Intrapreneurial Risk-Taking and Operational Competitiveness of Manufacturing Firms in the South-East Region of Nigeria

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Abstract
The research examined the relationship between intrapreneurial risk-taking and the operational competitiveness of manufacturing firms in the south-east region of Nigeria. The study used a cross-sectional research design. This study's population consists of 184 manufacturing enterprises from Nigeria's South-East Region. A total of 920 respondents were drawn from 184 industrial businesses. A questionnaire was utilized to gather data, and the hypotheses were evaluated using Spearman's rank-order correlation coefficient. The results show a substantial relationship between intrapreneurial risk-taking and the operational competitiveness of manufacturing firms in southeast Nigeria. As a result, the research showed that intrapreneurial risk-taking is connected with the operational competitiveness of manufacturing firms in southeast Nigeria. The study recommended that management should engage in research and development to enable them to achieve cost leadership and operational competitiveness. Management should conduct research and development to improve product quality and operational competitiveness. Management should develop the ability to invest in uncertainty with the aim of improving cost leadership and operational competitiveness. Management should develop the ability to invest in uncertainty with the aim of improving product quality and the operational competitiveness of manufacturing firms in the south-east region of Nigeria.

Keywords: *Intrapreneurial Ris-taking, Research and development, Investing in uncertainty, Operational compeyitiveness, Cost learedship, Product quality,*

Introduction

Operational competitiveness is a vital driver for the success of manufacturing firms in the south-east region of Nigeria, particularly given the area's dynamic business landscape. This region is renowned for its robust manufacturing sector, which plays a pivotal role in Nigeria's economic growth. Operational competitiveness refers to a firm's ability to effectively utilize its resources and capabilities to achieve superior performance compared to its competitors (Porter, 1985). Operational competitiveness encompasses several key elements, including cost efficiency, quality management, innovation, supply chain management, and employee

engagement (Dale et al., 1998). Focusing on these aspects can help manufacturing firms in the South-East region improve their productivity, reduce costs, enhance product quality, and innovate to meet customer needs.

Enhancing operational competitiveness can enable manufacturing firms in the South-East region to strengthen their market position, increase profitability, and contribute significantly to Nigeria's overall economic development. This paper explores the benefits of operational competitiveness for manufacturing firms in the Southeast region and provides insights into effective strategies for achieving and maintaining competitiveness in this dynamic business environment. Efficient operations lead to lower production costs, which can result in competitive pricing and increased market share. By optimizing processes and reducing waste, firms can improve their cost-competitiveness (Porter, 1985).

Scholars have examined some factors that improve operational competitiveness and found that innovativeness and proactiveness were responsible (Geroski et al., 1993; Lumpkin & Dess, 2001; Matsuno et al., 2002; Kotler, 2003; Agbo & Okwoli, 2019; Onyenma & Hamilton, 2020; Olaniran et al., 2016; Kiptoo & Koech, 2019; Kiveu et al., 2019; Aarakit, 2010). However, risk-taking has not been widely considered a determining factor for operational competitiveness in Nigeria, especially in the south-east business context. Research and development, as well as investing in uncertainty, are part of risk-taking (Matsuno et al., 2002; Kotler, 2003). Risk-taking is the readiness to transfer more resources to projects that can have a high cost of failure (Kolakovic et al., 2008). Risk-taking is always a problem during operations. This strategic option requires critical decision-making (Kolakovic et al., 2008). Kolakovic et al. (2008) examined the performance of Croatian large companies in an attempt to properly situate risk-taking as a catalyst for performance. They found that the Croatian transitional economy is risk-averse.

Other scholars have investigated the relationship between intrapreneurial risk-taking dimensions and organizational performance and found a significant relationship between these variables. However, in the exanimation of these studies, it was found that most of them were conducted in developed countries, which shows that studies that examined the relationship between intrapreneurial risk-taking and operational competitiveness are still lacking in the Nigerian business context. Hence, to fill this gap, the present study examined the relationship between intrapreneurial risk-taking and operational competitiveness of manufacturing companies in the south-east region of Nigeria.

Statement of the Problem

Scholars have conducted several studies on the relationship between intrapreneurial risk-taking and firm performance in developed countries, which have improved the performance of firms in those countries (Lumpkin & Dess, 2001; Matsuno et al., 2002; Kotler, 2003; Agbo & Okwoli, 2019; Onyenma & Hamilton, 2020; Olaniran et al., 2016; Kiptoo & Koech, 2019; Kiveu et al., 2019; Aarakit, 2010). In Nigeria, especially in the South-East Region, such

detailed empirical studies have not been conducted with the aim of improving the operational competitiveness of firms in this region, and the few studies performed in this area lack empirical findings. This revealed the problem of a lack of empirical studies that will address the relationship between intrapreneurial risk-taking and operational competitiveness in Nigeria's south-east region.

It is commonly acknowledged that firm operational competitiveness is critical to a company's economic success (Cozijnsen et al., 2000) because it fosters business expansion and profitability (Geroski et al., 1993; Kleinknecht et al., 1993). Numerous industrial enterprises are struggling to survive in Nigeria because of the hostile operating climate in which many manufacturing enterprises find themselves. This has impeded their attempts to generate profit. In this regard, it is evident that a lack of achieving operational competitiveness in terms of financial competitiveness, market competitiveness, and operational competitiveness has resulted in the demise of several industrial firms, which have raised concerns about their viability and, by extension, the viability of the Nigerian economy (Agbo & Okwoli, 2019).

