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The Relationship between Knowledge Risk Management and Sustainable Organizational Performance: The Mediating and Moderating Role of Leadership Behavior.

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The Relationship between Knowledge Risk Management and Sustainable Organizational Performance: The Mediating and Moderating Role of Leadership Behavior.

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Abstract

This study aimed to explore the relationship between knowledge risk management (KRM) and sustainable organizational performance (SOP) by examining the role of leadership behavior (LB). We obtained data from both private and public companies in Nigeria via an online questionnaire. The study utilized structural equation modeling to test the hypotheses. As at when this research is being carried out, there is no prior knowledge of any studies that explores LB role in the interaction between KRM and SOP. The empirical findings reveal that: (i) leadership behavior and KRM impact SOP positively; (ii) KRM exerts a positive impact on LB; (iii) LB moderates the relationship between KRM and SOP; and (iv) LB mediates the relationship between KRM and SOP. The outcomes from this empirical research will improve the understanding of owners and managers of the role of leadership behavior in the interaction between KRM and SOP.

Keywords: *Knowledge risk management; Leadership Behavior; Sustainable Organizational Performance;*

1. Introduction

In the recent time, scholars have observed that a growing large numbers of companies have discovered that in an extremely competitive domain of globalized economy, the success of the firm is no longer guarantee with only practicing a policy that focus on short term profits and as such believe that all policies must be accompanied by sustainable behavior. (Khan et al 2021; Stanciu et al 2014). Sustainability as opined by (Khan et al 2021) is important for an organization to manage ecological issues with global magnitude. Therefore, organizations have shifted their attentions to ensure that there is a balance of sustainable performance and financial performance with social and environmental performance. One of the key issues for business leaders globally is sustainability, which has raised the need for organizations to focus on ensuring long-term prosperity (Durst et al. 2019; Watson, 2010). Sustainable performance of an organization according to (Stanciu et al.2014) is described as “the ability to meet the needs and expectations of stakeholders and customers on long-term, balanced by an effective organizational management by organization staff awareness by learning and applying appropriate improvement and innovation” (p.341). As a result, it has become important to explore factors that will ensure organizational sustainable performance. The importance of knowledge as suggested by literature in the present “knowledge-based economy” is irrefutable owing to its significance of its management to the success of an organization (Durst et al. 2019; Massingham 2014).

Meanwhile, (Durst et al.2019) stressed that processing of knowledge only might not only assure strategic advantage, but its management that includes both the upsides and downsides of it should be considered. The study of (Victor, 2014) observed that in this contemporary world, knowledge is not only an asset and source of potential competitive advantage of a firm, but according to (Bratianu 2018, Zieba & Durst 2018, and Durst & Zieba 2017), several hazard and risks can arise as a result of knowledge. Though, this viewpoint is still a contemporary approach as still very few studies investigates knowledge risk and its management. As observed in the literature, only some selected knowledge risks were discussed, for instance knowledge leakage by (Mohamed et al. 2007), knowledge loss (Massingham, 2018), knowledge waste (Ferenhof, 2015), and a recent study by (Durst et al. 2019), which investigates the performance of an organization in relation to knowledge risk management. Moreover, in diverse corporate contexts, scholars and practitioners have recognized the benefits of research in knowledge risk management (Durst et al. 2019). This is particularly true in the modern period, with the current focus on creativity and

knowledge-based organizations. KRM plays a particularly essential role in ensuring positive sustainable organizational performance (SOP) in this sense. Though in the recent time, attention of scholars has been on the study of risk management, however it is still a novel scientific field (Durst et al. 2019; Aven, T. 2016).

While several attempts have been made to define the mechanisms of this interaction, this research uses a more synthesized approach to reveal new perspectives by focusing on the role of leadership behavior (LB). In recent years, several research have been carried out which link organizational performance and KRM (Durst et al. 2019; Namdarian et al. 2020; Thalmann et al. 2014; Wang 2016). Additionally, some studies have focused on leadership behavior and organizational performance (Al Khajeh, 2018; Alhammadi, et al. 2020). The findings from their studies revealed a positive interconnection between leadership behavior and organizational performance. Leadership in every organization is believed to be significant, as well as several responsibilities in a firm lies on the leader owing to the incorporation of different hierarchical levels like units, firm level and individuals in leadership (Alvi, et al. 2019). Some studies opined that an organization can achieve high performance through adoption or adaptation of a good leadership behavior (Al Khajeh, 2018; Debebe, 2020). Although prior studies have established that there is a positive interconnection between KRM and SOP, these studies did not take into consideration the role of leadership behavior in the relationship between knowledge risk management and sustainable organizational performance. Whereas, provision of vision leadership behavior is related to the provision of directions for future actions, communication of acceptable types of innovation towards the achievement of sustainable performance (Debebe, 2020).

In consideration of the importance of organizations' knowledge sources, and the non-exhaustiveness of its relationship with the achievement of an organizational sustainable performance, together with the role of leadership behavior, it becomes imperative to fill the gaps in the literature. Hence, the objective of this current paper is to examine the role of leadership behavior in the interconnection between KRM and SOP. These relationships will be explored with the use of resource-based view" (RBV) theory. The RBV according to (Akram et al. 2018) enables the development of framework for investigating both the sustainable and strategic resources of an organization. In relation to this, the study of (Ravichandran et al. 2005) posited that resources in an organization such as knowledge are unique and valued, and if properly harnessed could result to the achievement of sustainable competitive advantage" for the firm within the market they

operate. Several analysts have opined that it is important for SOP to encompass the creativity feature, which is important in the current business environment. Therefore, organizations are being actively encouraged to integrate KRM into their business frameworks. In line with the objectives above, the following research questions are addressed by this study: (a) what impact does KRM have on SOP? (b) Does the role of leadership behavior influence the interconnection between KRM and SOP? This study contributes to the literature in the following ways: (i) theoretical evidence is provided by examining these interactions; (ii) the study examines the role of leadership behavior on the relationship between knowledge risk management and SOP; (iii) the study provides managerial suggestions based on the findings. The remainder of this study is organized as follows: the study theoretical background and conceptual framework as well as the hypotheses development are discussed in Section 2. The study methodology is discussed in Section 3. Based on the methodology that was adopted, the study results are shown in section 4. Also the findings and conclusion are discussed in Section 5.

