an organization's age. Growth has to do with the increase in size of facilities, number of employees and customers (Bones 2018). Bass (2020) sees business growth to means an increase in the size or scale of operations of a firm usually accompanied by increase in its resources and output.

Generally, the term 'business growth' is used to refer to various things such as increase in the total sales volume per annum, an increase in the production capacity, increase in employment, an increase in production volume , an increase in the use of raw material and power (Twalambani & Arahyel 2015). The study uses growth as a measure of performance.

Non-financial performance

According to Christopher and David (2003), the nonfinancial performance of the enterprise can be measured by customer loyalty and employee satisfaction that ultimately affect the profitability of the enterprise. As there are more customers and employee's loyalty in the enterprise due to satisfaction with the products/services provided, then the enterprise has a good performance. A business will generate customer satisfaction and a loyal customer when the business is able to take care of customer needs. Meanwhile, Daniel and Okibo (2014) used growth in employees, markets and product development in measuring the nonfinancial performance of the enterprise. If the enterprise attempts to explore a new market or produce new products/services, then it will increase its performance. Bryman (2020) described performance as the result from a person's effort which is achieved by the presence of labour, ability and assignment perception, effort because of motivation, satisfaction, and organizational commitment that shows the amount of energy used by an individual in initiating a task. Iskandar, Ahmad and Martua (2019) also viewed performance as one of the elements that is assessable through the level of their productivity. This includes the quality, quantity, knowledge or creativity of individual towards the accomplished works that are in accordance with the responsibility during a specified period. In other words, the assessment systems must have some standard strictures that can also be seen from output, product quality, productivity, cost management, safety and health, employees' relationship and development (Armstrong 2019). However, Nwankwere et al (2021) argued that performance can be view on how an organization is faring in terms of level of loyalty, investment, profit, revenue, growth, expansion of the organization and satisfaction on the employees etc. (Luper & Kwanum, 2012) viewed that organizational performance can be measure in terms of level of output. Consequently, Wang (2019) viewed performance as product accomplishments, results and achievements in an organization. Williams and Andersons (2019) performance as employee's achievement level in his/her responsibility and duties assigned in the workplace. Understanding determinant factors of MSMEs performance are viewed an important area of focus in Enterprises (Rosli, 2017).

Munther, et al, (2021) investigated the influence of Enterprises Risk Management (ERM) on firm performance with a mediating role of Business Model Innovation (BMI). For the purpose, data from 228 Jordanian firms was collected and analyzed. The results indicated that the ERM practices have a significant influence on BMI and financial firm's performance. The BMI significantly contributed to the financial and non-financial performance, whereas it displayed insignificant effects regarding environmental performance. The BMI fully mediated the relationship between ERM practices and financial performance, where a partial mediating effect was observed for the path between ERM practices and non-financial performance, while showed no mediating role between the ERM practices and environmental performance. Economies of countries like Jordan are hereby urged to implement the formal ERM practices and to financially educate their top management teams to apply the BMI to gain first-rate performance. This study also encourages the researchers from other countries to extend this model to their economies to unleash useful insights.

The population in this study was not stated and the method used to arrive at a sample size of 228. Study also failed to clearly state the method of data analysis that was used to test hypotheses and arrive at findings.

Otekunrin et al (2020), examined the significance of enterprise risk management and listed manufacturing firms' financial performance in Nigeria using both the book-based approach and the market-based approach. Relevant ERM theories in relation to financial performance such as Agency Theory, Stakeholders Theory, and Enterprise Risk Management Theory were examined. A panel data analysis was employed on time series and cross-sectional data of thirty listed manufacturing firms in Nigeria from 2010 to 2018. The random effect of the Hausman test was found to be more appropriate and hence adopted in interpreting the results of the analysis. The results confirm the a priori expectations that profitability ratio, liquidity ratio, market-based ration to risk board committee, the board size, firm size, and directors' ownership all have varied impact on the firm's profitability with varied statistical significance levels.

