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COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF BUSINESS ADMINISTRATION

Leadership Capability and Organizational Resilience in the Construction Sector the Mediation Role of Organizational Culture and Risk Management at China Communication Construction Company Ethiopia

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Declaration

My thesis titled “Leadership Capability and Organizational Resilience in the Construction Sector the Mediation Role of Organizational Culture and Risk Management at China Communication Construction Company Ethiopia’’ has been done under the guidance and supervision of my advisor, Zelalem Gebretsadik (Ph.D.).

The thesis is original and has not been submitted for any degree or diploma award to any university or institution.

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Certification

This is to certify that Solome Denberu Alemeseged has carried out this research work on the topic “Leadership Capability and Organizational Resilience in the Construction Sector the Mediation Role of Organizational Culture and Risk Management at China Communication Construction Company Ethiopia " under my supervision. This research is his original work and has not been presented for a degree in any university, and all sources of material used for the study have been duly acknowledged. Thus, it is sufficient for submission to partially fulfill the requirements for the award of a Masters of Business Administration.

Advisor: Zelalem Gebretsadik (PhD)

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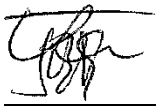
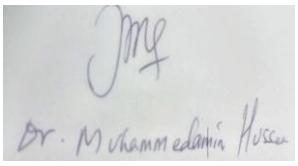
DEPARTMENT OF MANAGEMENT

Leadership Capability and Organizational Resilience in the Construction Sector the Mediation Role of Organizational Culture and Risk Management at China Communication Construction Company Ethiopia

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Abstract

*The findings demonstrate how the role of leadership capability (LC) affects organizational Resilience (OR) along with the mediating role of Organizational Culture and Risk Management in the case of China Communication Construction Company (CCCC) in Ethiopia. The current business environment is uncertain and very dynamic because of that organizations are exposed to interruptions and delay in ongoing projects due to operational risk and different environmental factors that will endanger organizational long-term sustainability and performance. Therefore, organizations that operate in the construction industry must give first priority to long-term organization resilience. The research adopts a quantitative approach by using a pre-defined set of standardized questionnaires designed and distributed to local management level employees of China Communications Construction Company operating in Ethiopia. Simple random sampling technique was applied and data were collected from 182 survey participants out of 222 distributed questionnaires. The response rate recorded was 81.98%. The collected data samples were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with Smart PLS version 4.1.1.8 software to test both the proposed hypotheses and mediation effects. The analysis output demonstrate that leadership capability shows significant positive impact on organizational resilience with value of (*β = 0.278, P= 0.002*), risk management (*β = 0.664, P= 0.000*) and organizational culture (*β = 0.661, P= 0.000*). In addition, in the mediation analysis between leadership capability and organizational resilience both risk management with value (*β = 0.153, P = 0.005*) and organizational culture (*β = 0.188, P = 0.001*) significantly help to improve organizational resilience and complementary partial mediation analysis were observed. The study concludes that the effective role of leadership capability contributes to organizational resilience not only directly but also through strengthening organizational culture, preventive risk management systems, and resilient cultural values. The study adds to what prior studies have neglected about resilience by integrating leadership capability, risk management and organizational culture together as a mediating factor especially for the construction sector. It also gives ideas for construction sector managers to improve organizational resilience in very uncertain and complex situations.*

Key Word: *Leadership Capability, Organizational Resilience, Risk Management, Organizational Culture, China Communications Construction Company, Construction Industry.*

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List of Abbreviation

AVE - Average Variance Extracted

CR - Composite Reliability

CCC - China Communication Construction company

COSO - Committee of Sponsoring Organizations

DCT - Dynamic Capabilities Theory

ERMT – Enterprise Risk Management Theory

ERM - Enterprise Risk Management

HRO - High Reliability Organization

HTMT - Hetro Trait Mono Trait

LC – Leadership Capability

OC – Organizational Culture

OCT- Organizational Culture Theory

ORT - Organizational Resilience Theory

OR – Organizational Resilience

PLS - Partial Least Squares

RM- Risk Management

RBV - Resource-Based View

SEM - Structured Equation Model

SHRM – Strategic Human Resource Management

TLT - Transformational Leadership Theory

UET - Upper Echelons Theory

VIF - Variance Inflation Factor

Chapter One

1. Introduction

1.1 Background of the study

The worldwide economic integrations nowadays become complicated, uncertain and putting pressure on business sector. This leads to disruption occurrence un and unexpected crisis in the market. Disruption in business can be in any form natural, manmade, technological, economic, cultural or it can be climatic change that decide the future resilience of the company (Lisdiono et al., 2022; Pradana & Ekowati, 2024).

Organizational resilience can be defined as organization's capacity to 'anticipate', 'absorb', 'respond' to, and 'adapt' to disruptive events, while performing main functions and improving future performance. Rather than being a static characteristic, resilience is increasingly viewed as a dynamic and capability-based process that evolves through leadership actions, organizational learning, and effective management of resources. (Pradana & Ekowati, 2024).