2. Background and Framework Development

RVB theory focuses on the value building through resource accumulation of any firm. Some organizations focus on improving their knowledge based resources while others focuses on capability building within the organization. From the insights of RBV, there is a necessity for organizations to work on resource building mechanism; also the organizations in their business model work for distinctiveness, imitability, agility, and rarity with the aim of having a competitive edge in the market (Akram, et al. 2018; Anifowose, et al 2018). In addition, according to resource based theory, organizations varies in respect to tangible and intangible asset they possess. (Anifowose, et al. 2018; Akhavan, et al. 2018; Spyropoulou, et al. 2018), thus the distinctiveness assist firms in gaining competitive advantage among their competitors. In underpinning the robustness role of KRM in achieving sustainable performance, the extant literature has suggested the significant of human capability to the improvement of various organizational processes (Kianto, et al. 2017), with the attendant effect on the organizational performance (De Guimarães, et al. 2018). An organization sustainable advantage can be determined by the competence of knowledge which is determined by the knowledge based review of such organization.

The RBV according to (Mahdi et al. 2019), claimed knowledge to be one of the core part of an organization by adding significant importance to the business process of the organization. Therefore, an organization's investment on creating a framework for knowledge based resources have the potential of enhancing the knowledge management capability with the possible impact on the achievement of sustainable performance. For an organization to achieve sustainable performance, the knowledge management capability especially on the risks needs to be developed. This becomes imperative because organization sustainability requires a firm to place strong emphasis on societal and environmental issues unlike the conventional focus on economic issues. Meanwhile, it is not clear in the literature how the KRM can influence the sustainable performance of an organization. In addition, the intervention of leadership behavior in the relationship has not been previously investigated. Therefore, instead of only looking into the direct relationship between sustainable organizational performance and KRM, the indirect relationship through the leadership behavior will be explored, as well as the moderating role of leadership behavior in the relationship.

2.1 Knowledge Risk management (KRM)

Knowledge assessment that is appropriate and current is vital for all organizations to address existing and potential problems. Nevertheless, it is well understood that information can not only be beneficial, i.e. anything of importance, but can also have a dangerous dimension (Durst, et al. 2019). According to (Durst and Ferenhof, 2016), irrespective of their form and scale, organizations are subject to a range of information-based threats, such as human resource threats, strategic risk, decision-making risks linked to emerging tactics, economies, goods and other critical business concerns, expertise gaps or risks due to outsourcing company functions. In order to expand on information risk control, it is important to describe risk management. (Perrott, 2007) described knowledge risk as the probability of any failure arising from the discovery, preservation or security of information that could affect the company's organizational or strategic gain. (Durst et al. 2019), divided information threats into external and internal. Internal threats, such as information depletion, information loss or knowledge hoarding, are mainly linked to the internal condition of the company, whereas awareness hazards, including knowledge spillover, resolve the relationship of the enterprise with the external threat. Risk management may result in a variety of

negative outcomes, such as the inability to deliver high-quality solutions, expensive results or organizational delays, lack of competitive edge or even catastrophic events (Kim, et al. 2014). Organizations are usually confronted with the threats (knowledge), but not necessarily threats of same nature or impacts. (Aliu, et al. 2016).

Additionally, risks are interdependent, which implies that one risk can lead to other risks. Consequently, in order to maintain vital information, which is the knowledge that can disappear (Frigo, et al. 2014), organizations must ensure that the information challenges they sometimes experience are deeply rooted in their risk control strategies. The management of risk is a systematic framework “where organizations methodically approach the risks associated with their operations with a view to obtaining sustainable gains within each operation and through the continuum across all operations” (Clarke, et al. 1999). Following (Trussell, et al. 2001), the risk management phases include: (i) risk identification; (ii) risk quantification and thus risk assessment; (iii) risk management and control; and (iv) continued risk development reporting. An organization should adopt method of risk management that is in line with a risk management vision which is guided by the risk landscape of the company. (Clarke, et al. 1999). Risk management is modeled to help organizations in establishing a compromise between profitability and risk. This have shown to have effects on the success of organizations (Aliu, et al. 2016).

In recent times, the standard to determine risk management method have increased exponentially which have led to demand in the expansion of context of the framework. (Mukhtyar, et al. 2009). (Smallman, 1996) suggested a standardized risk management strategy which can be determined by three major aspect: (i) constant analysis of all causes of concern; (ii) a mixture of quantitative and qualitative risk evaluation and risk control techniques; and (iii) a corporate method of learning, where corrections are made as a result of errors and failures which leads to adaptation of proactive coping attitude to mistakes.. KRM is a systemic approach to using resources and strategies to recognize, assess and respond to threats associated with the development, implementation and preservation of organizational information (Durst, et al. 2017). In view of this concept, KRM applies to all organizations and is therefore not restricted to private entities. Existing literature on KRM shows that it is yet to be comprehensively explored, as only identified threats or their implications are addressed in the available studies. A study by (Massingham, 2008; Massingham, 2018), only effect of lack of information on organization was put into consideration.

However, some elements of information risk assessment (e.g. multiple forms of information threats and their consequences) were not taken into consideration.

