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## **Innovation, Leadership and Supply Chain Resilience. A Theoretical Review**

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# Innovation, Leadership and Supply Chain Resilience. A Theoretical Review

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## Abstract

The area of supply chain resilience continues to gain increasing attention from scholars and practitioners as new risks and unforeseen disruptions have emerged posing serious threats to operational performance. In particular, the COVID-19 pandemic exposed the fragility of global supply chains. Against these growing concerns, supply chain networks need to be re-examined as organizations grapple with the challenge of strengthening their capacities for preparedness, response, recovery and growth from disruptions. This study analyses the body of literature on innovation, leadership and resilience in relation to supply chain from different perspectives. Conceptual, theoretical and empirical review was undertaken on 101 relevant journal articles and publications across the study area. Issues that present a case for a new theoretical model to advance the present understanding of the constructs and the emerging phenomenon in supply chain were identified. It emerged that the concept of leadership suffers from an unclear conceptualization and is inconsistent in the characteristics of its dimensions. Similarly, there is lack of common understanding of innovation; how organizations should deal with it; and how it relates with leadership. In addition, there are few empirical studies involving innovation, leadership, and supply chain resilience. This study presents a new theoretical framework linking the three constructs to help in developing the implementation of capabilities necessary in attaining resilience in supply chain networks.

**Keywords:** *Innovation, Leadership, Supply chain, Supply chain resilience*

## 1.0 Introduction

The fragility of supply chains in many sectors became evident globally at the onset of COVID-19 in 2020 (Hossain et al., 2022). Unforeseen disruptions caused shortages of human capital, spare parts, and production materials, forcing many firms across the world to either slow down or close their operations (Ivanov, 2020; Miller & Berk, 2020). The disruptions notwithstanding, globalization and intense competition meant that firms look for every possible way to remain in business and achieve higher performance (Um & Han, 2021).

The growing scale and complexity of modern supply chains (SC) and the increased probability of disruptions in the volatile, uncertain, complex, and ambiguous (VUCA) environments continue to make the understanding of supply chain resilience (SCR) a major concern for managers (Brandon-Jones et al., 2014; Troise et al., 2022). Jüttner and Maklan (2011, as cited in Um & Han, 2021) hold that the impact of unexpected risks in supply chain can be mitigated by adaptive resilience developed through collaboration, visibility, velocity, and flexibility. Such risks include those related to safety, product, quality, leadership, labor and the environment (Parast et al., 2019).

Whereas designing and implementing strategies for business are management functions, few of those strategies affect firm resilience more profoundly than the manner in which the firm's long-term direction is handled through innovation and leadership (Sharif & Irani, 2012). Indeed, innovation and leadership are critical to firm survival. In their studies, Parast et al., (2019) found innovation, leadership, and collaboration as among key practices that improved firm resilience to supply chain disruption. Specifically, they established that a firm's investment in innovation enhanced resilience capability by significantly mitigating the effects of disruptions in process, demand, and supply on firm performance. However, while innovation and collaboration enhanced firm resilience, Parast (2020) found that their overall impact on supply chain performance was dependent on the source of disruption.

### 1.1 Statement of the Problem

Innovation is viewed as a central path to firm success and competitiveness (Acciaro & Sys, 2020). However, in spite of the undisputed central role of innovation in supply chain sector, few studies have examined how firms deal with innovation, and how it relates with leadership (Dodgson et al., 2015; Kamau, 2020). At the same time, the construct of innovation is widely misunderstood and overused, which has led to firms making wrong decisions (O'Bryan, 2013). Furthermore, Arlbjørn et al. (2011) acknowledged that the knowledge and systematic research on supply chain innovation is limited, and common conceptual understanding in the area is lacking.

Although leadership is widely conceptualized as a social process of influencing others to work in certain ways to achieve goals, there is no common definition agreed among scholars (Antonakis, 2012). The lack of consensus in the understanding of the construct continues to present challenges both in theory and practice on how to effectively deploy leadership in modern firms for optimal outcomes. For instance, a lack of coordinated roles and collaborative approaches is among the major issues that have hindered the creation of effective innovative ecosystems within organizations (Kuratko et al., 2014). In addition, the continued preconception of leadership as a function stemming from a single source (the formal leader) is a narrow view whose limitations has recently attracted the attention scholars (Northouse, 2019; Yukl, 2013).