The above shows that the inability of manufacturing firms in the southeast region of Nigeria to pursue risk-taking has affected operational competitiveness and raised concerns in this region. Poor operational competitiveness is also evident in low financial competitiveness in terms of poor profit growth, liquidity, and low asset turnover. It has also resulted in low market competitiveness in terms of poor market expansion, low sales volume, and low brand loyalty. Specifically, it has affected operational competitiveness in terms of cost leadership, product quality, and product warranty.

Despite this, many businesses are hesitant to engage in innovation because they lack intrapreneural orientation. Lacking intrapreneurial risk-taking means that they do not engage in innovation, take proactive steps, and involve themselves in risk-taking to gain competitiveness. This has to deal with a variety of risks and uncertainties that surround innovation, as well as a high rate of failure. Cozijnsen et al. (2000) claimed that only one out of five firms started at the same time succeeds in business through intrapreneurial orientation. Intrapreneurial risk-taking is supposed to be a strong driver of operational competitiveness, but the reverse is the case in the business environment in recent times because firms see it as cost-intensive, thereby developing the tendency to ignore it. It also shows that most firms failed to engage in innovation, which led to a decline in sales and an inability to make profit as customers found it difficult to develop loyalty to the firm’s product.

Many firms fade out of business operations because they find it difficult to remain competitive in the industry. They failed to develop new products and services, new processes and technologies, new input sources, or identify new markets. As a result, customers find it difficult to find quality products and services for purchase to satisfy their needs. Additionally, there is a lack of product and service varieties from which customers can make choices. In recent times, these have resulted in low business growth and low chances for operational competitiveness.

Having seen the need for intrapreneurial risk-taking in order to achieve operational competitiveness, this problem is important to address because it has affected many areas of businesses and society at large in the sense that businesses are supposed to flourish with quality goods and services for societal consumption in variety, thereby creating the potential for profit-making. This problem can be tackled by examining the important role of innovation in operational competitiveness. This problem can also be resolved with the adoption of theories that support innovation in practice by management. When firms stand competitively in the business environment as a result of engagement in innovation, it grants them the chances for growth, profit-making, and ultimately firm survival. Therefore, the thrust of the present study was to provide a solution to the lack of intrapreneurial risk-taking that affects the competitiveness of firms in the southeast region of Nigeria. Thus, to provide solutions to the problem, the study developed a conceptual framework that guided it, formulated several research questions and hypotheses that were tested, and generated findings. In commotion with these, the study also adopted relevant theories that explained the phenomena and provided directions on how intrapreneural orientation could serve as an instrument for improving the competitiveness of manufacturing companies in the southeast region of Nigeria.

Conceptual Framework

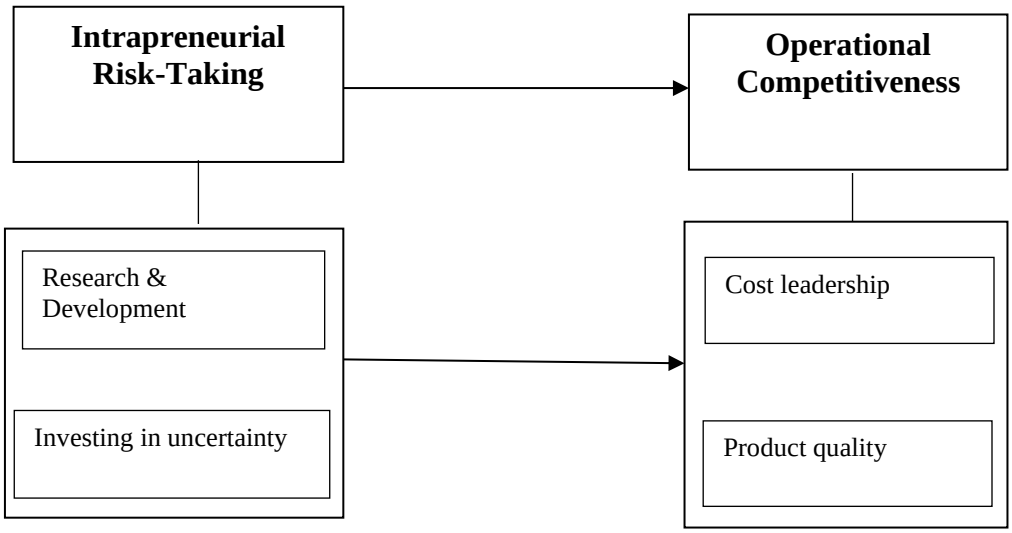

Figure 1: Conceptual Framework of Intrapreneurial ris-taking and Operational competitiveness

Source: Dimensions of Intrapreneurial ris-taking adapted from Matsuno et al. (2002) and from Joseph Schumpeter in Kotler (2003). Measures of operational competitiveness by Joseph Schumpeter in Kotler (2003).