Literature in organizational resilience can be categorized operational resilience that performs core functions during crisis and the strategic resilience in which the ability to withstand the challenges in the volatile environment (Hamel & Välikangas, 2003). Organizations with high reliability shows the importance of 'mindfulness', 'continuous learning', and 'adaptability' in building frim resilience capabilities. Their study reveals that frim resilience is not only reactive but it also requires proactive implementation through organizational and leadership activities (Weick &Sutcliffe, 2015). Employees of an organizations is not the main reason for an organization to be resilient in dynamic environment leaders also paly the critical role (Teo et al., 2017). Leaders' capacity and ability to manage its employees is the main factor in which organizational resilience rely on (Morales et al., 2019).

Recent resilience literature also highlights the importance of future-oriented resilience capabilities, including adaptability, collaboration, and strategic agility. (Pradana & Ekowati ,2024) argue that organizational resilience increasingly depends on integrated capability structures that support anticipation, response, and transformation. In construction organizations, these capabilities are

largely shaped by leadership decisions that influence organizational structure, communication patterns, and stakeholder engagement, particularly under uncertain environmental conditions.

This study examines the influence of leadership capabilities on risk management and the integration of risk into a company's strategic which is not adequately researched (Slagmulder R & Devoldere, 2018). Additionally, even though leadership is critical to the success and viability of any organization (McColl-Kennedy & Anderson, 2002) only few pervious research in introduce the idea of organizational resilience in current business environment.

Leadership also introduce 'proactive' risk management activity which leads to employee's safety within the frim (Ashby et.al, 2014). According to transformational leadership theory, how leaders motivate employees, encourage innovation and help organizations to respond effectively to uncertainty and risk (Burns, 1978; Bass, 1985).

According to (Boin et.al, 2003) leaders are related with the idea of disruptions. During a crisis the whole organization depends on the leader decision to take immediate action that will prevent all of them in difficult time through effective team management (Qing-gui et.al, 2012). It also applies risk management "that is proactive is the process of anticipating, assessing, controlling, and transferring risk, which involves the recognition, evaluation, control, and redirect of risks" (Qing-gui et.al, 2012).

Leadership also has influence on Organizational culture that is "a set of forces to shape and determine human behavior" (Adewale & Anthonia, 2013). The result from organizational culture may have impact on productivity and achievement of s of an organizational goal (Madueke et al., 2017). This demonstrate that employee resilience comes before of organizational outcome variables (Caniel & Baaten, 2018).

The research conducted on China Communication Construction Company (CCCC), one of the most prominent foreign contractors operating in Ethiopia, has been involved in some of the country's largest infrastructure projects over the past three decades. From expressways and industrial parks to major urban road networks, the company has established itself as a leading player in both international and domestic construction sectors Sara (2026).

CCCC has been active here for over 30 years, beginning with the Ring Road project. To date, it has completed more than 120 projects and currently has over 36 ongoing. It has delivered signature infrastructure such as the Addis Ababa to Adama Expressway**,** Woldiya–Mekelle railway, and several industrial parks including Mekelle, Semera, Jimma, and Debre Birhan. Additionally, CCCC has completed 70 percent of the municipal roads in Addis Ababa.

From current 10,000 employees, more than 9,300 are local, meaning their local content stands at a very high 93 percent. CCCC hires not only laborers, many local employees hold high-level management positions.

This research was done in CCCC bole airport expansion projects. They have around 500 local management level employees consisting of top level, middle level, operational manager, Project manager, Technician and Other managers are directly working on core projects at the offices and site. These employees are believed to provide relevant data for this research. Generally, the study contributes how leadership capability with mediating factors organizational culture and risk management have effect on in building organizational resilience CCCC.

1.2 Statement of the problem

Despite growing interest in organizational resilience, empirical research mediating roles of organizational culture and risk management in the leadership to organizational resilience link remains sparse, especially in the construction sector.

Construction industry is a business sector that works within an environment filled with projects with risks like operational, financial and compliance (Raz et al., 2002). Such factors exposed to disruptions, environmental changes and even strategic impacts for construction companies, which explains the use of organizational resilience and the capacity to plan for present and future overcome situations (Teece, 2007).

The role of leadership capability on strategy planning, formation, resources allocation and organizational success has been broadly known (Bass, 1985; Burns, 1978). According to transformational leadership theory, the behavior of leaders can determine employees' commitment to goals, vision and readiness to adapt, which can improve resilience building. Transformational leadership theory states that leaders influence their employee's commitment, vision, and adaptability factors that help build organizational resilience (Bass & Riggio, 2006).

Despite these theoretical insights, empirical studies analyzing how leadership influences organizational resilience have failed to consider these mediating variables. Most of the research has focused immediate effect of leadership on organizational resilience without considering mediating variables of risk management and organizational culture (Lisdiono et al., 2022; Raz et al, 2002).

Resource-based view (RBV) states that both risk management and organizational culture have significant importance and core internal resources that improve organization resilient capabilities (Barney, 1991; Schein, 2010). But there are few researches that have considered their roles in relation to the construction industry (Zungu et al., 2025).

Moreover, systematic literature reviews explain some differences in resilience models of organizations and present a view point for empirical examination of such constructs according to each industry sector (Pradana & Ekowati, 2024; Rodgers et al., 2023). Therefore, there is an obvious gap in research related to the impact of leadership capability on organizational resilience through internal organizational processes.