Supply chain management (SCM) is viewed as “an integrating function whose primary responsibility is to link business processes and functions” (Grant et al., 2017, p. 9). Its goal is to increase throughput (the rate of end customer sales) and minimize both inventory and

operating costs, and thus has a basic pattern of planning and managing activities related to production, inventory, location, transportation and information (Hugos, 2018). Wieland (2021) observes that the vulnerability of traditional supply chains to environmental disruptions was exposed by the COVID-19 pandemic. This was a call for resilience among SC partners. Evidence reveals that resilient firms are better able to recover from and thrive following major crises, and this has recently placed organizational resilience research in the limelight (Luthans, 2002; Nguyen et al., 2016). Most previous research has however paid more attention on the outcomes of firm resilience but ignored the role of the antecedents (Cooper et al., 2019; Ou et al., 2014). Further, firm resilience has not adequately been addressed in the innovation literature (Akgün & Keskin, 2014).

Lastly, few studies have sought to understand the interrelationships between innovation, leadership, and supply chain resilience. This paper examined literature to consider how the concepts of innovation and leadership are constructed for supply chain resilience. It also attempted to apprehend current practices, recognize gaps, and advance future research routes. The overall objective was to review conceptual, empirical, and theoretical literature on the concepts and propose a fitting conceptual framework. Propositions were advanced on the basis of the conceptualization. Study findings are significant because innovation, leadership, and supply chain resilience continue to attract a lot of scholarly investigations and commentary. In addition, findings showing the interrelationships between the variables are critical given the need for firms to continually reinvent themselves for higher performance and survival in VUCA conditions (Daft, 2015; Yukl, 2013).

## **2.1 Theoretical Review**

The conceptual discussion has attempted to link innovation, leadership and resilience in the context of supply chain. The nature and interactions of the constructs has been revealed, and issues raised that call for an examination of relevant theories emanating from the phenomenon. Arguments of this paper are anchored on several theories focusing on innovation, leadership, and organizational resilience. The theories include dynamic capabilities theory, contingency theory, adaptive leadership theory, and the balanced scorecard model.

### **2.1.1 Dynamic Capabilities Theory**

Dynamic Capabilities Theory (DCT) developed by Teece et al. (1997) explains how organizations attain sustained competitiveness in environments of rapid change. It addresses constraints associated with the resource-based theory, which proposed that firms must internally acquire Valuable, Rare, Inimitable, Organizational and Non-Substitutable (VRION) resources for sustainable competitive advantage (Dushime et al., 2022). DCT considers both internal and external competencies that provide organizations with alternative options and a basis for strategic choices. In that regard, Muithya and Muathe (2020) opined that organizations adopt certain behavioural skills to help in developing innovative products and processes for new markets. Those skills are either absorptive, adaptive, innovative or networking capabilities.

Among the dynamic capabilities is the capability of innovation. Innovation as a strategic tool ensures organization's survival in a rapidly changing environment and the sustainable use of resources (Dushime et al., 2022). The dynamic capabilities theory therefore demonstrates how partners within supply chain networks can increase the chances for mutual survival and growth, by enhancing their dynamic capabilities to cope with turbulence. As Muithya and Muathe (2020) averred, the theory provides a broad view of value creation in organizations for growth. DCT however faces criticisms spanning from conceptual issues, weak theoretical foundations and inconsistencies, to few studies (Giudici & Reinmoeller, 2012; Steininger, et

al., 2022).

### 2.1.2 Contingency Theory

Several contingency approaches have been developed since 1960's with the central basis that no one universal set of principles applies in the management of organizations. Since organizations are individually different and face different situations, they require different management approaches. For instance, Fiedler (1967) who is considered the pioneer of contingency theories argued that leadership styles are inborn traits and regardless of the basic leadership style, the effectiveness of an individual to lead is contingent upon numerous situational factors, such as the relationship with members, the leader's positional power, and the kind of the task. For a leader to have control over a situation, Fiedler (1972) suggested the requirement of good leader-member relations, clear goals and procedures for task, and power by the leader to reward and punish. Leadership failure thus results whenever these factors are lacking in the right context and combination.

Positional power and task structure are especially central to contingency theories. According to Subri et al. (2020), positional power reflects the leader's ability to impact the situation's outcome while task structure explains the aspects of the situation, enhanced by tasks being precise and direct. Since supply chain disruptions require quick and coordinated responses as well as sustained stakeholder engagement, it is critical that network partners are adequately motivated to work in specific ways to avoid confusion or frustration (Banomyong, 2018; Gibson & Tarrant, 2010; Singh et al., 2019). Contingency approaches also recognize that given the right conditions, any individual has the capacity to become an effective leader during a crisis. The theory has faced criticism attributed to the vagueness of the parameters used in measuring relationships between situational variables (Northouse, 2019).