This study employed the panel data on time series and cross-sessional data which is good when analyzing with secondary data. Houseman test was used to interpret the result and bring out findings. This research shall focus on primary data in trying to examine the effect of ERM on non-financial performance

Folake and Moruff (2019) examined the effect of Enterprise Risk Management (ERM) on financial performance of the non-financial quoted companies in Nigeria, using the following financial performance parameters: shareholder value, profit margin ratio, and management efficiency. Secondary data were obtained from all the thirty-three companies, which is the total population of all active non-financial companies quoted on the Nigerian Stock Exchange, and the various compliance elements of ERM practices and financial performance indicators were identified and examined. Regression analysis was adopted to examine the effect of ERM on the performance of non-financial quoted firms. The findings showed that ERM implementation status has positive significant effect on shareholder value, profit margin ratio, and management efficiency of non-financial quoted firms in Nigeria. It is therefore concluded that the implementation status of ERM has a positive significant effect on shareholder value, profit margin ratio, and management efficiency of non-financial quoted firms in Nigeria.

This study tested the effect of ERM on financial performance. It used shareholder value, profit margin ratio, and management efficiency as financial performance parameters. The first two parameters are good, but study failed to state how Management efficiency is a measure of financial performance.

Empirical Review

Pistone (2019), examined the effect of enterprise risk management on the performance of selected companies in Indonesia. 45 companies were selected for the study. Data was collected through the use of questionnaire administered to 102 respondents. Data was analysed using correlation and descriptive statistics. Hypotheses was tested using the simple linear regression, where results

showed that; risk review has a significant and positive effect on the organizational performance of the companies.

Theoretical Framework

This study is anchored on Dynamic Capabilities Theory.

Dynamic Capabilities Theory

Dynamic Capabilities Theory (DCT) is an extension of the RBT by Grant in 1991. DCT advances that organizational capabilities are the main source of a firm's performance advantages (Grant, 1991). Capability is the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result (Helfat & Peteraf, 2003). RBT is enhanced by the dynamic capabilities theory that argues that firms should continuously reconfigure and redeploy these resources to be firm specific if they have to earn a sustainable competitive advantage (Teece et al. 1997). This view can be facilitated if an organization encourages knowledge creation among its employees as proposed by the Knowledge Based Theory. Secondly, the dynamic capability perspective indicates how firms can cope with unforeseen events. A lot of risk-management theory and practice focuses on the ex-ante identification of risks. Nevertheless, there are always going to be circumstances that firms cannot foresee. Possessing dynamic capabilities provides firms with routines and processes that allow the firm to recover from those events quickly. Thus, applying a dynamic capability perspective supports ERM to move beyond an ex ante prediction of risky events by providing managers with the tools to recover from risky events that may occur.

Model Specifications
The study uses ERM indicants such as Risk assessment. The dependent variable is performance which is non-financial and measured using growth. simple regression models, the regression model is stated as:

$$Y = a + bx \quad - \quad - \quad - \quad - \quad - \quad - \quad 1$$

Where y is the dependent variable

a is constant or intercept

b is the coefficient

x is the independent variable

However, the above model is expanded to:

$$Y = \alpha + \beta_1 X + \beta_2 X + \beta_3 X + \beta_4 X + \mu - \quad - \quad - \quad - \quad - \quad 2$$

The formula is substituted with the variables and presented as follows;

$$PFM = \alpha + \beta_1 RAS + \mu - \quad - \quad - \quad 3$$

Where:

PFM = Performance (Growth)

RAS = Risk Assessment

α = Intercept or Constant

β = Slope of the regression line with respect to the independent variables

μ = error term

Data Presentation

The data gotten from the respondents are presented in tabular form to summarize and compare.

Table 1. Demographic Distribution of the respondents based on gender.

OPTIONS	NUMBER	PERCENTAGE %
MALE	219	65.2
FEMALE	117	34.8
TOTAL	**336**	**100**

Source: Researcher's survey

Table 1. describes the gender of the respondents used to carry out the research from all the eight (8) companies. The result shows that out of three hundred and thirty-six (336) respondents, two hundred and nineteen (219) representing (65.2%) were male. It also shows that one hundred and seventeen (117) of the total respondents representing (34.8%) were female. This implies that male respondents constitute the highest responses.