2.2 Leadership Behavior

Leadership is known to be one of the most contentious topics in modern day management due to its contribution to performance. Leadership in its basic form is the skill and method utilized in guiding individuals (Al Khajeh, 2018). It is the capability of a person or a group of people to be the primary targets or to take the lead when others are watching. Leadership has been a subject of discourse, particularly with respect to the standard of leadership. According to (Ogbeidi, 2012), a leader is required to embody characteristics that support but are not restricted to good nature, intuition, strategy, discretion, and the capacity to lead by example, since individuals generally delegate leadership to others they believe will better allow them to accomplish essential goals or objectives. Leadership is analogous to a collaborative mechanism in which individuals come together to seek progress and, in doing so, aim to jointly create a common view of what the world (or any aspect of it) might be like, to make sense of their reality and to shape their decisions and acts (David, et al. 2014). As (Igbaekemen, 2014), stated, leadership is an interactive phenomenon affecting both the influencer and the individual being influenced. This implies that there can be no leader without followers. This leadership activity assists in the formation and execution of the organizational framework, directs the commitment and initiative of the followers, forms the objectives of the group and even corrects errors or ensures that followers are focused on the company goal as they diverge. All of this is meant to better accomplish the corporate purpose and enhance operational efficiency by manipulating the actions of adherents or by managing activities personally. The transactional and motivational model of leadership requires two kinds of actions. Each of them reflects on the corporations' mission and aim, the management of followers, the provision of the required resources to followers, technological assistance and even the provision of the appropriate tools. On the other hand, the other reflects on the partnership between the manager and the employee, how leaders demonstrate confidence and faith in workers, how welcoming they are to staff, and how appreciative they are of employees' efforts and accomplishments (Yiing & Ahmad, 2009). According to (Quinn and Cameron 1988), executive leadership positions consist of leadership actions that can be defined in the light of conflicting principles. (Hart and Quinn 1993), claimed that the leadership activities involve vision-setting,

inspiring, evaluating and handling followers' tasks. Executive leaders must invest researching the social, technical and economic patterns of the world in order to be effective in performing this position. Top management must concentrate on the overall success of the company by leading workers to the corporate mission and the environment. As an individual who sets the vision of an organization, the leader must be alert to environmental shifts, search for knowledge that is essential for corporate growth, and build a roadmap for the future in order to fulfill the organizational purpose. The corporate purpose and goal will direct workers in their activities and participation, which in turn will boost the financial success of the company. The relationship-oriented leadership behavior and the task-oriented leadership activity at the supervisory level of the company have an effect on the employee's satisfaction with their jobs and overall company efficiency (Judge, et al. 2004).

2.3 Economic Implication of leadership behavior in an organization.

Many researchers believe that there is little or no correlations between Leadership and economics. Not only do the theories on the behavior of humans in these fields differs, methodologies, central variables and the topic of interest also varies. Despite this differences, researchers have picked interest and an increasing body of work have emerged that shows that economic variables as well as the approach, assumptions and methods to understanding leadership provides a pathway to broaden scientific study. (Kulas, et al. 2013; Kosfeld 2018).

This study aim to contribute to the fast emerging body of work on economics and leadership. The application of both economic and economic related constructs and thinking points to important questions like: What effect does institutional, systematic and economic impact have on the quality and motivation of leaders and leadership in an organization? In what ways do the conditions of macroeconomics influences how a leader perform in an organization. Also how do effective management of knowledge by leaders within an organization translate to economic growth of the organization?

This research give an insight in the assumptions about leadership from an economic point of view. Our study perspective suggests an economic view of the influence of leadership in an organization as a role that serve a functional purpose in solving problems through coordinating of individuals within the organization, enhancing cooperation through effective knowledge management and reduction of uncertainty to boost economic growth of the organization. (Kosfeld 2018; Zehnder

et al. 2017). Also the behavior of leaders in an organization is affected and found to shift fairly in operational context such as competitive pressure, contracts and macroeconomic environments.

Despite the fact that scholars of leadership and economics have interest in understanding how leadership role in an organization impact the economics value of the organization, often they disagree on the assumptions, method of inquiry and the general approach on the subject. (Zehnder et al. 2017).

Generally to boost compliance, managers uses organization's control system and economic exchange. Meanwhile leaders make use of trait and personal qualities, also they use a very good communication style to foster commitment, loyalty, and persistence in the organization which in turn leads to economic growth of the organization.

2.4 Sustainable Organizational Performance (SOP)

Sustainability is a strategy for enhancing organizational performance, which is an increasing problem for many developed countries, businesses and organizations. Sustainable development is described by the United Nations as that which "meets current necessities without undermining the capacity of later generations to fulfill their own desires" (Longoni, et al. 2014). An organization's SOP is largely focused on the execution of the implementation strategy of the organization, which involves the optimal consideration of the goods and services it provides in comparison to other rival organizations. Organization perceive sustainability as essential to growth, such that it is not only a concept, but also a philosophy that suggests a coherence of environmental, social and economic issues (Lopes, et al. 2017). Addressing sustainability in an organization can affect elements of knowledge risk management, (Lopes, et al. 2017; Tseng, et al. 2014). Companies partially achieve longevity by promoting risk control of expertise. Organizations may enable sustainable action planning by collecting knowledge about their economies, their clients, their rivals and future innovations. Organizational performance (OP) in the management literature is one of the most widely studied outcome variables (Sambasivan, et al. 2011; Alaarj, et al. 2016). Several analysts have primarily concentrated on organizations' minimal financial output, whereas others have concentrated on their broader economic performance (Preuss, L. 2005). Sustainability within organizations is gradually being characterized more generally, which encompasses the fiscal, environmental and social impact of the production activities of the

enterprise. SOP requires positive financial performance, protection of the reputation of the organization and sustainability-linked results (Lutgen- Sandvik, et al. 2016). Therefore, (Wiggins & Ruefli 2002) suggested that SOP denotes the ability of a company to gain and maintain a competitive edge over time.

2.5 Knowledge Risk Management and SOP

Sustainability from the perspective of organization according to (Smith & Sharicz 2011; Saunders, et al. 2007; Inkinen, H. 2016) can be describe as “the result of the activities of an organization, voluntary or governed by law, that demonstrate the ability of the organization to maintain viable its operations whilst not negatively impacting any social or ecological systems”. Hence, for every organization to perform in a sustainable manner, (Chow & Chen 2012) opined that such firm should adopt economic, environmental and social development in their business operations. Meanwhile, it is important for an organization to focus on the integration of the three dimensions so as to avoid scandals and disasters. Meanwhile, (Durst et al. 2019) suggested that an organization should be able to acknowledge the actions that are needed within the organization to be sustainable with adequate knowledge and ability to utilize it. In reference to the studies of (Lopes, et al. 2017) concept of sustainability of an organization intertwines with knowledge management.