### 2.1.3 Adaptive Leadership Theory

Heifetz and colleagues conceptualized adaptive leadership as "the practice of mobilizing people to tackle tough challenges and thrive" (Heifetz et al., 2009, p. 14). Adaptive Leadership Theory (ALT) focuses on how leaders encourage others to respond to challenges, problems, and changes (Northouse, 2019). In other words, it stresses on the behaviours of the leader in supporting others to accomplish tasks under given contexts.

Conceptually, ALT holds that a leader steps back from a situation with challenge in order to better understand the situation complexity as well as the interpersonal dynamics among participants. The leader first determines whether challenges presented in the situation are adaptive or technical. Where technical challenges exist, rules and procedures are enforced through the leader's authority and expertise. For adaptive challenges, the leader engages specific behaviors including giving direction, people empowerment, keeping people focused on essential issues, regulating distress, creating a holding environment where people feel secure to confront and resolve difficult challenges, and allowing those who may feel unrecognized to voice their views. Chatenier et al. (2010) and Davila et al. (2006) argued that these leadership behaviours are considered critical in the promotion of innovative cultures in organizations.

Limited research, wide ranging and abstract ideas and assumptions are criticisms on the adaptive leadership theory (Northouse, 2019). Its propositions however strongly underpin the present study in several ways. Specifically, the approach integrates ideas from the viewpoints of systems perspective and service orientation perspective (Heifetz, 2009). From the systems perspective, it is assumed that many challenges organizations face are embedded in complex interactive systems. This view is consistent with the complexity of operations within supply chain networks which call for coordinated efforts. In such situations, leadership is seen as a shared responsibility, different perspectives are permitted, and change and creativity are

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common. In addition, the theory's service orientation supports product innovation in offering new products, services, or programs to the market for growth (Kahn, 2018).

#### **2.1.4 Balanced Scorecard Model**

Developed by Kaplan and Norton (1996), the Balanced Scorecard (BSC) model includes both financial and non-financial measures in conceptualizing organizational performance (OP). OP was traditionally measured in financial terms only. Specifically, the framework originally examined organizational value-creation from the four different strategic pillars of financial gains, customer satisfaction, internal business processes, and learning and growth (Kaplan & Norton, 2002).

In the measurement of organizational performance, there is no consensus on a common reporting standard and the competing frameworks are complex (Hubbard, 2009). To strengthen the BSC, Hubbard developed the Sustainable Balanced Score Card (SBSC) to capture additional pillars of social and environmental performance. Overall, the latest model proposes that for higher performance, organizations should go beyond the realization of financial objectives to include sustainable satisfaction of the stakeholders interacting with the business. Furthermore, innovation is supported through the pillar of learning and growth, while the support given by top leadership is required in successfully driving all the pillars of the model. These factors are critical in informing the current study since innovation and leadership are key variables in the development of supply chain resilience.

The application of BSC faces several challenges. For instance, Nørreklit (2003) alluded that the model does not provide for monitoring competition or developments in technology. This is critical given that organizations must analyze their environments for the anticipated actions by competitors in order to formulate competitive strategies (De Kluyver & Pearce, 2015). BSC also lacks flexibility and ignores the critical dimension of Human Resource (Molleman, 2007). In addition, Nørreklit argued that the model's claim that more loyal and satisfied customers generate more revenues might not be established in all situations. Consequently, the causal interrelationships between learning and growth > processes > client > finance, which are core assumptions in the model, are held in question.

#### **The Case for a New Theoretical Model**

Issues from the foregoing review support a case for a new theoretical model that links innovation, leadership and supply chain resilience. A theoretical model incorporates bits of knowledge obtained from existing theories and relevant research to explain a phenomenon (Maxwell, 2013). In that regard, several points emerged from this study. First, there is need to expand the indicators operationalizing the study variables beyond what extant literature has provided. The expansion will increase "the conceptualization of the constructs, the accuracy of their measurement, and facilitate in-depth analysis of their interrelationships" (Mutinda & Kilika, 2019, p. 40).

Second, it emerged from literature that different concepts of innovation, leadership in respect of firm resilience have been employed in different studies. This has produced varied results that make it almost impracticable to make direct comparisons. In addition, there are gaps arising from forms of innovations and leadership approaches that need clarification. The situation could in part explain why the successful implementation of innovative and leadership strategies has remained elusive to most organizations (Daft, 2015; Kuratko et al., 2014).

Third is the emergent phenomenon linking innovation from Dynamics Capabilities Theory with leadership characteristics from leadership theory to explain resilience in supply chain. The phenomenon offers in this new perspective a simple integrated and multidiscipline perspective with clear linkages between the constructs. Few studies have previously focused in depth on

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the relationships between innovation, leadership and supply chain resilience (Hughes, et al., 2018; Muoki & Moronge, 2021, Wakasala, 2020).