Aim and Objectives of the Study

The aim of this study was to examine the relationship between intrapreneurial ris-taking and the competitiveness of manufacturing firms in south-east region of Nigeria. However, the specific objectives of the study were to:

1. Examine the relationship between research and development and cost leadership of manufacturing firms in south-east region of Nigeria.
2. Ascertain the relationship between research ad development and product quality of manufacturing firms in south-east region of Nigeria.
3. Determine the relationship between investing in uncertainty and cost leadership of manufacturing firms in south-east region of Nigeria.
4. Determine the relationship between investing in uncertainty and product quality of manufacturing firms in south-east region of Nigeria.

Research Questions

The following research questions were developed to guide the study.

1. What is the relationship between research and development and cost leadership of manufacturing firms in south-east region of Nigeria?
2. How does research ad development relate with product quality of manufacturing firms in south-east region of Nigeria?
3. What is the relationship between investing in uncertainty and cost leadership of manufacturing firms in south-east region of Nigeria?
4. How does investing in uncertainty relate with product quality of manufacturing firms in south-east region of Nigeria?

Research Hypotheses

The following null hypotheses were tested in the study:

Ho_1: There is no signicant relationship between research and development and cost leadership of manufacturing firms in south-east region of Nigeria.

Ho_1: There is no signicant relationship between research ad development and product quality of manufacturing firms in south-east region of Nigeria.

Ho_1: There is no signicant relationship between investing in uncertainty and cost leadership of manufacturing firms in south-east region of Nigeria.

Ho_1: There is no signicant relationship between investing in uncertainty and product quality of manufacturing firms in south-east region of Nigeria.

LITERATURE REVIEW

Concept of Intrapreneurial Risk-Taking

The concept of risk-taking refers to the propensity of businesses to engage in daring behavior, such as entering uncharted markets or devoting a significant amount of resources to endeavors whose outcomes are uncertain. Additionally, taking risks denotes an inclination to act in a courageous manner, such as by entering an unfamiliar and untested sector (Lumpkin & Dess, 2001; Wiklund & Shepherd, 2005). It is also possible to be related to the readiness to invest a large amount of resources in a project, despite the high likelihood that the project will fail and the accompanying costs (Keh et al., 2007; Baker & Sinkula, 2009). Risk-taking also encompasses the propensity to take on significant debt in the expectation of generating substantial profits (Dess et al., 2007; Etebang et al., 2010). A firm's tendency to engage in high-risk projects and managerial preferences for bold as opposed to cautious actions in order to achieve firm objectives is indicative of its 1ntrapreneurial risk-taking propensity (Madhoushi et al., 2011). Risk-taking suggests the extent to which management is willing to make large and risky resource combinations and is characterized by heavy borrowing, investments in technologies that are yet to be explored, or bringing new products to new markets (Wang, 2008; Dess & Lumpkin, 2009).

It largely reflects the willingness of the organization to break away from the tried-and-true and venture into the unknown (Ejdys, 2016). Firms with a high entrepreneurial orientation are typically identified by their risk-taking behaviors, which they manifest by incurring heavy debt or making large resource commitments in order to obtain high net worth and seize opportunities in the marketplace (Dess & Lumpkin, 2005). The 1ntrapreneurial orientation approach is a widely used scale that measures risk-taking at the firm level. This approach asks managers about their firms' proclivity to engage in risky projects and managerial preferences for bold, as opposed to cautious acts aimed at reaching their organization's objectives (Wang, 2008).

A similar approach is the degree to which organization managers followed tried-and-true approaches, or the tendency to support projects for which they were certain of the returns. The meaning of risk depends on the context in which it is applied. Baird and Thomas (1985) identified three types of strategic risk within the domain of strategy. (a) "risk-taking," (b) "dedicating a significant portion of one's assets," and (c) "heavily borrowing." The first communicates a sense of uncertainty and applies generally to some degree of risk often discussed in the 1ntrapreneurial literature, such as personal risk, social risk, or psychological risk (Baird & Thomas, 1985). Both the notion of high leverage from borrowing and the heavy commitment of resources are consonant with this definition of risk-taking. So, firms with intrapreneurial risk-taking often take risks, such as taking on a lot of debt or committing a lot of resources, in order to get high returns by taking advantage of opportunities in the market.

Research and development

In today's corporate environment, research and development are an essential component. The significance of research and development is often taken into consideration when companies make their most important decisions. The process of researching and developing a market goes hand in hand with the process of researching and developing a product. Product researchers use marketing information to help them develop products or services and select appropriate designs (Sadraoui & Zina, 2009). The topic of research and development (R&D) has been making its way to the forefront of economics writing for some time now, and numerous studies have been conducted on its value intermixing. It serves as a source of information, keeps the organization up to date, and compels the organization to report any changes that occur in the surrounding environment.