In the empirical literature, studies on KRM are still in their infancy. There is no previous research that examines the correlation that exist between management of knowledge risk and sustainable organizational performance. However, several studies have explored the interconnection between organizational performance and knowledge risk management and they found a positive interconnection between them (Durst, et al. 2019; Thalmann, et al. 2014; Mills,et al. 2011; Kimaiyo, et al. 2015). Furthermore, (Ha et al. 2016) also found a positive link between the performance of an organization and knowledge management. These outcome shows that knowledge risk management enhances organizational performance if it is well implemented. The outcomes of these studies have significantly assisted in comprehending the connections between knowledge risk management and SOP. Meanwhile, the implementation of KRM has the potential of making it easier and better for a firm to fulfill their sustainability requirements, owing to the potential of KRM to identify certain risks like environmental or social risks and eliminating them.

Therefore, the study anticipates a positive interconnection between knowledge risk management and sustainable organizational performance. Based on this, the following hypothesis is formulated:

***H1:** There is a positive link between knowledge risk management and sustainable organizational performance*

2.6 Knowledge Risk Management and Leader Behavior

Leadership behavior includes the attributes and actions that render an individual a successful manager. This guides the method to which an individual directs, lead and also control the work of others to accomplish an objective. These behaviors and techniques should be learned in order to improve the efficacy of others around them. So many research have explored the link between knowledge risk management and leadership behavior. (Fernández-Muñiz, et al. 2014; Sax, J. & Torp, 2015; Jain & Jeppesen 2013).

Additionally, the study conducted by (Politis, 2001) revealed a positive link between leadership behavior and knowledge risk management. The study carried out by (Huang et al. 2016) also corroborated the findings of (Politis, 2001). Using the health care system as a case study, the findings of (Tretiakov et al. 2017) revealed a positive interconnection between knowledge management and leadership behavior. The outcomes of these studies have significantly assisted in comprehending the connections between knowledge risk management and leadership behavior. Therefore, the study anticipates a positive interconnection between knowledge risk management and leadership behavior. Based on this, the below hypothesis is formulated:

***H2:** There is a positive link between knowledge risk management and leadership behavior.*

2.7 Leadership Behavior: Mediating and Moderating role

The leader aims to produce above average outcomes and sets higher organizational priorities by fostering a sense of the value of the team's goal, empowering workers to think creatively about a challenge or a job, and placing community targets above specific self-interests. Leaders' actions have an impact on inspiring workers to become more conscious of the effects of their work; they promote their morale and grow their self-interest in the success of the company. In their research on leadership strategies in Russian businesses, (Kaluza, et al. 2020) investigated

the effect of such strategies on organizational performance. The study found a positive link between leadership behavior and organizational performance. The outcomes of the study of (Katou, 2015) also correspond to this finding, (Hashim, et al.2018) researched the influence of sustainable performance of an organization on leadership behavior. The empirical findings reveal a positive association between leadership and organizational Performance. This finding concurs with the outcomes of (Ejere & Ugochukwu 2013; Muijs 2010; Alhammadi et al. 2020). The outcomes of these studies have significantly assisted in comprehending the connections between leadership behavior and SOP. Therefore, the study anticipates a positive interconnection between leadership behavior and sustainable organizational performance. In addition, the KRM is expected to have a direct relationship with SOP, while it is also expected to have an indirect relationship through leadership behavior. Leader is expected to provide planning of work activities, differentiating objectives and roles for employees and also coordinating the operations and their performance. Meanwhile, where these attributes are lacking or efficient, there is potential of either moderating or mediating the relationship between knowledge risk management and sustainable organizational performance. Based on this, the following hypotheses are formulated:

H3: There is a positive link between leadership behavior and sustainable organizational performance.

H4: Leadership behavior moderates the relationship between knowledge risk management and organizational performance

H5: Leadership behavior mediates the relationship between knowledge risk management and organizational performance

2.8 Theoretical Framework

The model proposed in the current study identifies that knowledge risk management (KRM) can bring about an advancement in sustainable performance of an organization (SOP) and mediating and moderating the relationship role of leadership behavior in the relationship between knowledge risk management and SOP. Recently, knowledge risk management has become a key issue amongst practitioners and scholars due to its role in creating SOP. Scholars in management have claimed that KRM is perceived an agent of competitive benefit and has various effects on SOP (Fay, et al. 2015; Rasool & Koser, 2016). In dynamic business environments, KRM practices

influence the innovativeness of firms and constitute important instruments for the improvement of SOP. Thus, the authors of the current paper contend that leadership behavior plays a significant role in the interconnection between KRM and SOP. The present paper investigates these associations and identifies the influence of knowledge risk management on SOP via leadership behavior in a developing country. The current research complements prior studies by expanding the role of KRM in determining the leadership behavior that leads to SOP. Organizations can increase SOP by rising their financial status in comparison to their rivals. It is now standard practice for organizations to closely evaluate their KRM against their rivals in order to help them reach their SOPs (Koser, et al. 2018). It is a challenge for organizations to retain their success via leadership, but a comprehensive strategy will allow organizations to meet this goal. SOP must be regarded with the ultimate intention of making this unique a specific firm; otherwise, competitors can repeat business operations and thereby pave the way for the loss of SOP (Koser, et al. 2018). Centered on these concepts, the study framework is illustrated in Figure 1, which illustrates the current study hypotheses.