The last issue stems from the fact that a lot of the prior leadership literature takes a relatively one-sided view that stresses on traits and behaviors of leaders but neglects aspects of followers that moderate their responses to leadership. This perspective underlines most recent theories including transformational leadership, and is held to stem from employing easily observable “first-order” constructs that view leaders as origins and causes of outcomes (Lord & Brown, 2003; Northouse, 2019). In reality however, less observable processes like followers’ understanding of leadership, or followers’ reactions to a leader’s behavior, also determine organizational outcomes (Carsten, et al., 2014; Ndongye, 2022). The emergent phenomenon linking innovation with supply chain resilience offers a perspective of leadership as process-oriented, incorporating aspects of both the leader and followers as moderators of the relationship.

### **The Proposed Theoretical Model**

In light of the foregoing arguments, a theoretical framework and corresponding hypotheses are proposed. The model shows the interrelationship between the constructs as well as the indicators to measure them. While the proposed indicators are drawn from conceptual and theoretical studies, the actual behavior can best be understood when examined empirically.

## **2.2 Empirical Review**

### **Conceptualization of Key Constructs**

#### **Innovation**

This study examined the constructs of innovation and leadership and explored how they interlink to enhance supply chain resilience. Supply chains need to be dynamic in keeping pace with shifting business environments characterized by high rate of operating processes becoming outdated, changing customers' needs, and unexpected disruptive events and technologies (Yu et al., 2019). Empirically, Yu et al. (2019) established that supply chain dynamism had a significant positive effect on supply chain resilience. Dynamism relates to “the capacity of an organisation to purposefully create, extend, or modify its resource base” (Helfat, 2007; as cited in Wang et al., 2020, p.85). In their findings, Kamalahmadi and Parast (2016) established that innovation was one of the dynamic capabilities for building firm resilience. Indeed, an important objective of the “fourth industrial revolution (Industry 4.0) is the acceleration of the development of innovation capability for firms” (Frank et al., 2019; as cited in Wang et al., 2020, p.84).

Distanont and Khongmalai (2018) posited that innovation emerges from factors both within and outside a firm. Internally, knowledge transfer from among employees can give rise to new thoughts, ideas, and innovation; while externally, knowledge can be transferred between a firm and other organizations. The outcomes of innovation include actual new or projected business processes, products, and services that enhance firm competitiveness and stakeholder value (Arbjørn and Munksgaard, 2011; Kohli & Melville, 2018). Innovation is thus a survival issue and a critical decision senior management must make is how the organization engages in it (Davila et al., 2006). Overall, much of the conceptualization portrays innovation in process orientation perceiving it as steps taken by firms over time (Kohli, 2018; Rogers, 2003).

Based on the level of scale, innovations have been categorized as either radical, semi-radical or incremental (Davila, 2006; Tebaldi, et al., 2018). Radical innovations relate to firms’ strategic market positioning whereby existing business models or practices are either supplanted or destroyed and new ones introduced. Incremental innovations are small

improvements made to existing processes, methods, products or services, and they aim at attaining operational efficiencies for cost reduction, faster order fulfillment, and defects elimination (Barbieri & Álvares, 2016). Semi-radical innovations on the other hand are intermediate to the two extremes.

Primarily, innovation is understood as a mindset, a process, and an outcome (Daft, 2016; Davila, et al., 2006; Kahn, 2018; Rogers, 2003). First as a mindset, it concerns the internalization of the concept among organizational members and the creation of a supportive culture. Dyer et al. (2011, as cited in Kahn, 2018) identified five skills that spur innovation through different, lateral and expansive thinking. They include associating ideas, questions, or problems from different fields; questioning the status quo; observing the behaviors of customers, suppliers, and competitors to identify new ways of operating; trying new experiences and provoking unconventional responses for new insights; and networking with others having different ideas and perspectives. Daft (2016) suggested that by providing employees with opportunities to interact with others, and allowing them freedom to experiment, take risks, and make mistakes, organizations can create and spur internal creativity. Generation of new ideas is therefore not limited to a single source but originates from many sources (Barbieri & Álvares, 2016).

Second, as a process, innovation concerns the way it is organized to deliver outcomes. A distinctive consideration is the innovation development process (IDP) in which the common stages are problem identification, idea generation, pre-technical evaluation, business case preparation, technical development and testing, and launch (Kahn, 2018; Rogers, 2003). The stages may not always take place in a linear sequence, and others may not even occur at all, but Cooper et al. (2002, as cited in Kahn, 2018) emphasized the crucial role IDP plays in integrating efforts to facilitate organizational learning, adaptability and scalability under different situations.