Yam et al. (2004) consider the role of research and development (R&D) as an input to the process of increasing productivity. He does this by analyzing the relationship between R&D and productivity. The primary finding of his investigation indicates that growth in general productivity can be positively attributed to research and development efforts. The authors, who studied the impact of technological innovation capability on Chinese companies' performance, found that there is a significant relationship between R&D investments and performance indicators, despite the fact that the relationship is only modest (Yam et al., 2004). According to Wang (2007), new knowledge and new technology generated from R&D activities increase productivity, and this is true not only at the level of the firm but also at the levels of the industry and the nation. In their research on the relationship between research and development and market value in developed countries, Ehie and Olibe (2010) found that successful investments in R&D lead to the creation of innovative products and services that allow a company to improve its intangible assets. They came to the conclusion that investments in R&D had a beneficial effect on the performance of firms.

Investing in uncertainty

A business that cannot reverse its investment choices suffers a higher user cost of capital than a firm with an entirely reversible investment. This leads to less investment for enterprises with irreversible investments. More uncertainty in the returns to capital raises the user cost for businesses with irreversible investments without altering the user cost for enterprises with reversible investments. Abel and Eberly (1996) explore the contrary “hangover” effect: a business that cannot disinvest would have more accumulated capital from periods when demand was low, but the irreversibility constraint prevented it from lowering the capital stock. Although the user cost impact suggests that increasing uncertainty tends to diminish irreversible investment, via the hangover effect increased uncertainty tends to raise the long-run capital stock under irreversibility compared to that under reversibility. The net impact of uncertainty on the long-run capital stock relies on the balance of various elements and cannot be conclusively signed. These findings are in contrast to the conclusions of Dixit and Pindyck (1994). Focusing on a specific functional form, they compute the predicted long-run average

change in the log of the capital stock and find that increased uncertainty leads to a lower long-run average growth of the capital stock.

Operational Competitiveness

The degree to which a company is able to create, sell, and provide products and services in a certain market in comparison to the degree to which other companies are able to do the same. To put it another way, the question is: how can one company win over consumers so that its product or service becomes the preferred option? The operational competitiveness of a production unit (PU), where **r**esources are transformed into outputs of goods and services, is a very important component of its overall competitiveness (Parkan, 1994). A PU's operations are comprised of a number of purposeful activities that consume resources and generate rewards.

The operational competitiveness of a production unit (PU), where resources are transformed into outputs of goods and services, is a very important component of its overall competitiveness. A PU's operations are comprised of a number of purposeful activities that consume resources and generate rewards (Parkan, 1994). The efficiency with which these activities are carried out determines the PU's operational competitiveness. A reliable rating system is a prerequisite for controlling and improving operational competitiveness. In the present paper, we adopt a multi-activity view of the concept of operational competitiveness and develop a procedure to calculate ratings to help gauge the relative operational competitiveness of a set of Pus (Parkan, 1994).

Cost Leadership

When it comes to operational competitiveness, cost leadership is absolutely essential. According to Porter (1985), the term "cost leadership" refers to the practice of selling traditional goods at aggressive prices. A cost leadership strategy is an integrated set of measures taken to develop goods or services with qualities that customers desire at prices that are the lowest feasible in relation to those offered by competitors (Sirmon et al., 2011). On the other hand, according to Calthrop (2010), cost leadership should be understood in terms of the cost incurred per unit of input rather than the absolute lowest cost.

According to Porter (1985), a cost leadership strategy is an effective method to produce a long-term competitive advantage by reducing and controlling expenditures. As a result, the term "cost leadership" has been operationally defined as the process by which a company promotes itself as the cheapest producer or supplier of a certain product or commodity in a competitive market and consistently works to cut costs at all levels in order to remain competitive. This research has led to this definition. This new definition of cost leadership is analogous to the concepts that came before it. On the other hand, the new idea is that such expenses are cut all across the board, not only for things but also for services. This is an addition to the original notion. According to Porter (1980), in order to achieve a low-cost position, a business that successfully implements a cost leadership strategy places a strong emphasis, among other

things, on aggressive cost reduction, stringent cost and overhead management, research and development, and advertising. As a direct consequence of this, businesses that implement a plan to minimize costs are anticipated to see an increase in their production efficiency.

Product Quality

A company's level of success may be directly correlated to the level of operational competitiveness shown by its products. Within the realm of academic writing, the concept of "product quality" may be defined and characterized in a variety of different ways, including "excellence," "value for money," "adherence to standards," and "matching customer expectations," to mention just a few examples (Reeves & Bednar, 1994). Quality is defined as the customer's opinion of the product's or service's perfection, according to the operational definition that is used most often. In today's highly competitive market, quality is critical to any firm's success and continued existence. The issue of quality is becoming increasingly important as a direct result of the intense level of competition that exists on a global scale. Now more than ever, what differentiates one business from another is not its superior quality but rather its ability to remain competitive (Giffi et al., 1990). Deming (1982) shows that organizations are able to improve quality while simultaneously reducing costs if they use the proper management approaches. Product quality, in its widest sense, refers to a product's capacity to meet or surpass the expectations of its target audience, the consumer (Waters & Waters, 2008).

Risk-taking and operational competitiveness

Olaniran et al. (2016) conducted research to investigate how a company's level of risk tolerance influences its overall success. There are 176 businesses listed on the Nigerian Stock Exchange that have made their most recent financial reports accessible to the general public. They came to the conclusion that in 2007, Nigerian managers lacked the proactiveness, aggressiveness, and risk aversion that are essential for the expansion of small and medium-sized businesses (SMEs). The study drew a random sample of 60 companies from the total population. Based on the results of a panel analysis, it was found that the 1ntrapreneurial orientation risk-taking dimension was linked to both low returns on assets and low returns on equity in Nigerian Stock Exchange companies. According to the results of a panel analysis, the 1ntrapreneurial risk-taking dimension was linked to both low returns on assets and low returns on equity in Nigerian Stock Exchange companies.