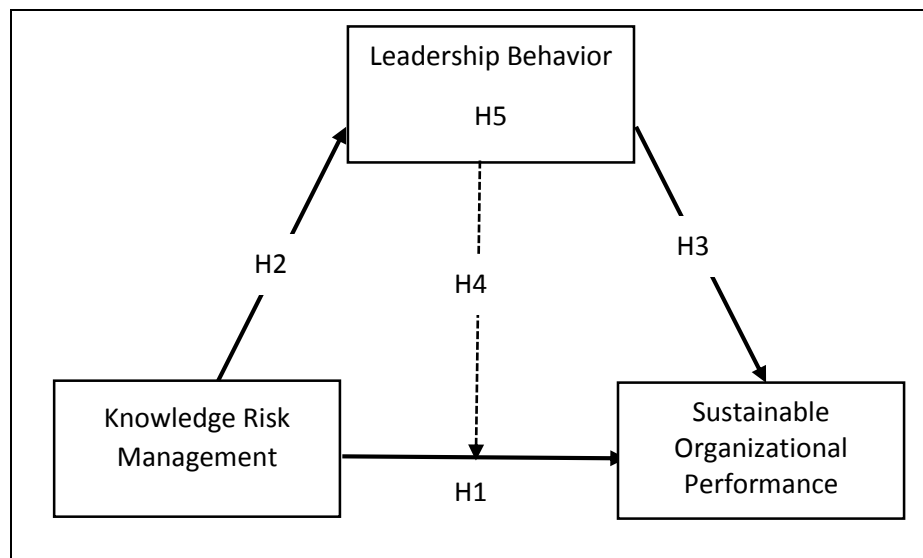


Figure 1: Research Model

3. Methodology

Sample and Data collection

The data for this analysis were obtained from online questionnaires distributed between November 2019 and September 2020 by utilizing Google Forms. The questionnaire comprised of 24 closed-ended questions that were divided into five parts. As the subject of discussion has not previously been discussed, it was not feasible to draw on existing questionnaires. Hence, either original items have been created or established ones from similar fields (such as risk management) have been updated. In addition to the parts on knowledge risks management and its implementation, empirical quantitative statistics have been gathered, such as the year in which the company was established, the type of entity, the position and the number of workers. After the questionnaire was created, it was tested to verify the conciseness of the questionnaire, the sequence of questions and the feasibility of answering the questions within a certain time frame (max. 30 min). The pre-test, reducing the vulnerabilities of self-managed surveys was identified (Saunders, et al. 2007). Two marketing PhD holders and business participants pre-tested the questionnaire. Further research will be necessary to determine the relationship between KRM and organizational results. (Inkinen, 2016). Considering this information, the investigators utilized the methodology of (Heisig et al. 2016) and obtained data from firms. Convenience sampling was utilized to reach target respondents; in other words, the participants were informed about the survey via different social media channels.

The possible participants from Nigeria's companies were accessed using a convenience sampling by informing the participants about the survey through email. In total, 339 responses were obtained from administrators and shareholders of businesses, who are passionate regarding the topics in question. In order to make sure that the results are accurate, only fully filled and completed questionnaires are put into consideration during the analysis process, culminating in a final total of 303, which represents a completion rate of 89.6 per cent, which is above the established benchmark. The benchmark for sample size is 126 or more to guarantee that coefficients in the model have a significance level of $P < 0.05$ (Kock, et al. 2016; Parker, et al. 2007). We made sure that each coefficient that have direct impact produces a significant f-square effect size of more than 0.02, (Cohen, 1988).

Measures

Knowledge risk management, leadership actions and organizational success are core components of this study. Operational performance includes sub-dimensions such as innovation, responsiveness, resilience, operational progress, organizational sustainability and organizational development (Durst, et al. 2019; Gürlek & Çemberci, 2020). Information risk management was evaluated based on two survey questions posed to the respondents regarding their KRM practices. Resultantly, the participants were questioned whether their company implements KRM, and if so, what information threats were discussed in their KRM, which was extracted from previous knowledge risk analysis (Durst & Zieba, 2017; Gürlek & Çemberci, 2020). The research also utilizes CEO leadership conduct as a mediating and moderating component (Alhammadi, et al. 2020; Yiing & Ahmad, 2009; Oyetunji, et al. 2019). This research utilized quantitative metrics of organizational success to assess organizational performance. More specifically, contextual self-reporting methods have been utilized. While subjective metrics have historically been regarded with great caution, empirical studies indicate that this caution is unfounded. The researchers agree that discretionary market success metrics can also be suggested in the event of the unavailability of archival records or insufficient access to quantitative measurements. In comparison, the usage of subjective measures can often resolve time dependence. The approach used to analyze data during this research was factor-based partial least square structural equation modelling which is an adaptation of the traditional partial least square methodology (Kock, 2014). This variance provides accurate results for small quantities, does not cause the data to be naturally distributed, and works with variables as compared to composites i.e. correcting for the calculation errors (Kock, 2015; Kock & Mayfield, 2015). The WarpPLS package, version 7.0, incorporates this variant (Kock, 2020; Kock & Chatelain-Jardón, 2016) and has also been used. The structural equation modeling (SEM) study was followed by confirmatory factor analysis by which the measuring instrument was tested (Kock, 2014; Kline, 1998). In addition, CEO leadership activity was used as a mediating and moderating component in the simulation of the structural equations.

4. Results and Discussions

To show the correlations between models, “Partial Least Square-Structural Equation Modelling (PLS-SEM)” was utilized along with WarpPLS (7.0). The model structure was analyzed using WarpPLS 7.0 as suggested by (Kock, 2020; Odugbesan, et al. 2021), WarpPLS is “a partial least square regression procedure that is effective for analyzing both linear and non-linear relationship simultaneously”. PLS-SEM shows efficiency while testing the correlations in the constructs and the results which reflects reality in real life situation. Due to its non-dependency on data normality, it is effective in addressing small samples.

Measurement Instrument Validation

The key purpose of evaluating the validity of the instrument of measurement is to establish that there is coherence between instrument designers and participants, and also between the participants as a group, in their interpretation of the questions as regards the fundamental constructs that they intend to evaluate (Kline, 1998; Kock & Lynn, 2012). Coherence between instrument developers and participants with respect to the fundamental constructs relates to the converging validity, with a lack of consensus between the constructs relating directly to the discriminatory validity. Coherence amongst participants as a collective relates to reliability, this means that all the participants interprets the questions and also the query answers in the same way. The lack of collinearity is related to the distinction of measures within constructs, i.e. separate constructs quantify different items. Cross-weights, weights, loadings, and effects of loading sizes were estimated, mainly for convergent validity tests. As the estimated P-values for the weights and loadings are less than 1% ($P < 0.001$), the loading is found to be statistically significant. Additionally, cross-loadings were lower than 0.5 and loadings were greater than 0.5, which illustrate significance since it ranges between 0.701 and 0.950.