Finally as an outcome, innovation is the kind of output sought by organizations in terms of business model, organization, products, processes, markets, and supply chain. According to IBM (2009, as cited in Kahn, 2018), business model innovation involves changes in the industry from three fronts. First as change in industry model by leveraging on the unique firm assets to innovate the value chain; second as change in revenue model by reconfiguring the product-service-value mix and pricing models; and lastly as change in enterprise model by extending enterprise and networks with customers, employees, and suppliers. Organization innovation on the other hand relates to changes in the organization, such as its structure, management, and work environments. Product innovation pertains to offerings of new products, services, or programs to the market. It includes “cost reductions, product improvements, line extensions, new markets, new products categories, and new technologies” (p. 454). Process innovation attends to changes in processes or methodology to achieve efficiencies in throughput, service, costs, or processing. Market innovation connects a firm with its consumers and customers on new and different levels and may include promotional efforts such as product uniqueness, awareness, and brand recognition. Lastly, supply chain innovation relates to a change within networks, technology, or processes in a firm, an industry or a supply chain to enhance stakeholder new value creation.

Within the outcomes category, current innovative supply chain interventions exist. For instance, technologies such as Artificial Intelligence (AI), Industry 4.0, and advanced product tracking applications hold significant potential for risk analytics to improve SCR (Ivanov et al., 2019). AI relates to the statistical, self-learning, and predictive machine learning techniques designed to enlarge human intelligence for improved decision-making in complicated situations (Dubey et al., 2020; Grover et al., 2020). Empirically, Belhadi et al. (2021)



established that AI had a direct impact on firm performance in the short-term. The authors recommended that information-processing capabilities needed to be exploited in building resilience for sustainable supply chain performance.

Other data-intensive technologies such as blockchain can minimise supply chain risks such as contractual disputes, privacy, hacking, political turmoil, and financial instability (Cui et al., 2019). Block chain technology offers a shared, open and ledger recording and storing of transactions, and data backed by a cryptographic value distributed across a peer-to-peer networks (Dutta et al., 2020). Studies suggest that business analytics confer capabilities that improve safety and security, quality management, transparency and accountability, all necessary for long-term organizational survival. For instance, Big Data Analysis (BDA) techniques extract critical information from large amounts of data, which facilitates sound decision-making (Tsai et al., 2015; as cited in Nguyen et al., 2018). For instance, Singh and Singh (2019) empirically established that adoption of BDA capabilities enabled firms to effectively utilize resident firm knowledge and develop supply chain risk resilience capacity.

The more recent phenomenon of circular economy (CE) offers another window for the innovative operationalization of sustainable development in supply chain networks (Kirchherr et al., 2017). CE can be adopted as a way of solving resource, waste, and emission challenges by creating a production-to-consumption system that is restorative, regenerative, and environment friendly (Avraamidou et al., 2020). According to Ellen MacArthur Foundation (2013), CE is founded principally on designing out waste, creating resilience, and dependence on renewable energy resources. The object is to keep materials, products, and components at their highest utility and value with minimal to non-existent waste. It is characterized by reduction of input and the efficient use of natural resources, recovery and recycling of materials and products, replacement of non-renewable resources with renewable ones, limiting the use of virgin materials, reduction in emissions or pollutants, and redesigning products to increase their lifetime. Critiques of CE concept however claim that it has unclear theoretical grounds, diffused limits, and is faced with structural implementation obstacles (Corvellec, 2022).

Previous studies have identified relationships between innovation and firm resilience. For instance, Akgün and Keskin (2014) established a direct correlation between product innovativeness and firm resilience. In the same study, product innovativeness was found to mediate the relationship between firm resilience and firm performance. The findings also revealed that high levels of technological change, agility, and preparedness positively correlated with product innovativeness.

In conclusion, to ensure that innovation efforts are sustained, organizations must institute measurement systems to monitor the process. Sloane (2007) suggested that such metrics should capture certain key aspects. First, they must monitor the number of new ideas generated. Second, they should check the efficiency by monitoring how many of the generated ideas make it through the initial selection into the next stage as projects. Finally, the system should check the number of projects that become prototypes eventually turning into new products. Indeed, the existence of formal mechanisms to ensure that innovations are captured and monitored is the clearest indication of an irrevocable commitment by leadership to the search of innovative solutions (Hamel, 2002).

### **Leadership**

Leadership is among the most misunderstood concepts and there is no single commonly accepted definition (Burns, 1978; as cited in Daft, 2015). However, most scholars agree that leadership is a process that entails an individual exerting influence over others to structure relationships and activities for the achievement of goals (Day et al., 2014; Mena, et al., 2014).