The basic research question concerns the lack of theoretical and empirical studies on the role of leadership capability in contributing to organizational resilience through risk management and organizational culture, specifically in China communication construction company in Ethiopia.

1.3 Research question

Q1. Does the leadership capability have a direct influence on building organizational resilience?
Q2. Does organizational culture mediate the relationship between leadership and organizational resilience?
Q3. Does organizational risk management mediate the relationship between leadership and organizational resilience?

1.4 Objective

1.4.1 General Objective

To examine leadership capabilities in building organizational resilience through the mediating effect of organizational culture and risk management in CCCC, Ethiopia.

1.4.2 Specific Objectives

- To assess the direct influence of leadership capabilities in building organizational resilience in the China Communication Construction Company in Addis Ababa (CCCC).
- To assess the mediating effects of Risk Management on organizational resilience in China Communication Construction Company in Addis Ababa (CCCC).
- To assess the mediating effects of Organizational Culture on organizational resilience in China Communication Construction Company in Addis Ababa (CCCC).

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1.5 Significance of the study

The research focused on the leadership in building organizational resilience and their impact within the construction industry, specifically in the context of China Communication Construction Company in Addis Ababa (CCCC), a consulting company that has led in infrastructure construction and development in East Africa.

The research looks for effective leadership practice and the finding helps organizations to know how the role of leadership has a significant impact on organizational resilience with the mediation factor of organizational culture and risk management.

Moreover, the study identifies challenges organizations face during implementation of effective leadership roles within a construction company. It contributes practicable ideas how leaders act accordingly, robust risk management solutions and organizational culture that enhance long term resilience in the company.

And also, it adds valuable theoretical and Practical contribution to the field of organizational resilience. By integrating the role of leadership, risk management, organizational culture and organizational resilience it improves understanding of theoretical knowledge. For dynamic and uncertain environmental factors, it explains broadly the existing literature and shows how the role of leadership influences organizational resilience outcome. The research supports empirical evidence by using reliable and validated measurement instruments with statistical analysis for construction areas in addition to theoretical knowledge.

Organizations operating in a construction environment like CCCC can use the outcome to design, plan and develop modified strategies to improve organizational culture, risk mitigation during disruption and long-term resilience that helps for competitive advantage.

1.6 Scope/Delimitation of the study

This study focuses on examining the role of leadership in organizational resilience within the operational context of China Communication Construction Company (CCCC) local level management staff in the bole airport expansion project only in Addis Ababa.

The research is limited to the company's construction-related services and project management functions, particularly those projects executed within the past three to six years which is primarily the Ethiopian airlines expansions.

The research primarily involved data collection from local level management staff within the organization, including top level, middle level, project manager, operational manager, technicians, experts and other management staff.

Limitation of the study

The research had a significant effect on the role of leadership capabilities in building organizational resilience in construction companies but it focused on one single construction company (China Communication Construction Company) which limited the study applicability to the larger Ethiopian construction sector.

The study is conducted by gathering responses from the respondent which introduce response bias because the data used by the analysis depends on how respondents understand the survey question, how they are honest in sharing thought and self-awareness is needed.

The data collected at one point in time from different management staff about the role of leadership, organizational culture, risk management and organizational resilience which are uncertain and dynamic factors in a construction area that needs over time analysis.

The research includes one independent and dependent variable with only two mediating variables that are organizational culture and risk management without including other mediating and moderators because of this not fully including all the complex factors about organizational resilience. As data were collected via self-report surveys from the same respondent's simultaneous common method bias may inflate relationship among constructs (podsakoff et al., 2003)

1.7 Organization of the Study

The organization of the research includes five chapters. The first chapter encompasses introduction, statement of problem, objectives, research question, scope, limitation and significance of the research. The second chapter is the literature review in which existing empirical studies and theoretical foundations were discussed. The third chapter holds the research methodology that includes, study area, sample size, sampling technique, research design, research approach and data collection method. Chapter four data analysis and interpretation in this section the collected data from the respondents were analyzed and interpreted. Chapter five includes conclusions, recommendation and future work is suggestions from the research findings.

Definition of Key terms

The following acronyms and important words will be used often in the study.

- Leadership Capabilities**:** These variables measure the extent to which leadership practices, behaviors, and competencies are implemented within the organization to guide and influence employees toward achieving organizational goals (Madueke et al., 2017).

- Organizational Risk Management**:** This variable assesses the degree to which the organization identifies, evaluates, and mitigates risks in its processes, and how these practices support organizational resilience (David J & Teece, 2007).

- Organizational Culture**:** These variables measure the "shared values, norms, and practices within the organization that influence employee behavior, collaboration, and adaptability, contributing to resilience" (Sawan et al., 2018).

- Organizational Resilience: This variable evaluates the organization's "ability to anticipate, respond, and adapt to disruptions while maintaining operational continuity and performance" (Pradana & Ekowati, 2024).

Chapter Two

2. Literature Review

2.1 Introduction

This chapter contain existing literature that deals with leadership's contribution to organizational resilience, with specific reference to mediating factors such as organizational culture and risk management. It also presents what previous researchers have discussed with regard to leadership practices and their contribution to organizational resilience.