Model measures are evaluated and presented in Table 1. Results shows that knowledge risk management (KRM) items, leadership behavior (LB), and sustainable organizational performance (SOP) were more than 0.5 which is the threshold value. Also the p values at less than 1% confidence level are statistically significant. As suggested by previous research, (Kock, 2014; Kock & Lynn, 2012; Odugbesan, et al. 2021) it shows that the instruments that are used in measurement of constructs demonstrates a good “convergent validity”. The “Cronbach alpha” and “composite reliability” coefficients for KRM (0.918 & 0.934), LB (0.868 & 0.899), and SOP

(0.890 & 0.913) subsequently as indicated in Table 1, are more than the value of conservative threshold of 0.7 (Kock, 2014; Kock, 2015), this shows the instrument use for measurement have good reliability. Furthermore, the “average variance extracted” of KRM (0.670), LB (0.562), and SOP (0.572) have greater value than the threshold value of 0.5 (Kock, 2015; Odugbesan, et al. 2021) this means the internal consistency is acceptable. Finally, “full collinearity variance inflation” (FVIF) and KRM (1.926), LB (1.865), and SOP (2.344) are all below the recommended threshold of less than (5.0). According to (Kock & Lynn 2012), the coefficient of FVIF is “the model-wide measure of multi-collinearity, calculated in a way that incorporates the variations in the other variables in the model, and that allows us to test whether respondents viewed our constructs as conceptually different from all of the other constructs”.

Table 1. Measurements properties assessment

Constructs	Loadings	Cronbach alpha	Composite reliability	Average variance extracted	FVIF
KRM		.918	.934	.670	1.926
KRM1	.812				
KRM2	.863				
KRM3	.822				
KRM4	.843				
KRM5	.831				
KRM6	.775				
KRM7	.780				
KRM8	.851				
KRM9	.851				
KRM10	.891				
KRM11	.825				
KRM12	.639				
LB		.868	.899	.562	1.865
LB1	.622				
LB2	.809				
LB3	.801				
LB4	.758				
LB5	.792				
LB6	.713				
LB7	.734				
LB8	.683				
SOP		.890	.913	.572	2.344
SOP1	.736				
SOP2	.754				
SOP3	.775				
SOP4	.551				

SOP5	.839				
SOP6	.767				
SOP7	.841				
SOP8	.746				
SOP9	.521				
SOP10	.689				

The validity of the items were examined and the reliability of the measurement instrument were also assessed. As shown in Table 2, there is consistency in the literature and the proposition that “square root of average variance extracted shown in diagonal of each construct must be greater than the correlations between that construct and other constructs” (Fornell & Larcker, 1981). Results indicates that the green hard TM, green soft TM, artificial intelligence, innovative work behavior and transformational leadership shows good discriminant validity in context of our model.

Table 2. Correlations among 1.vs with sq. rts. of AVEs

	KRM	LB	SOP
KRM	0.819		
LB	0.645	0.749	
SOP	-0.103	-0.084	0.756

Note: KRM = knowledge risk management, LB = leadership behavior, SOP = sustainable organizational performance. Square roots of average variances extracted (AVEs) shown on diagonal.

Common Bias Method (CMB)

Furthermore, “common method bias” (CMB), shows in the study of (Kock, 2015) that full collinearity VIF coefficients react explicitly to “pathological common variations” throughout the items in methodological contexts which correlate with this study. It means the sensitivity allows CMB to be notable in the model which also passes the assessment of convergent and discriminant validity criteria based on a “confirmatory factor analysis” (CFA), as we have in this research. Previous research proposed a threshold value of 5 to be acceptable and <3.3 to be the best for full collinearity VIF coefficients (Kock, 2015; Kock & Lynn 2012). Thus, with the full VIF presented in Table 1, none of the full VIF coefficients if greater than the acceptable threshold (≤ 5), and as such there is no issue of common bias method in this study.

Hypotheses Testing

Table 3 and Figure 2 illustrates the hypotheses formulated with the different relationship types (direct, moderating and mediating) with their corresponding coefficients and P-values. In Table 3, “KRM”, “SOP” and “LB” indicate knowledge risk management, sustainable organizational performance (SOP) and leadership behavior (LB), respectively. The first effect is the direct effect, which demonstrates a direct link in the framework; for example, KLM→SOP. The second effect is the moderating effect, which moderates the interconnection between two variables, such as LB→KRM→SOP. The last effect is the mediating effect, which mediates the association between two variables in the model, such as KRM→LB→SOP. The association coefficient for the direct interconnection KRM→LB ($\beta = 0.71$) was positive significant at the 1% significance level ($P < 0.01$). This finding concurs with hypothesis H1, which states that KRM has a positive impact on LB. Furthermore, the interconnection coefficient for the direct interaction LB→SOP ($\beta = 0.48$), was positive significant at the 1% significance level ($P < 0.01$). This outcome agrees with hypothesis H2, which states that LB and SOP have a positive association. Also, the interaction coefficient for the direct link KRM→SOP ($\beta = 0.41$) was significant at the 1% significance level ($P < 0.01$). The findings shows that there is a positive relationship between SOP and KRM just as shown in hypothesis H3. The association coefficient for the moderating link LB → (KRM → SOP) ($\beta = 0.22$) was positive and significant at the 1% significance level ($P < 0.01$). This result implies that, as the values of LB rise (i.e., a surge in leadership behavior), the association coefficients for the KRM → SOP link tend to rise in value. This result supports hypothesis H4, which states that leadership behavior positively moderates the direct interconnection between KRM and SOP. Lastly, the association coefficient for the indirect link KRM → LB → SOP ($\beta = 0.35$) was positive and significant at the 1% significance level ($P < 0.01$). This provides supportive evidence for hypothesis H5, which states that KRM has a positive and indirect interconnection with SOP through LB. Table 4 illustrates the hypotheses. The findings from Table 4 reveal that all five formulated hypotheses were supported.

Table 3. Hypotheses testing results

Hypothesized links	Effect type	Coefficient	P-Value
KRM→LB	Direct	0.72	P< 0.01
LB→SOP	Direct	0.48	P< 0.01
KRM→SOP	Direct	0.41	P< 0.01
LB→(KRM→SOP)	Moderating	0.22	P< 0.05
KRM→LB→SOP)	Mediating	0.35	P< 0.01
Note: KRM, SOP and LB indicate knowledge risk management, leadership behavior and sustainable organizational performance, respectively.			