Leadership influences behaviour at the workplace and it serves as a modeling process that helps firms embrace growth by fostering supportive and empowering climate (Nguyen et al., 2016; Northouse, 2019; Qian et al., 2018).

Focus has recently shifted from leadership as something a leader does, towards leadership as an influence process among individuals (Uhl-Bien et al., 2014). A more encompassing conceptualization is that leadership is the execution of management characterized by top management support, employee engagement, and superior decision-making (Seville et al., 2015; Manning & Soon, 2016; as cited in Han et al., 2020). This is consistent with the argument that majority of explanations offered on leadership center around the entities of leadership, followership and common goals, (Bennis, 2007; By, 2021).

Leadership is one of the antecedents of firm resilience and performance (Scholten & Schilder, 2015; Wieland & Wallenburg, 2013). According to Sharif and Irani (2012), “leadership in the context of supply chain improves firms’ overall performance” (p. 57). To this end, Hamel (2002) identified certain aspects leaders need to address in relation to evaluating organization’s innovation journey for resilience. First, management should pay attention to innovation ideas that could be struggling to get noticed; second, the organization should placed some of its best people to work on innovations; and finally, the organization should define its opportunity space more broadly to keep focus away from its current market.

Leaders have control over the working space for innovation. For instance, they create and embed culture (Schein, 2010). For innovation culture to thrive, firms need the support of management, especially in the provision of necessary resources to fund potential ideas (Davila, et al., 2006). A common notion is that leaders must provide a long-term view for innovation, sensitize others on innovation, nurture key innovative projects, manage internal and external relationships, provide opinions and crucial judgment, and manage the critical balance between business and innovation. Finally, a leader has to be willing to run the risk associated with innovation, including investing projects that may have no foreseeable returns in the short term (Sharif & Irani, 2012; Um & Han, 2021).

Because many supply chain projects are team efforts, leaders need the ability to rally team members around common objectives (Hamel, 2002). Furthermore, individuals require right connections with others in order to create an interactive and continuous flow of ideas, perspectives, experiences and values. This generates new knowledge, builds trust, and raises organizational commitment (Chatenier et al., 2010). To cultivate a climate of teamwork, leaders must therefore possess knowledge on leading highly effective teams, conflict resolution, and strategy formulation.

In sum, resilient organizations require innovation development supported by a leadership having the necessary authority and risk behaviour. This is supported by empirical studies that have shown that attributes such as spontaneity, inspiration, imagination, innovativeness, improvisation, flexibility and relationships, are among the most required in leadership (Mamula et al., 2019). Hamel (2002) underscored that dynamic organizations need to become different in ways that “continually stun competitors and thrill customers” (p. vii). A study by Bag et al. (2021) established that leadership indeed strengthened the effect firm dynamic capabilities on innovation and responsiveness to disruptions. Specifically, findings of a study by Shin and Park (2021) confirmed a positive relationship between firm’s leadership, SC capabilities and overall SC resilience outcome.

Resilient organizations are therefore those with leaders with the ability to ignite and harvest innovative behaviors among personnel. Kremer et al. (2019) have argued that organizations lacking this capacity face the threat of obsolescence.

## Supply Chain Resilience

Supply chains (SC) are among the most crucial parts of managing successful business enterprises given the nature of operations they entail. Generally, SC operations are placed in four major categories (Hugos, 2018). They include planning (demand forecasting, pricing, inventory management), sourcing (procurement, credit and collections), making (product design, production, facility management), and delivery (order management, delivery scheduling and return processing). These networks are often the areas of frequent disruptions and waste. For firms to be able to continue carrying out SC operations effectively, the need to develop internal capacity to respond positively, persevere, and continuously improve in changing business environments is paramount (Brandon-Jones et al., 2014; Nilakant et al., 2014; Ou et al., 2018). In other words, successful firms need the capacities to resist disruptions and recover operational capability after the occurrence of a disruption. Rego et al. (2018) argued that this capability together with economic and social resources are an important source of firm's competitive advantage. For instance, supply chain resilience (SCR) offers firms the capacity for business continuity by predicting risk and minimizing impact through adaptability, evolution, survival, and growth (Day, 2014; Singh et al. (2019).

Different conceptualizations of supply chain resilience (SCR) abound. For instance, it was described by Hohenstein et al. (2015) as the "ability to be prepared for unexpected risk events, responding and recovering quickly to potential disruptions to return to its original situation or grow by moving to a new, more desirable state" (p. 90). Overall, literature review reveals that most definitions of SCR comprise aspects related to organization's readiness, response, recovery, and growth from disturbance.