Leadership contributes to organizational resilience indirectly as it influences internal organizational mechanisms, including risk management and organizational culture. Thus, effective risk management helps organizations to prepare for and respond to disruptions, whereas a positive organizational culture helps employees to share their knowledge, adapt to change, and work collaboratively during adverse situations (Madueke et al., 2017).

2.2 Organizational Resilience

Organizational resilience refers to an organization's ability to anticipate, absorb, adapt, and recover from disruptive events while maintaining core functions, preserving performance, and often emerging stronger after crisis conditions" Duchek (2020).

Organizational resilience can be interpreted as "a feature of an organization, an outcome of an organization, and a measure of uncertainty that an organization can tolerate during disruptions". When we see organizational resilience as a feature referred to as the 'ability, 'capacity,' or 'capability' (Duchek 2020). If we see as an outcome, organizational resilience was connected to what it does for the organization and as a measure, resilience was associated with the magnitude of the level of disturbance that can be tolerated and still allow the organization to survive (Ruiz-Martin et al., 2018).

Organizational Resilience Theory (ORT) finds several key principles that enable organizations to effectively withstand and recover from disruptions. First, it demonstrates preparedness by proactively identifying potential risks and developing strategy and plans before a crisis. (Duchek, 2020). Second it states that resilient organizations exhibit adaptability, to adjust structures, strategies, and operational processes to withstand emerging challenges (Weick & Sutcliffe, 2007).

Another important principle is that learning capability is acquiring knowledge from both successes and failures and apply these experiences to modify future performance and decision-making (Lengnick-Hall et al., 2011). Furthermore, resilience needs robustness, which enables organizations to maintain core activities and sustain operations during periods of disruption (Duchek, 2020). Finally, resilient organizations demonstrate agility by responding quickly and effectively to unexpected events, thereby minimizing adverse impacts and facilitating rapid recovery (Weick & Sutcliffe, 2007).

The construction industry operates in a highly unpredictable environment, constantly affected by factors, such as changing climate, regulatory shifts, economic factors, and uncertainty like natural disasters, pandemics, and terrorism. Construction organizations aiming to be resilient must proactively prepare for these disruptions, implementing strategies to maintain continuity and minimize financial impacts (Alshebani and Wedawatta 2014).

organizational resilience states also that resilience functions as a meta-capability, allowing organizations to manage unforeseen events, recover from crises, and prosper in the future (Vogus and Sutcliffe 2007). This high-level capability comprises various underlying capabilities, including affective, cognitive, relational, and structural elements. When we say affective capabilities, it holds emotional readiness and psychological preparedness, while cognitive capabilities include sense-making, learning, and decision-making (Richtn'er and Lofsten 2014). Relational capabilities entail collaborative networks, trust, and effective communication (Kahn et al. 2013), while structural capabilities involve robust processes, redundancy, and flexibility (Richtn'er and Lofsten 2014). All these capabilities empower organizations to resist challenges effectively and adapt to change, thereby strengthening resilience (Vogus and Sutcliffe 2007).

A dynamic capability theory is focused on how organizations adapt, renew and reconfigure its resource base to achieve sustained competitive advantage in a dynamic environment (Teece et al.,1997). Moreover, dynamic capability has three interdependent processes in order for organizations to be resilient the first one sensing opportunities and threats second capture those opportunities through strategic action and the third transforming organizational assets and routines to remain aligned with changing market conditions (Teece, 2007; Helfat & Peteraf, 2015).

Organizations are interconnected systems that operate in uncertain environments that cannot be predicted (Mhlanga and Dzingirai ,2024). (Hillmann and Guenther, 2021) shows that most recent

literature describes organizational resilience as an ongoing process not an outcome and the process consist of continuous preparation, learning progress and response in every activity of the company. **(**Annarelli and Nonino ,2021) also describe organizational resilience developed through time and process that is strengthened by well-defined risk management practice and resource allocation.

2.3. Leadership Capabilities and Organizational Resilience

Construction companies faced different challenges due to strategy implementation, resource allocation, operational and financial in project implementation because of this disruption the need to have a capable leadership role in their strategy towards organizational success (Lennick-Hall et al., 2005). Transformational Leadership Theory (TLT) explains leadership as one of the main reasons that employees can be inspired, innovated and have commitment which is used for organizational adaptability development in result helps for organizational resilience (Burns, 1978; Bass, 1985). The core principles stated by TLT idealized influence, individualized consideration, inspirational motivation, intellectual stimulation and performance beyond expectation are main factors in which leaders can work on employees in order to build organizational resilience (Burns, 1978; Bass, 1985).

Adaptive Leadership Theory Developed by (Ronald Heifetz,1994) explains that leaders who effectively manage change, uncertainty, and complex challenges enable organizations to adapt and remain resilient in turbulent environments. Leaders assist organizations in adapting to their environment by directing, guiding, supporting, and providing support to their subordinates (Taylor et al., 2014). The study on supply chain resilience done by (Shin et al., 2021) found that leadership creates superior resilience performance. Resilient leadership is required to execute organizational strategies that promote resilience by rapidly changing the organization's entire system and adjusting to changing business climate (Dartey-Baah, K.,2015).