Table 4. Hypotheses Summary

	Hypotheses	Supported
H1	KRM influences LB	Yes
H2	LB influences SOP	Yes
H3	KRM influences SOP	Yes
H4	LB moderates the relationship between KRM and SOP.	Yes
H5	LB mediates the relationship between KRM and SOP	Yes

In addition, the variation of explanation as depicted in Figure 2 shows that knowledge risk management and leadership behavior has about 51.8% explanation variation in sustainable organizational performance which according to Cohen (1988) is substantial. Similarly, knowledge risk management was found to have contributed about 23.8% explanation variation in leadership behavior (see Figure 2).

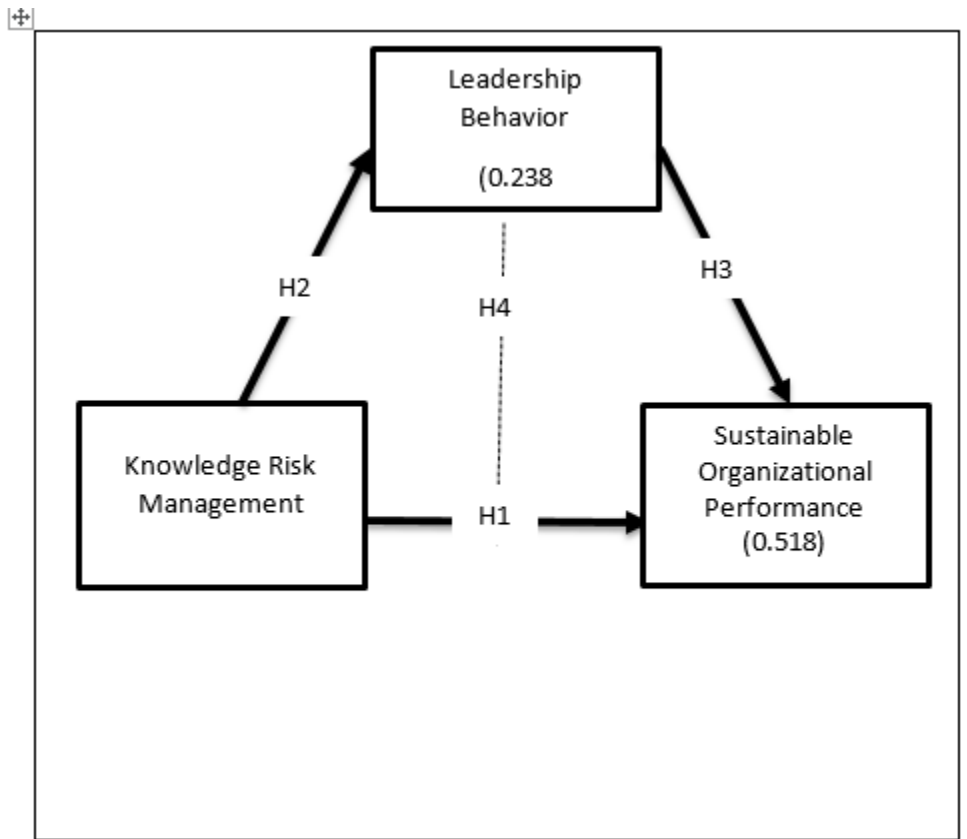


Figure 2. Theoretical constructs with R^2 values in bracket

A summary of model fitness in this paper is depicted in Table 5 as proposed by (Kock, 2014; Odugbesan et al. 2021). In order to check the model fitness, the study utilized four indices: (a) Tenenhaus goodness-of-fit index (GoF), (b) Average R-squared (ARS), (c) Average full collinearity variance inflation factor (AFVIF), and (iv) Average path coefficient (APC). The degree to which the hypothesized model correlate with result is determined by the goodness of fit. ARS AND APC works in conformation with the indices to show if there is anything wrong with structural framework (interactions between related indicators), while the AFVIF and GoF are helpful in identifying issues with the measurement framework (connections between latent variables and indicators). The APC and ARS shows to be statistically significant with $\beta = 0.460$, $P < 0.001$, and $\beta = 0.193$, $P < 0.001$ respectively. Since the AFVIF (2.261) is less than the 3.3 threshold, there is evidence of collinearity in the model. Furthermore, since GoF (0.362) is less than the 0.360 threshold, this indicates that the model has a good fit. To summarize, these goodness of fit indices indicate strong model-data coherence when taken together, and provide optimism that the effects of the hypothesis-testing are not substantially skewed by the prejudice of the sample misspecification.

Table 5. Table 3 Model Goodness of Fit

Fit index	Value	Level of acceptance
APC	0.460	$P < 0.001$
ARS	0.193	$P < 0.001$
AFVIF	2.261	Acceptable if ≤ 5 , ideally ≤ 3.3
GoF	0.362	Small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36
Note: GoF, Tenenhaus goodness-of-fit index; ARS, average R-squared; AFVIF, average full collinearity variance inflation factor; APC, average path coefficient		

Discussions of Findings

The study sample comprised 303 participants from listed and non-listed companies in Nigeria. In total, 339 questionnaires were gathered from owners of companies and managers who are knowledgeable on the given topic through online survey. Out of the 339 responses, only 303 were correctly answered and were therefore compiled for interpretation. In order to examine these interactions and hypotheses, Theoretical model created serves as guide to the analysis of factor based PLS structural equation. The findings from this paper reveal that KRM exerts a positive impact on sustainable organizational performance. Therefore, KRM not only plays a defensive role in knowledge safeguarding and enforcement, it also aims to enhance sustainable organizational performance. This does seem rational given that creativity is decided, amongst many other factors, through the willingness of organizations to take risk (Das & Joshi, 2007), as a degree of risk-propensity is correlated with higher levels of creativity. Alvarez and Barney (Alvarez & Barney, 2007), demonstrated that an increase in the level of risk taking is often correlated with greater chance of failure. As a consequence, the interaction with knowledge of resources that are engaged in the stage of creativity are not the only requirement of an organization, also the recognition, appraisal and reacting to the risk that are linked with the resources. A structured KRM strategy can ensure sustainable organizational performance.