Extant literature has offered a variety of innovation models in SC. For instance, the Resilience Triangle Model (RTM) developed by Gibson and Tarrant (2010) is among the latest models, which depicts capabilities supporting firm resilience in three categories of leadership, people, and knowledge; resources and infrastructure; and process. The model captures the fluidity of the internal organization processes aimed at continually reviewing, assessing and adapting to ensure that capabilities are fit for their purpose, retain sufficient capacity to meet organizational goals, have tenacity to continue performing in disruptions, and exhibit flexibility. The authors argued that resilience is undermined when there is loss in the effectiveness of any of the three capabilities, subject to the prevailing environment.

RTM also recognizes the role of leadership in driving the adaptation of the other elements to withstand organizational disruptions. Jüttner and Maklan (2011, as cited in Scholten & Schilder, 2015) identified the adaptive capacities of SCR "as flexibility, velocity, visibility and collaboration" (p. 472). While flexibility concerns processes coordination to minimise high levels of uncertainty, velocity relates to the speed of a supply chain reaction to market events. On the other hand, visibility denotes extent the supply chain partners have timely access to important operational information. With respect to information access, Scholten and Schilder (2015) empirically established that collaborative communication, information-sharing, joint relationship efforts, and mutually created knowledge increased supply chain resilience via increased visibility, flexibility and velocity. They also acknowledged the need for human resources strategic management in developing organizational capacity for resilience.

LengnickHall et al. (2011, as cited in Douglas et al., 2021) hold that by creating and developing core competencies at the firm level, organizations are capable of responding in a resilient manner to adversity or challenges. Bruneau et al. (2003, as cited in Hossain et al., 2022) identified four measurements of resilience. They include robustness (system strength), rapidity (how fast a system can regain its unique state, or an acceptable degree of usefulness after a disruption), resourcefulness (the ability to apply resources to react to disruption), and

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redundancy (the degree a system limits the probability and disruption effects). In particular, redundancy relates to the additional stock that can be utilized in the midst of a crisis, as evidenced by existence of safety stock, excess capacity, backup sites multiple and suppliers (Han et al., 2020). Hossain et al. (2022) hypothesised that six SCR factors - flexibility, agility, collaboration, information sharing, visibility and redundancy, interact along four resilience continuum phases of “readiness, response, recovery, and growth, in that order of progression” (p. 4). Banomyong (2018) earlier recognized the phases in terms of organizational preparedness, response and reconstruction.

In sum, SCR is perceived as the proactive ability organizations develop to mitigate the actual impact of numerous risks associated with disruptive environments (Um & Han, 2021). A variety of possible innovation strategies for resilience can be deployed, but whichever strategy an organization adopts, an important consideration is to ensure that the overall business strategy for the organization is supported (Davila et al. (2006). Furthermore, subject to prevailing circumstances, an organization’s innovation strategies will need adjustment over time to ensure their sustainability (Daft, 2016).

### **Issues from Conceptual Review**

The foregoing discussion has clarified that the broad understanding of the constructs of innovation, leadership, and supply chain resilience is generally clear among scholars. This is despite the diversity of definitions offered across literature, since the dominant ideas are easily discernable. However, most studies in the respective areas have mainly sought to establish links between the study constructs with organizational outcomes, such as performance and effectiveness, and not resilience or the interrelationships amongst them.

The second issue relates to the nature and application of the construct of leadership. Most studies approach leadership from a leader-centric perspective, with tendency to diminish follower roles in the process of leadership (Uhl-Bien, et al., 2014). This study argues that deployment of leadership cognizant of the active involvement of every individual within a system is critical in the creation of a unified network that sets focus on a collective action.

Third, most attempts in measuring supply chain resilience have concentrated on firms’ internal systems in terms of the capacities to withstand disruptions. This is consistent with findings generated by Gebhardt et al. (2022) who established that most firms prioritized bridging over buffering approaches for increasing supply chain resilience. While buffering approaches are external and aim at reducing organization’s exposure to partners, bridging approaches are internal and attempt to increase an organization’s power over other parties. A focus on profits normally fueled by desire for short-term survival could explain this status, but which situation calls for the conceptualization of resilience to be expanded to include more buffering approaches. Such measures include SC mapping to enhance network visibility and increased market proximity.

The fourth issue relates to the fact that supply chain is a network concept. Since network disruptions affect many partners, one organization cannot therefore strive for adaptation alone. This emphasizes a central role played by collaboration that leaders must anchor organizational efforts in attaining overall SCR (Scholten & Schilder, 2015). Collaboration facilitates the development of partner synergies, joint planning, and real-time information exchange. The latter is particularly useful given that it allows for sharing of relevant and confidential plans, ideas, and procedures among partners.