A company's leadership capabilities may help ensure the company's resilience. Organizational resilience relies on a strong leadership style that encourages unified and interdependent teams to work together (Leslie et al., 2010). Organizational Resilience Theory (ORT) emphasizes that organizations become resilient through capabilities such as anticipation, coping, adaptation, and learning. Leadership capability is considered a major driver of these resilience processes (Duchek, 2020).

Leaders should be able to detect a challenging situation throughout times of hardship the earliest possible. They determine and decide what should be done by the whole team, coordinate vertically and horizontally, and give understanding and guidance to the team with clear and effective communication. At the same time, create, develop and enhance resilience of all teams throughout this experience (Boin, A., 2013; Kane, G.C,2022).

Numerous individuals throughout an organization engage in leadership activities that require core competencies and are successful in achieving positive outcomes (Leslie, 2010). In the public sector, having leadership charisma and capabilities is crucial to navigating the harsh environment (Alam et al., 2018). Thus, during times of adversity and disruption, leadership is crucial in propelling the organization to be resilient to move forward toward its ultimate goal as an agent of development, creator of value, and protector of the nation's interests.

Empirical research conducted by (Prayag et al., 2020) in the tourism and hospitality sector found that organizations with strong leadership related practice, effective communication, employee support and adaptive management capabilities demo high level of organization resilience. The findings from the quantitative study also indicates that leadership plays a crucial role in creating adaptability, employee engagement and coordinated responses to challenges. But the research focuses on Psychological and organizational factors so furthered study needs to examine other factors.

In project-based industries such as construction, where temporary organizational structures and high uncertainty dominate, leadership influence may not translate directly into resilience unless embedded within formal systems and shared cultural norms. Thus, although transformational leadership is theoretically associated with adaptive capacity, the organizational mechanisms through which this influence fosters resilience remain insufficiently specified and empirically tested (Burns, 1978; Bass, 1985). Based on the review of previous research, the study proposes the first research hypothesis

Hypothesis (H1): There is a significant relationship between Leadership Capabilities and Organizational Resilience.

2.4. Leadership Capability and Risk Management

Borgelt and Falk (2007) found that innovation occurs when a leader allows his team to take a risk that has been carefully planned, executed, and managed by qualified staff. Risk and risk management have always been a concern for all leaders (Ashby et.al, 2022) The leader guides the management team in identifying the risks each organization faces, directing mitigation efforts, and seizing opportunities in challenging times by shifting risk into opportunity. Effective leadership promotes proactive risk management, which increases employee safety behavior (Ashby et.al, 2014). According to transformational leadership theory, how leaders motivate employees, encourage innovation and help organizations to respond effectively to uncertainty and risk (Burns, 1978; Bass, 1985).

Upper Echelons Theory posits that organizational strategic choices and performances are direct reflection of the values, experiences and cognitive bases of top-level executives (Hambrick and Phyllis Mason, 1984). Leaders and crises have a strong correlation (Boin et.al, 2003). During a shock, the entire organization relies on the leader to take the appropriate action that will protect them all. Thus, a strong leader will motivate the organization to effectively manage uncertain events, enabling the organization to navigate through difficult times and return to normal or better conditions. Risk management that is proactive is the process of anticipating, assessing, controlling, and transferring risk, which involves the recognition, evaluation, control, and redirect of risks (Qing-gui et.al, 2012)

Riskier firms (for example, those with a great deal of leverage) frequently appoint a chief risk officer to demonstrate that they manage their risks effectively and are committed to remaining sound and healthy (Liebenberg et.al,2003). Enterprise risk management and organizational resilience are strongly connected (Baharin et.al, 2021). They found that enterprise risk management was identified as one factor contributing to organizational resilience. (Chopra and Sodhi, 2004) emphasize the importance of the manager knowing the characteristics and effectiveness of supply chain risks to form or enhance the organization capabilities for further effective risk management by becoming more resilient.

Enterprise Risk Management (ERM) theory by (Coso, 2004) emphasizes that leadership and management commitment are essential for identifying, evaluating, and controlling organizational risks. Effective leadership capability strengthens risk management implementation across the

organization. Based on the review of previous research, the study proposes the second research hypothesis.

Nguyen (2022) quantitative study investigated the influence of leadership perspectives and approaches on the effectiveness of risk management practices within commercial banking institutions. The researchers employed reliability analysis, Exploratory Factor Analysis (EFA), and multiple regression as their primary analytical techniques. The findings demonstrated that leadership perspectives including risk awareness, strategic vision, and management commitment significantly affect the effectiveness of risk management implementation in commercial banks.

The study underscored that leadership plays a critical enabling role in shaping the culture of risk awareness within banking institutions and in ensuring that risk management frameworks are not merely procedural but are actively embedded in organizational decision-making. This Study wants to extend the existing by applying leadership capability with risk management practice to construction companies. Based on the pervious study the second hypothesis proposed.

Hypothesis (H2): There is a significant relationship between Leadership Capability and Risk Management Practice

2.5. Risk Management and Organizational Resilience

Dynamic Capabilities Theory, focuses on an organization's ability to sense opportunities and threats, seize them effectively, and reconfigure resources in response to changing environments. Risk management practices play a critical role in this process by enabling early detection of risks and facilitating timely responses (David J & Teece, 2007). Organizations that develop strong dynamic capabilities can continuously adapt to uncertainty and disruptions. As a result, effective risk management strengthens resilience by ensuring flexibility, innovation, and rapid recovery in the face of challenges (David J & Teece, 2007).