Research shows that small and medium-sized businesses are more willing to take risks than their larger counterparts. The authors of Lumpkin and Dess (2001) and Oscar et al. (2013a) use this as a definition of risk-taking that includes venturing into the unknown. Because the entrepreneurial environment is less defined and more unpredictable, those who are self-employed tend to be seen as more reckless than those who are not. Intrapreneurs have been shown to be more risk-averse than non-entrepreneurs, according to a recent study. Intrapreneurs are also more inclined than non-intrapreneurs to take risks (Bearse, 1982).

Another way to look at risk-taking is to see it as a person's tendency to take on riskier projects. As expected, organizations with a higher level of success would also have a stronger risk tendency (Leko-Simic & Horvat, 2006, 2013).

Theoretical Review

The study adopted "The Need for Achievement Theory" by David McClelland (1961). A person's "need for achievement" may be described as an innate need to better oneself in order to reach greater levels of success. People who have a strong need for achievement are more likely to create goals for themselves and work actively toward achieving those objectives. Each person is motivated by one of these three fundamental motivators, according to McClelland's human motivation theory. These include the desire for achievement, the need for affiliation, and the need for power. The Need for Achievement Theory, proposed by David McClelland, suggests that individuals are motivated by the desire to achieve success and avoid failure. This theory can be related to intrapreneurial risk-taking and operational competitiveness. Intrapreneurship involves employees within a company taking on entrepreneurial roles, such as developing new products or processes. The Need for Achievement Theory suggests that individuals with a high need for achievement are more likely to engage in intrapreneurial activities, as they are motivated by the challenge and the opportunity to succeed (McClelland, 1961).

Operational competitiveness refers to a firm's ability to effectively use its resources to achieve superior performance. Intrapreneurial risk-taking can contribute to operational competitiveness by fostering innovation and driving growth. Employees who take calculated risks within the organization can lead to the development of new products, processes, or business models that enhance the firm's competitive position (Smith, 1991). Therefore, the Need for Achievement Theory suggests that individuals with a high need for achievement are more likely to engage in intrapreneurial risk-taking, which can contribute to operational competitiveness by driving innovation and growth within the firm.

Empirical Review

On the Nigerian Stock Exchange, Olaniran et al. (2016) studied the effect of businesses' willingness to take risks on their performance. For the purpose of this article, the performance of businesses on the performance of businesses on the Nigerian Stock Exchange (NSE) will be examined. A number of studies cited in the paper were examined critically, and it was concluded that in 2007, Nigerian managers lacked the proactiveness, aggression, and risk aversion necessary for the growth of small and medium-sized enterprises (SMEs). The research for these studies was done in 2007. As of August 2014, there were 176 companies listed on the Nigerian Stock Exchange that had financial results available for public viewing. We drew a random sample of 60 companies from the total population. Statistical methods include calculating the average and standard deviation, as well as using pooled, random, and fixed regression models. These models are based on the preferences revealed by the Hausman

specification test. Based on results from a panel analysis, it was discovered that the 1ntrapreneurial orientation risk-taking dimension was negatively associated with both returns on assets and returns on equity at companies listed on the Nigerian Stock Exchange. In the study, there were two proxies: asset returns and equity returns. As previously mentioned, this finding corroborates the findings of a study conducted in Nigeria in 2007 on 88 SMEs.

Research conducted in Bangladesh by Ullah and Islam (2011) evaluated the effect of warranties on the purchase of electronics. A warranty, as defined by common law, is a statement or guarantee about the suitability of a product or service for its intended use. Most contracts have a warranty clause included in them. This research examines how warranties influence Bangladeshi consumers' purchases of electronic goods. Following a thorough investigation of the research topic, an exploratory research phase was successfully completed, allowing the study to proceed to its conclusion. Convenience sample selection was used to select 100 samples from the population we were interested in. The literature review reviewed several countries' worth of research on product warranties, using a wide range of case studies. More than 30 topics were covered in the 33-question survey, including topics such as service provider accountability, product reliability, long-term warranty, and short-term warranty. The survey asked about risk relief in addition to other topics. In this scenario, the data was examined using a regression analysis. When it comes to electronic devices, six of the eight factors have an impact on consumers' purchase decisions.

Agbo and Okwoli (2019) explored how factors associated with corporate entrepreneurship, including creativity and willingness to take risks, affect the profitability of Nigerian manufacturing businesses. To gather data for the study, a self-administered structured questionnaire was used, and a structural equation model known as PLSSEM was used to assess the findings. According to the findings of the research, the rate of innovation has a negative impact on the profitability of manufacturing firms, which suggests that increasing the rate of innovation has a negative impact on the profitability of manufacturing organizations. On the other side, taking unnecessary risks might have a detrimental effect on a company's profitability. Based on the findings of this study, suggestions are made for manufacturers to make efforts that are both more innovative and more consistent with their efforts. In order to maintain their position as market leaders and expand their bottom lines, manufacturing businesses in Nigeria have to be receptive to novel concepts and more willing to take calculated risks.