Moreover, as knowledge has become a vital resource for company's eager to expand, accounting for approximately 80 percent of organizational assets, knowledge management typically have major effect on sustainable performance of an organization. This research backs positive interconnection, which indicates demonstrate that proactive approach to risks that are linked with knowledge within an organization would help assist them in pursuing their strategic

goals. This is due to the protecting role of KRM in particular and to the positive impact on performance of the organization (Cho & Pucik, 2005). Additionally comprehensive KRM strategy means it can be utilized as a strategic method for communicating with the inner and outside worlds of companies and evidently allows them to have competitive edge. KRM show to stabilize unpredictable activities that is needed for an organization to function and thrive in an ever changing condition that is unpredictable, thus minimizing output uncertainty (Callahan & Soileau, 2017). Indeed, (Lumpkin & Dess 1996) recognized that the propensity of risk, as a rational understanding of the associated risks and also an ability to mitigate certain risks, may have a beneficial effect on the SOP. This conform to KRM which helps companies to recognize and deal with essential knowledge in the best way possible. As a consequence, KRM can be used as an imaginative method in handling risk-taking, creativity and the proactiveness of companies to improve SOP. It is imperative to put in mind that decision making styles due to leadership may vary as a result of difference in culture and as such will impact how knowledge management influences organizational performance. (Abubakar, et al., 2019)

Furthermore, there is evidence of a positive interaction in leadership behavior and SOP. This implies that when leaders in an organization lead their subordinates effectively, its SOP will improve. This finding is in line with prior studies (Hurduzeu, 2015; Zhu, et al. 2005). In addition, the study examined the role of leadership behavior in the relationship between knowledge risk management and sustainable organizational performance. The findings reveal that leadership behavior mediates the association between KRM and SOP. This implies that leadership behavior transmits the impact of KRM on sustainable performance of the organization. Therefore, leadership behavior changes the strength or direction of the relationship between knowledge risk management and sustainable organizational performance. Furthermore, the moderating effects propose that leadership behavior plays crucial role in the interconnection between KRM and SOP. This implies that leadership behavior transmits the effect of KRM on sustainable organizational performance. Therefore, leadership behavior changes the strength or direction of the relationship between knowledge risk management and sustainable organizational performance.

Theoretical and Practical implications

Although many research explored the antecedents of generic organizational performance, and also the outcome of knowledge management, this research is first to simultaneously investigate

knowledge risk management as a determinant of sustainable organizational performance in respect to the mediating and also the moderating role of leadership behavior. This research gives a unique insight which informs that knowledge risk management along with leadership behavior can predict sustainable performance of an organization. The research was carried out in a context of an emerging economy (Nigeria) which is not considered in previous research to cumulate knowledge that is important for theory and practice. Previous research may have shown meaningful findings on generic organizational performance, but none of them have examined knowledge risk management as the antecedent of sustainable organizational performance. However, this study have closed the gap in literature and also put knowledge risk management in a sustainability context by exploring its contributions directly or indirectly to sustainable organizational performance. The positive influence of KRM expand the RBV theory.

Furthermore, this research emphasis recent empirical perception that shows leadership behavior as a drive for sustainable organizational performance. It was shown in this research that leadership behavior triggers a positive influence on sustainable organizational performance. Moreover, this study predicts that leadership behavior would positively moderate and mediate the relationship between knowledge risk management and sustainable organizational performance.

Findings from this research provides relevant implications for both policy makers in an organization and also for practitioners to create guidelines that is relevant for promoting sustainable performance in a firm. The managers need to develop strategies to build an effective knowledge risk management. The dynamism of the business environment and most importantly for every firm to achieve sustainable competitive advantage in the market where they operate has gave rise to the firm's attention towards the sustainability of their performance, which involves the integration of social, economic and economic performance. In addition, in this present knowledge-based economy, it becomes imperative for an organization to improve their knowledge which will enable them to enhance their share in the market and compete favorably in the competitive business environment. Through leveraging of intellectual assets, organizations in Nigeria can create strategies that will sustain competitive advantage for the achievement of an optimal performance, as well as developing a knowledge-based economy. The sustainable performance of the firms in Nigeria could be developed by depending on intellectuals to enhance innovative products and services. Thus, it is expected of the managers to develop various strategies

through an investment in various knowledge management which would assist the firm to achieve their sustainable performance.

Limitation and further studies

Though, this study makes significant contribution to literature, but it must be acknowledged that it is not devoid of some drawbacks. First, a diversified survey composed of participants from different firms may have generated a certain prejudice, which calls for further study of cultural disparities. Secondly, a cross-sectional approach was used during this study so changes over time could not be monitored. The problems stated above may have shaped the foundations of potential study in the future. Moreover there are other areas of study that can be explored. Finally, the variations between particular industries may be further expanded to determine whether certain industries are more vulnerable to KRM than others.

Conclusions

As (Durst & Zieba 2017) identified, the available research on this subject is limited and studies offer only an incomplete interpretation of the definition. This study helps to develop assumptions that are important to practitioners and scholars. Analysis reveals and demonstrates why KRM enhances sustainable performance of organization. Empirical evidence is also presented on the role of leadership behavior in the interconnection between KRM and sustainable performance of organization. Therefore, the findings of this research add to the field of management by studying the role of leadership behavior in the interconnection between knowledge risk management and sustainable organizational performance, which is yet to be explored. Based on the empirical findings, attention should be given to leadership behavior since it plays a vital role in the relationship between leadership behavior and sustainable performance of organization. The results further add to the analysis of KRM by highlighting the value of concentrating on the role of leadership. By doing so the current research extends the existing literature on knowledge risk management. Part of the major findings of this research shows that KRM have been established as an important mechanism for enhancing sustainable organizational performance and also the overall economic performance of the organization. Managers may use these results as a reason to convey the advantages of KRM activities. In addition, the research further discusses the influence of leadership behavior in the association between KRM and SOP.

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