Organizations should make every effort to incorporate resilience into their operations in a way that benefits them in normal times as well as in the face of unpredictable threats or change. One of the efforts is applying proactive risk management (Nauck, et al,2022). Many organizations fail to take the necessary steps toward resilience by not preparing proactive risk management (Marsh,2021).

High Reliability Organization (HRO) theory focuses on organizations that operate in high-risk environments yet maintain consistent and reliable performance. It emphasizes continuous monitoring, error detection, and learning as essential components of risk management. Organizations applying HRO principles develop a proactive approach to identifying and mitigating risks, fostering a strong culture of safety and accountability (Weick & Sutcliffe, 2001).

HRO theory identified five characteristics as common traits of HROs, namely preoccupation with failure, reluctance to simplify, sensitivity to operations, commitment to resilience, and deference to expertise (Weick & Sutcliffe, 2001).

Weick and Sutcliffe (2007) claimed that all these characteristics are supported by collective mindfulness, a state where all individuals of an organization are similarly focused on the same goals to achieve reliability.

The study by (Louisot et.al, 2015) about risk and resilience in the supply chain suggests that due to the interconnected nature of today's supply chain, it is unavoidable that enterprises might very well encounter catastrophic risk, which is why resilience has to be a principal goal of any organization risk management strategy. Thus, resilience is the objective of risk management practice. Analyzing risks and mitigating them is vital in creating resilience (Linkovet et.al, 2014). Creating an enterprise's resilience will not negate the necessity of having risk management (Fikse et.al 2015). Organizational Resilience and risk management do not exist independently. As a result, risk management practices lead to the enhancement of Organizational Resilience.

Arfiansyah (2021) this empirical study found that the application of ERM has a positive effect on organizational resilience This research also supports the statement of COSO (2017), that in the long term the application of ERM will strengthen organizational resilience. The important role of ERM in supporting organizational resilience can be seen in the second component of ERM, namely Risk, Strategy, and Objective-Setting (COSO, 2017). In this component, it is necessary to determine organizational goals and the strategies used to achieve these goals. ERM, must be integrated into the process. Thus, the organization can identify risks that arise in achieving organizational goals. By integrating ERM in determining company strategy, risk identification will be implemented in strategy implementation. So that the company can overcome various obstacles that occur. Based on the review of previous research, the study proposes the third research hypothesis proposed.

Hypothesis (H3): There is a significant relationship between Risk Management Practice and Organizational Resilience.

2.6. The Mediating Effect of Risk Management Practice on the Relationship between Leadership Capabilities and Organizational Resilience

In the dynamic and uncertain business environment, companies must boost their response due to unexpected shocks. Risks are viewed as crucial to project successes and failures (De Carvalho et. al, 2015). Examine the impact of organizational resilience and top management narcissism on the success of the project (Al-Abrrow, 2018). They found that risk management partially mediates the impact of project performance. In their study (Bogodistov, 2017) incorporated risk management as a contributory factor to a firm's resilience in the face of all possible risks. They discovered that firms' capacity to interact and adjust their resource for the disruption primarily acquire risk management. Additionally, they demonstrate risk management capabilities enable businesses to build and sustain resilience in challenging environments as a component of a dynamic capability. (Ambulkar et.al, 2015) found that even if supply chain organization has strategy and plan to deal with crisis it is insufficient to build organization resilience.

Lisdiono (2022) study adds to existing knowledge on risk management and organizational resilience from a dynamic capability theory insight, especially in public organizations operating in existing markets. It is well known that dynamic capabilities are important for efficient performance.

This study also revels the role of risk management in building organizational resilience and mediating leadership capabilities and organizational resilience. It also demonstrates that joint resilience can develop through progress and can be used in in trouble circumstance. Existing literature emphasizes on dynamic capabilities without including risk since the study on how companies dealt with high uncertainty is less developed in the literature (Lisdiono et al., 2022).

Hmidou (2024) study investigates that leadership capability positively affects organizational resilience in Moroccan public companies and risk management practice plays a critical role between leadership and organizational resilience.

Awyerr and Harrison (2020) the research highlights that effective risk management capability enables leaders to resist disruptions and respond proactively. This approach reveals leadership decisions into tangible organizational resilience outcomes.

The organization must have the capabilities to adjust and monitor its resources according to the need and implement risk management. (Riley et.al., 2015) discovered that risk management practice helps the organization to deal with deficiencies, both proactive and reactive, by enhancing robustness and agility that needs to develop value and performance (Lisdiono et al., 2022).

They found evidence that building risk management capabilities can better address the risks, and a leader has a vital role in fostering strong warning and recovery capabilities. (Durach et.al, 2015) conclude that leadership commitment and relationship magnitude influence firms' supply chain robustness capabilities, which is part of resilience (Kantur et.al ,2015). Based on the review of previous research, the study proposes the fourth research hypothesis.

Hypothesis (H4): Risk Management mediating the relation between Leadership Capability and Organizational Resilience.