Finally, while considering the phenomenon of deploying leadership in innovation for supply chain resilience, partner organizations’ internal contextual settings need consideration. It is critical than firms retain the capabilities to build, integrate and reconfigure their internal

competencies and flexibilities in addressing unstable environmental realities. However, since these contextual settings represent an opportunity organizations can individually exploit for competitiveness, this study argues that the responsibility of creating and entrenching such conditions permitting initiative taking, ownership, sharing information and collective responsibility, is within the responsibilities of leadership (Carsten et al., 2014; Schein, 2010; Daft, 2016). Further, arguing from sustainability perspective, corporate leadership is needed to guide resilience strategies that are restorative, regenerative and environment friendly (Avraamidou et al., 2020).

**Conceptual Framework**

**Figure 1**

**The Theoretical Framework**



### 3.0 Methodology

This study was a review and an analysis of literature related to the study variables to explore linkages and then propose a refined theoretical framework. A systematic desk review of various empirical and theoretical studies was conducted in search of relevant information. Peer-reviewed journal articles for studies done between 2017 and 2022 were reviewed, with more recent ones showing clear connections between the study variables prioritized. In defining an initial sample of relevant literature, search for articles was made using terms innovation, creativity, leadership, supply chain, and supply chain resilience, and sorted year wise. Subsequently, relevant references from the selected articles were added to make the final sample for review. In total, 101 publications were used in the review following the recommended steps of source identification, selection, and analysis (Mokhtar et al., 2019; Rowe, 2014).

### 4.0 Findings and Discussion

#### Innovation and Supply Chain Resilience

At the core of innovation are mindsets and processes that produce outcomes for resilience (Davila, et al., 2006). Mindsets that individuals possess are capabilities that determine the available knowhow and hence the kinds of innovation undertaken. Processes explain the ways and means of carrying out innovations, while outcomes are the ends obtained. Supply chain innovation thus captures all those activities aimed at providing solutions and improved processes for enhanced efficiency and customer value delivery in dealing with uncertainty in the environment (Arlbjørn et al., 2011). The literature review has provided evidence from previous studies showing positive effects of components of innovation on supply chain resilience (Akgün & Keskin, 2014; Belhadi et al., 2021; Singh & Singh, 2019; Yu et al., 2019). This study therefore proposes that:

**Proposition 1:** *Implementation of the innovation in organizations will positively affect supply chain resilience.*

#### The Role of Leadership

Review of literature has demonstrated that leadership affects the association between innovation and supply chain resilience. Effective leadership creates capabilities needed in responding and adapting to rapidly shifting circumstances (Daft, 2016). For instance, a key leadership responsibility is the cultivation of environments conducive to innovation (Oeij, et al., 2022). This includes putting in place mechanisms that spur innovation such as allowing and evaluating new ideas, identifying and developing potential ideas, creating platforms that expand firm capabilities, and opening up to external networks to leverage resources, and executing well-designed measurement and reward systems (Davila et al., 2006). Strategic leadership is enacted through decisions and actions made to “boost the organization’s current performance and strengthen its future effectiveness and competitiveness” (Hughes & Beatty, 2005, p. 3). Empirical studies have suggested that leadership styles including authoritative, transactional and transformational promote employee innovativeness, with authoritative leadership being the most effective (Hughes et al., 2018; Mena, et al., 2014; Zabolotniaia, et al., 2019). Cognizant of past studies linking innovation, leadership and supply chain resilience, this study proposes that:

**Proposition 2a:** *Leadership moderates the relationship between innovation and organizational resilience.*

**Proposition 2b:** *There is a relationship between the execution of leadership and organizational resilience.*

## 5.0 Conclusion

The study sought to provide an understanding of the relationship between innovation, leadership and supply chain resilience. This was accomplished through the review of relevant extant literature. From the review, innovation was categorized as the mindsets, processes and outcomes that strategically provide value for organizational resilience. The moderating role of leadership in determining the association between innovation and supply chain resilience was underscored. It was argued that leadership with the behaviour and authority needed for innovation development supports the realization of resilience in dynamic environments. An effective leadership promotes information sharing and collaboration among partners, and structures internal capabilities to adapt to shifting conditions, including reduction of demand fluctuations.

The study anchored its arguments on relevant theoretical frameworks to explain the emerging phenomenon. To model the relationships among the constructs leading to sustainable supply chain resilience, a new conceptual framework was proposed. Conceptualization of each of the constructs was provided by identifying its critical indicators.

In conclusion, this paper contributes knowledge towards organizational resilience by consolidating literature that gives rise to understanding innovation and leadership from different disciplines. Propositions made were not empirically tested. This calls for future studies to consider the proposed theoretical model using the given indicators for empirical validation.

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