Table 2. Demographic Distribution of the respondents based on period of employment and service.

OPTIONS	NUMBER	PERCENTAGE %
Less than a year	78	23.2
1 to 5 years	134	39.9
Over 5 years	124	36.9
Total	**336**	**100**

Source: Researcher's survey

Table 2 presents data from the respondents as regards to their period of employment or service in their various organizations. The data shows that; out of a total of three hundred and thirty six (338), seventy eight (78) respondents, representing (23.2%) have spent less than a year in their organizations. One hundred and thirty four (134) representing (39.9%) have spent from one to five (1-5) years. A total of one hundred and twenty four (124) respondents, representing (36.9%) have spent over five (5) years in their organizations. This implies that the larger part of the respondents have spent over a year and some, over five years in the organizations. Hence, responses are from experienced employees and employers.

Table 3. Demographic Distribution of the respondents based on staff category

OPTIONS	NUMBER	PERCENTAGE %
Management Staff	46	13.7
Senior Staff	178	53
Junior Staff	112	33.3

Total	336	100

Source: Researcher's survey

Table 3. describes the staff category of the respondents. Out of the total number of three hundred and thirty six (336), forty six (46) respondents, representing (13%) were management staff. One hundred and seventy eight (178) respondents, making up (53%) were senior staff. The junior staff among the respondents were up to one hundred and twelve, which constituted (33.3%) of the entire sampled respondents. This implies that the responses come largely from the senior staff in the various organizations.

Table 4.Responses regarding Risk Assessment.

ITEMS	SA	SA%	A	A%	U	U%	D	D%	SD	SD%	TOTAL
Your organization identifies the various risks it faces or could face in the long run	92	27.4	123	36.6	24	7.1	56	16.7	41	12.2	336
Your organization assesses the severity of the various risks it faces or could face.	67	19.9	126	37.5	78	23.2	43	12.8	22	6.5	336
The organization prioritizes the various risks it identifies	73	21.7	109	32.4	45	13.4	73	21.7	36	10.7	336
The organization implements risk responses on the various risks in can take or avoid	126	37.5	98	29.2	40	11.9	48	14.3	24	7.1	336

Source: Researcher's survey

Table 4. presents responses as regards to questions on the concept of risk assessment. Responses were graded based on the respondents' opinion on each question as to whether they strongly agree (SA), agree (A), undecided (U), disagree (D) or strongly disagree (SD).

The first question tried to identify whether the organization identifies the various risks it faces or could face in the long run. Ninety two (92) respondents out of a total of three hundred and thirty six (336), representing (27.4%) of the respondents strongly agreed. One hundred and twenty three respondents (123) representing (36.6%) of the total respondents agreed. Twenty four (24), which makes up (7.1%) were undecided. Fifty six (56) respondents, forming (16.7%) disagreed, while forty one (41) respondents, making up (12.2%) strongly disagreed. The implication of this is that there was a high level of respondents who agreed and strongly agreed.

The second question asked respondents' opinion on if the organization assesses the severity of the various risks it faces or could face. Sixty seven (67) respondents, making up (19.9%) of the total strongly agreed. One hundred and twenty six (126) respondents representing (37.5%) agreed. While seventy eight (78) respondents; making up (23.2%) were undecided, forty three (43) respondents, making up (12.8%) disagreed and twenty two (22) represented by (6.5%) of the total respondents strongly disagreed. The result implies that over 50% of respondents agreed or strongly agreed that the organization assesses the severity of the various risks it faces or could face.

The third question summarizes responses on the question of whether the organization prioritizes the various risks it identifies. Seventy three (73) respondents, making up (21.7%) of the total respondents strongly agreed. One hundred and nine (109) respondents, representing (32.4%) of the total population agreed. Forty five of the respondents (45) were undecided, representing (13.4%) of the respondents. Seventy three (73) respondents, representing (21.7%) disagreed while thirty six (36) respondents disagreed, making up (10.7%) of the total respondents. This implies a respondent slope towards agreed and strongly agreed.