Review of Related Literature: Summary and Gap

Efforts have been made to ascertain the relationship between intrapreneurial risk-taking and operational competitiveness. To achieve this, the study first defined the concepts and proceeded to examine each concept as they relate to each other, especially as the concept of intrapreneurial risk-taking relates to operational competitiveness. After an extensive literature review, it shows that intrapreneurial risk-taking relates to operational competitiveness. This was supported by previous relevant studies conducted in these areas. The study used capital

allocation and risk tolerance policies as moderating variables because they best describe how policies set by the intrapreneurial organization will regulate the relationship between innovativeness and operational competitiveness. As a result, the chapter presented a real argument and evidence that intrapreneurial risk-taking relates to operational competitiveness. This was presented in an operational framework that provides links between each variable for better understanding. Thus, the study claims that innovativeness relates to operational competitiveness in manufacturing firms in Nigeria's south-east region.

Knowledge Gap in Literature Reviewed

In light of the above discussions and empirical review, this study asserts that the two dimensions of intrapreneurial risk-taking enhance operational competitiveness. This demonstrates that the three dimensions of intrapreneurial risk-taking play a critical role in operational competitiveness. In this aspect, intrapreneurial risk-taking plays a vital role in gaining operational competitiveness. However, it appears that most of the research studies tend to focus on the relationship between intrapreneurial risk-taking and organizational performance, with no detailed examination of each specific dimension as it relates to operational competitiveness. This has created a lack of empirical data and results in the literature. Furthermore, previous studies treated these concepts with a limited number of data points, which were not provided. Thus, the present study tends to fill this gap in the literature

METHODOLOGY

Research Design

The study adopted a cross-sectional research design because it is survey research. The cross-sectional research design is appropriate because the respondents are not under the researcher's control. Because the research covered more than one organization at the same time, the cross-sectional research design was applied. Furthermore, the cross-sectional research design assists in providing a deep analysis of a selected number of variables, involving the analysis of interrelationships among several variables.

Population for the Study

The target population of this study was comprised of all manufacturing firms in the Southeast region of Nigeria. The available record shows that there are 184 functional manufacturing firms in the south-east region of Nigeria (Manufacturers Association of Nigeria, Enugu Regional Office, Enugu, Nigeria, 2022). Thus, the population for this study is the 184 manufacturing firms in the south-east region of Nigeria.

Sample Size and Sampling Techniques

Since this study adopted a census method for determining the population of the study, The sample size is the entire 184 firms, which represents the functional manufacturing companies employed as the population for the study. This decision was made because the size of 184 companies is not too large to engage, and that's why the researcher decided to employ the census sampling technique, which allows the use of the entire population as the sample size.

With respect to the respondents of the study, the unit of analysis of the study is the macro level of analysis, where the firms themselves are analyzed. Since this was the case, the respondents were the people at the managerial level who understood the visions, missions, objectives, strategies, and operational modes of the firms. Specifically, five managers were designated in each firm on the basis of the positions they occupied. These were the top managers: production managers, marketing managers, product development managers, and financial managers. This produced a total of 920 respondents.

Sources of Data

The research used primary data. The main data was collected directly from respondents. It was firmly believed that obtaining data from this source would aid in the development of reasonable results and legitimate conclusions on the issue, particularly the link between intrapreneurial risk-taking and operational competitiveness.

Measurement of Variables

All variables were measured on Likert's 4-point scale, which ranged from strongly agree to strongly disagree. In this case, a score of 1 was assigned to strongly disagree, 2 to disagree, 3 to agree, and 4 to strongly agree.

Validity of the Instrument

Multiple questions covering all aspects of the variables were used to determine the validity of the content of the content (Spector, 2008). This demonstrates that all variables' domains were covered by the objects required for the assessment. Content validity is defined as "the degree to which items in an instrument reflect the content universe to which the instrument will be generalized (Straub, Boudreau et al. 2004). To achieve content validity, the study used multiple items to assess each variable in order to adequately gather relevant data for each variable. Furthermore, these items were made available to experts for validation in this field of study and were found suitable for measuring all aspects of the variables in this study.

An instrument's reliability

The study applied the Cronbach alpha reliability test to ascertain the reliability of the instruments in order to achieve reliability scores of 0.7 or above, which is the benchmark for

reliability acceptance (Nunnally, 1978). The reliability test calculation was performed using SPSS version 23.0. As shown in Table 1, the reliability test yielded the following results:

Table 1. Reliability Test Results

Variables	Number of Items	Alpha coefficient
Research ad development	7	0.890
Investing in uncertainty	7	0.893
Cost leadership	5	0.793
Product quality	6	0.886
Total	**25 items**	

Source: Resarcher's Desk (2024)

Administration of Instrument

Nine hundred and Twenty (920) copies of the questionnaire were administered directly to respondents by the researcher. Instructions guiding the filling of the questionnaire were provided and the questionnaire was retrieved in a short time. Using questionnaire in collecting the data was helpful because it allowed the respondents to get enough time to ponder over the questions before responding to them.