2.7. Leadership Capability and Organizational culture

Leadership is important in every structure of an organization (Koohang et al., 2016). Recent studies on organizational resilience confirm that leadership is critical for supporting the resilience-encourage potential of different work units (Duchek et al., 2020). Similarly, (Southwick et al., 2017) insisted that an organization needed strong leadership that promotes cohesive and interdependent teams towards resilience.

An organization must have leader who are capable of to inspire and motivate employees (Morales et al., 2019). Leaders who support and encourage employees are mainly related with employee resilience (Cook et al., 2018). Leaders by developing strong employee resilience can resolve problems during organizational disruptions (Zhu et al., 2019).

According to Transformational Leadership Theory, leaders who demonstrate vision, inspiration, and support for innovation can foster a positive and adaptive organizational culture that encourages employee engagement and collaboration (Burns, 1978; Bass, 1985).

Organizational theory they find out that leaders are the primary source for establishment of organizational culture. Leaders by themselves can establish values and motive behaviors through strategic planning and decisions. Leadership style, value and strategy can also affect organizational culture (Warrick, 2017).

Warrick (2017) study finds that during organizational disruption and challenging moments many experts conclude that culture is the solution to solve problems. When leaders and employs of an organization work collaborate, they share behavior, value and belief which results robust organizational culture (Sow et al., 2017). This indicates that organization must develop well defined structure for organizational culture to respond during the time of crisis (Bowers et al., 2017).

According to (Sow et al., 2017) for organization to be resilient or can easily recover during disruptions leadership and organizational culture must be the best fit and can work jointly to create shared value, belief and assumptions among employees. Based on the review of previous research, the study proposes the fifth research hypothesis

Hypothesis (H5): There is a significant relationship between Leadership Capability and Organizational Culture.

2.8. Organizational Culture and Organizational Resilience

Organizational culture contains three layers the first layer artifacts, the second espoused values, and the third layer basic assumptions (Sawan et al., 2018). The first layer of culture is the 'artifacts' which may be visible or non-visible. It explains 'how' and 'what' is going on in the organization. The second middle layer is called the 'espoused values' it related to the ideal standards and goals that management or the entire organization can approve and can be communicated through public legal documents. The third one is core layer it is the 'basic assumptions' or the ''unsaid, taken-for-granted beliefs and values'' (Sawan et al., 2018).

Additionally, organizational culture has six dimensions ''dominant characteristics, organizational leadership, management of employees, glue, strategic emphases, and criteria'' for success. Each of these dimensions has four culture types ''adhocracy, clan, hierarchy, and market'' (Sawan et al., 2018).

Adhocracy basically relies on the external alignment of the organization with efficient flexibility and individuality. Clan also related with internal maintenance for people, sensitivity for customers, and flexibility. Hierarchy focuses on internal maintain ace that require stability and control (Sawan et al., 2018).

Professionals believe that culture is "a solution for many organizational problems like organizational disruption. Culture can be influenced by lots of factors, including leadership "(Warrick, 2017). Leaders influence organizational culture through their "values, strategies, and leadership style" (Warrick, 2017). When the leader and employees of an organization deals with to "core values, beliefs, and behaviors, a strong culture emerges" (Sow et al., 2017).

Organizational in the case of disruption the way it can handle crisis depend on the culture structured in that company and leadership (Bowers et al., 2017). For organization to handle crisis leadership better to align with employee's organizational culture with in that frim. (Sow et al., 2017).

Organizational work culture build by the leader align the company "mission", "values", "principles" and "visions" promote acceptable behaviors, and becomes the foundation of the leader's driving force (Morales et al., 2019). Organizations can effectively resilient to disruptions by modifying their culture (Bundy et al., 2017; Tasic et al., 2019). The culture in the organization have the tendency to develop or decline employee's resilience (Seville, 2018).

According to (Srivastava et al., 2025) empirical study on organizational culture shows that in Indian service sector for organization to be resilient organizational culture has significantly influence on employee performance in return it influence sustainability of resilience in the company). Based on the review of previous research, the study proposes the sixth research hypothesis.

Hypothesis (H6): There is a significant relationship between organizational culture and Organizational Resilience

2.9. The Mediating Effect of Organizational Culture between Leadership Capabilities and Organizational Resilience

From the perspective of Transformational Leadership Theory, leaders shape values, beliefs, and norms that define organizational culture (Burns, 1978; Bass, 1985). Transformational leaders inspire shared vision, encourage innovation, and build trust, which fosters a strong and adaptive culture. This culture, in turn, enhances organizational resilience by enabling employees to respond effectively to disruptions and uncertainties (Burns, 1978; Bass, 1985).

leaders develop and organize culture within an organization through their activity, plan decisions, and interactions. Culture is a way that instructs employees of an organization behavior during difficult times (Schein, 2010).

Organizational culture mediates the relationship between leadership and organizational resilience through employee coordination, commitment and understanding cultural values of each other (Schein, 2010).

According to Teece et al. (2007) study indicates that leadership have the ability to drive organizational resilience. Organizational work culture formed by leader's place mission, values, principles, and visions, gives a sense of identity, introduces acceptable behaviors, and becomes the groundwork of the leader's driving force (Morales et al., 2019).