The last question in table 4. enquired respondents' opinion on whether the organization implements risk responses on the various risks in can take or avoid. One hundred and twenty six (126) respondents, making up (37.5%) of the total responses. Ninety eight (98) respondents, completing (29.2%) of the total respondents agreed. Forty (40) respondents (11.9%) were undecided, while forty eight (48) respondents (14.3%) disagreed and (24) respondents, making up (7.1%) strongly disagreed. This shows that more of the respondents either agreed or strongly agreed that the organization implements risk responses on the various risks in can take or avoid.

Test of hypothesis

Table 5 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.691[a]	.682	.682	.17025

a. Dependent Variable: PFM

b. Predictors: (Constant), RAS

Table 6. Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.229	.032		.917	.360
RAS	.924	.050	.914	18.541	.000

a. Dependent Variable: PFM

The result, as shown in tables 5 and table 6, revealed an r-square value of 0.682 which implied that, 68.2% of the variation in performance (PFM) could be explained by risk culture (RAS), while the remaining 32.8% variation could be explained by other factors not included in this study. The table further shows an F-statistics of 4572.575 which indicates that the set of independent variables were as a whole contributing to the variance in the dependent variable and that there exist a statistically significant relationship at 0.000 (0%) between performance and the set of predictor variables indicating that the overall equation is significant at 0% which is below 5% level of significance. The results of the model summary revealed that, other factors other than employee commitment also contribute high to the variation in organizational performance.

Ho$_1$: Risk Assessment has no effect on the performance of manufacturing companies in North-Central Nigeria.

The regression line PFM = 0. 229 + 0. 924RAS indicates that a unit increase or change in risk assessment (RAS) will lead to a 0. 924 increase in performance (PFM) significantly. The result indicated that, risk assessment has positive and significant effect on the performance of selected manufacturing companies in North-central Nigeria. The decision was reached based on the t-value and p-value of (p = 0.000, t-value = 18.541). Thus, this implies a rejection of the null hypothesis which stated that, risk assessment has no significant effect on the performance of selected manufacturing companies in North-central Nigeria.

Discussion of Findings

Risk assessment and performance

Findings from the study revealed that risk assessment has positive and significant effect on the performance of selected manufacturing companies in North-central Nigeria. This means that an increase in the organizations' risk assessment will lead to an increase in its performance. Hence, identifying the various risks organization faces or could face in the long run; assessing the severity of the various risks it faces or could face; prioritizing the various risks that are identified by the organizations; and implementing risk responses on the various risks the organization can take or avoid, are aspects of risk assessment that can affect performance.

This finding is in line with that of (Mbuva, Rambo and Oketch 2018; Adebanji 2019; Pedro & Miguel 2021; Oyede and Aderibigbe, 2022, and Receeba 2020), who also found in their studies, that risk assessment has a significant and positive effect on the performance of organizations.

Conclusion and Recommendation

Based on the findings of the research, the study hence, concludes the following;

Risk assessment has positive and significant effect on the performance of selected manufacturing companies in North-central Nigeria. This means that an increase in the organizations' risk assessment will lead to an increase in its performance. Hence, identifying the various risks organization faces or could face in the long run; assessing the severity of the various risks it faces

or could face; prioritizing the various risks that are identified by the organizations; and implementing risk responses on the various risks the organization can take or avoid, are aspects of risk assessment that can affect performance. Manufacturing companies in north central Nigeria should intensify effort in risk assessment in their organizations. Identifying and assessing the various risk to take or transfer, based on the risk appetite of the organization as set up in its culture is important in ensuring performance and hence, recommended. The study recommends that manufacturing companies in north central Nigeria should intensify effort and resources in identifying the various risks they face or could face in the long run, assessing the severity of the various risks they face or could face. Also, the study recommends prioritizing the various risks that are identified by the organizations, based on which is more eminent or beneficial and implementing risk responses on the various risks the organization can take or avoid. These, as revealed by the study have immense effect on the performance of manufacturing companies in north central Nigeria.

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