Data Analysis

Two methods of data analyses were employed. This study applied the descriptive and inferential analysis. The descriptive data analysis focused on univariate analyses of the demographic data of the respondents and research questions, while, the inferential data analyses focused on bivariate and multivariate testing of hypotheses. The descriptive statistics included the computations of percentage rates, mean score and standard deviations, while the inferential statistic was concerned with testing the relationship between the independent and dependent variables. The hypotheses were tested using Spearman's Rank Order Correlation Coefficient.

Data Presentation

A total of 920 (100%) copies of the questionnaire were administered to the respondents in various firms. Out of this number, 902(98%) were retrieved, which means only 18(2%) copies of the questionnaire were abandoned. This shows that a successful administration and retrieval of the questionnaire because more than 90% of the questionnaire were filled out by the respondents.

Demographic Data Analysis

The demographic data analysis focused on the bio data or information of the respondents who participated in the study by providing the necessary data for the study.

Educational Level

Table 2 presents the result of educational attainment, which is very important because it portrays the level of knowledge in terms of who can write, read, and communicate effectively in the pursuit of organizational goals.

Table 2
Educational Qualifications

Educational qualifications	Responses	Percentage
Primary school	103	11.4
Secondary School	134	14.9
Diploma/NCE	286	31.7
HND/B.Sc	185	20.5
PGD/Master	130	14.4
Ph.D	64	7.1
Total	**902**	**100**

Source: Research Survey (2024)

The result in Table 2 shows that 10.3% of the respondents only ended up in primary school; 13.4% stopped at secondary school; 31.7% of the respondents managed to reach diploma/NCE certificates; 20.5% obtained an HND/B.Sc. degree; 14.4% were PGD/Master degree holders; and only 7.1% were Ph.D. degree holders. The results show that most of the respondents had a B.Sc. or HND degree as their educational qualifications.

Position in the Organization

Analyzing the position distribution of respondents was essential because it helped in knowing the categories of participants in the research from the firms studied. Hence, table 3 contained the result.

Table 3
Position of Respondents

Position	Responses	Percentage
General managers	184	20.4
Production managers	174	19.3
Marketing managers	168	18.6
Product development managers	192	21.3
Financial managers	184	20.4
Total	**902**	**100**

Source: Researcher's Desk (2024)

Table 3 revealed that 20.4% were general managers, 19.3% were production managers, 18.6% were marketing managers, 21.3% were production managers and 20.4% were financial managers. This implies that majority of the respondents were production managers.

Bivariate Analysis of the Study Variables

In this section, the study analyzed the responses gathered and used it to test the relationship between study variables.

Test of Hypothesis 1

Ho1: There is no significant relationship between research and development and cost leadership of manufacturing firms in south-east region of Nigeria

Table 4

Correlation between Research and development and the Cost leadership

Correlations

			Research and Development	Cost Leadership
Spearman's rho	Research and development	Correlation Coefficient	1.000	.858**
		Sig. (2-tailed)	.	.000
		N	902	902
	Cost leadership	Correlation Coefficient	.858**	1.000
		Sig. (2-tailed)	.000	.
		N	902	902

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

Source: Researcher's Desk, (2024).

From table 4 above**,** research and development correlates with cost leadership at (.858) when the P-value is .000 < 0.01. This indicates very strong and positive relationship. Therefore, the study rejected the null hypothesis and accepted the alternative hypothesis that there is a significant relationship between research and development and cost leadership of manufacturing firms in south-east region of Nigeria.

Test of Hypothesis 2

Ho2: There is no significant relationship between research and development and the product quality of manufacturing firms in south-east region of Nigeria.

Table 5
Correlation between Research and Development and the Product Quality

Correlations

			Research and Development	Product quality
Spearman's rho	Research and Development	Correlation Coefficient	1.000	.863**
		Sig. (2-tailed)	.	.000
		N	902	902
	Product quality	Correlation Coefficient	.863**	1.000
		Sig. (2-tailed)	.000	.
		N	902	902

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

Source: Researcher's Desk, (2024).

According to table 5 above, research, development, and product quality are at (.863) when the P-value is.000 < 0.01. The result indicates a very strong and positive relationship. Therefore, the study rejected the null hypothesis and accepted the alternative hypothesis with the conviction that there is a significant relationship between research and development and the product quality of manufacturing firms in the south-east region of Nigeria.

Test of Hypothesis 3

Ho3: There is no significant relationship between investing in uncertainty and cost leadership of manufacturing firms in south-east region of Nigeria.

Table 6
Correlations between Investing in uncertainty and Cost leadership

Correlations

			Investing in uncertainty	Cost leadership
Spearman's rho	Investing in uncertainty	Correlation Coefficient	1.000	.844**
		Sig. (2-tailed)	.	.000
		N	902	902
	Cost leadership	Correlation Coefficient	.844**	1.000
		Sig. (2-tailed)	.000	.
		N	902	902

**. Correlation is significant at the 0.05 level (2-tailed).
Source: Researcher's Desk, (2024)

From table 6 above**,** investing in uncertainty correlate with cost leadership at (.844) when the P-value is .000 < 0.01. This indicates very strong and positive relationship. Therefore, the study rejected the null hypothesis and accepted the alternative hypothesis that there is a significant relationship between investing in uncertainty and cost leadership of manufacturing firms in south-east region of Nigeria.

Test of Hypothesis 4

Ho4: There is no significant relationship between investing in uncertainty and product quality of manufacturing firms in south-east region of Nigeria.

Table 7
Correlations between Investing in Uncertainty and the Product Quality

Correlations

			Investing in uncertainty	Product quality
Spearman's rho	Investing in uncertainty	Correlation Coefficient	1.000	.443**
		Sig. (2-tailed)	.	.000
		N	902	902
	Product quality	Correlation Coefficient	.443**	1.000
		Sig. (2-tailed)	.000	.
		N	902	902

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Researcher's Desk, (2024).

According to table 7 above**,** investing in uncertainty correlates with product quality at 0.443 when the P-value is.000 < 0.01. This indicates a mature and positive relationship. As a result, the study rejected the null hypothesis and accepted the alternative hypothesis, believing that there is a significant relationship between investing in uncertainty and the product quality of manufacturing firms in Nigeria's southeast region.

Discussion of Findings

In Nigeria's south-east region, there is a significant relationship between research and development and the cost leadership of manufacturing firms. This means that investing in R&D can result in cost-saving innovations, process efficiencies, and competitive pricing strategies, all of which contribute to cost leadership. There is a significant relationship between research and development (R&D) efforts and cost leadership. While it may seem counterintuitive at first, investing in R&D can actually contribute to cost leadership in the long run.

In Nigeria's south-east region, there is a significant relationship between research and development and the product quality of manufacturing firms. This implies that higher R&D investment can lead to improved product designs, features, and performance, thereby enhancing product quality. There is often a significant relationship between research and development (R&D) efforts and product quality. Companies that invest in R&D typically focus on developing new products, improving existing products, and enhancing production processes. These investments can lead to innovations that result in higher-quality products.

In the southeast region of Nigeria, investing in uncertainty has a significant impact on the cost leadership of manufacturing firms. This implies that strategic investments in uncertainty management, such as market research and flexible production systems, can improve cost efficiency and decision-making, thereby supporting cost leadership. The relationship between investing in uncertainty and cost leadership can be significant. Investing in uncertainty management strategies, such as market research, technology adoption, and supply chain optimization, can help companies identify and mitigate risks, reduce waste, and improve operational efficiencies.

In the southeast region of Nigeria, investing in uncertainty has a significant impact on the product quality of manufacturing firms. This shows that managing uncertainty through R&D and market analysis can lead to a better understanding of customer needs and preferences, resulting in higher product quality. There can be a significant relationship between investing in uncertainty and product quality. When companies invest in managing uncertainty through strategies such as research and development, market analysis, and flexible production systems, they can gain insights into customer needs, market trends, and potential risks. These insights can lead to the development of higher-quality products that better meet customer expectations and differentiate the company from competitors.

The relationship between investing in uncertainty and product quality may not always be direct or straightforward, as it can be influenced by various factors, such as the effectiveness of uncertainty management strategies, the industry context, and the competitive landscape. However, when uncertainty is managed effectively, it can contribute to improved product quality by enabling companies to make informed decisions and adapt quickly to changing market conditions. It is important for companies to carefully evaluate the impact of their uncertainty management efforts on product quality and to continuously improve their strategies to enhance both product quality and overall competitiveness.

Conclusion

It is worth considering the importance of intrapreneurial risk-taking in the pursuit of operational competitiveness. In manufacturing firms in the south-east region of Nigeria, the study found a strong correlation between intrapreneurial risk-taking and operational competitiveness. This suggests that intrapreneurial risk-taking has an impact on the competitiveness of manufacturing companies in Nigeria's southeast region. The study therefore

draws the conclusion that there is a significant relationship between research and development and cost leadership, research and development and product quality, investing in uncertainty and cost leadership, and investing in uncertainty and product quality of manufacturing firms in the south-east region of Nigeria. Thus, the study concludes that intrapreneurial risk-taking relates to the operational competitiveness of manufacturing companies in the south-east region of Nigeria.

Recommendations

Based on the findings and conclusions drawn, the following recommendations were necessary:

1. Management should engage in research and development to enable them to achieve cost leadership and operational competitiveness.
2. Management should conduct research and development to improve product quality and operational competitiveness.
3. Management should develop the ability to invest in uncertainty with the aim of improving cost leadership and operational competitiveness.
4. Management should develop the ability to invest in uncertainty with the aim of improving product quality and operational competitiveness.

Areas for further research

The study was carried out on manufacturing firms in the south-east region of Nigeria after an observation of low operational competitiveness in this region. However, other regions in Nigeria might suffer from the same; hence, further research needs to be carried out on intrapreneurial risk-taking and operational competitiveness in the south-south, south-west, south-east, or north-west of Nigeria. This will ensure deep coverage of how intrapreneurial risk-taking affects operational competitiveness in Nigeria as a whole. As a result, poor intrapreneurial risk-taking may have an impact on other industries such as telecommunications, transportation, hospitality, and the aviation industry, necessitating additional research

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