Organizations can better respond to crises by adjusting their culture (Bundy et al., 2017; Tasic et al., 2019). The culture of the organization can also enhance or erode employee's resilience (Seville, 2018). And later studies highlight that culture serves as a strategic resource (Barney, 1991) for mediating organizational resilience and leadership capability.

Lengnick-Hall (2005) organization culture builds communication, coordinate response and trust. It also holds Learning, flexibility and readiness of employees which are modeled by leaders of organization so it is a bridge between organizational resilience and leadership capability. Denison (1990) found that leadership capability improves organizational outcomes through cultural behavior such as involvement, consistency, adaptability, and mission.

Empirical evidence from (Iulian Georgescu et al., 2024) studies demonstrated that organizational culture must integrate with leadership activities to enhance resilience with the firm. The findings from the study shows strategic human resource management aligned with organizational culture shows significant result during organizational crisis.

Lim, E. & Gaerlan, A. (2022) another empirical study finds that organization must have leaders that enhance organizational resilience. The findings also show that leaders can influence culture through motivation and inspiration to the employee this shows effective leader can survive an organization during time of crisis. Based on the above studies hypothesis seven proposed.

Hypothesis (H7): Organizational Culture is mediate the relation between Leadership Capability and Organizational Resilience.

2.10. Summary of Literature Review

The literature review indicates that organizational resilience has become an essential capability for organizations operating in a dynamic environment. This capability is very important in the construction sector (Duchek, 2020; Ruiz-Martin et al., 2018). Organizational resilience is the capability of an organization to anticipate, adapt to, withstand, and recover from crisis while maintaining its core functions and performance (Duchek, 2020). It is widely viewed as a dynamic and continuous process involves preparedness, adaptability, learning, robustness, and agility, enabling organizations to effectively respond to uncertainty and emerge stronger from challenges (Weick & Sutcliffe, 2007; Hillmann & Guenther, 2021). In dynamic and high-risk environments such as the construction industry, organizational resilience is essential for sustaining operations, managing unexpected events, and achieving long-term organizational success.

According to TLT leadership as one of the main reasons that employees can be inspired, innovated and have commitment which is used for organizational adaptability development in result helps for organizational resilience (Burns, 1978; Bass, 1985). Adaptive Leadership Theory by (Ronald Heifetz,1994) also explains that leaders who effectively manage change, uncertainty, and complex challenges enable organizations to adapt and remain resilient in turbulent environments. Additionally, Organizational Resilience Theory (ORT) emphasizes that organizations become resilient through capabilities such as anticipation, coping, adaptation, and learning. Leadership capability is considered a major driver of these resilience processes (Duchek, 2020). Empirical research conducted by (Prayag et al., 2020) in the tourism and hospitality sector found that

organizations with strong leadership related practice, effective communication, employee support and adaptive management capabilities demo high level of organization resilience. From the above points hypothesis one is generated for this study.

Enterprise Risk Management (ERM) theory by (Coso, 2004) emphasizes that leadership and management commitment are essential for identifying, evaluating, and controlling organizational risks. Additionally, Upper Echelons Theory posits that organizational strategic choices and performances are direct reflection of the values, experiences and cognitive bases of top-level executives (Hambrick and Phyllis Mason, 1984). Nguyen (2022) quantitative study investigated the influence of leadership perspectives and approaches on the effectiveness of risk management practices within commercial banking institutions. From the above points second hypothesis is generated for this study.

Dynamic Capabilities Theory, focuses on an organization's ability to sense opportunities and threats, seize them effectively, and reconfigure resources in response to changing environments. As a result, effective risk management strengthens resilience by ensuring flexibility, innovation, and rapid recovery in the face of challenges (David J & Teece, 2007). According to High Reliability Organization (HRO) theory organizations that operate in high-risk environments yet maintain consistent and reliable performance (Weick & Sutcliffe, 2001). The study by (Louisot et.al, 2015) about risk and resilience in the supply chain suggests that Organizational Resilience and risk management do not exist independently. Another empirical study Arfiansyah (2021) also found that the application of ERM has a positive effect on organizational resilience This research also supports the statement of COSO (2017), that in the long term the application of ERM will strengthen organizational resilience. As a result, risk management practices lead to the enhancement of Organizational Resilience. Based on the review of previous research, the study proposes the third research hypothesis

Lisdiono (2022) empirical study adds to the pervious existing points about risk management and enterprise resilience from a dynamic capability theory view, especially in public organizations (state-owned enterprises) operating in emerging markets. It is well known that dynamic capabilities are important for excellent performance. Hmidou (2024) study also investigates that leadership capability positively affects organizational resilience in Moroccan public companies and risk management practice plays a significant role between leadership and organizational

resilience. Additionally, Awyer and Harrison (2020) the research highlights that effective risk management capability enables leaders to resist disruptions and respond proactively. This approach reveals leadership decisions into tangible organizational resilience outcomes. Based on the review of previous research, the study proposes the fourth research hypothesis

According to Transformational Leadership Theory, leaders who demonstrate vision, inspiration, and support for innovation can foster a positive and adaptive organizational culture that encourages employee engagement and collaboration (Burns, 1978; Bass, 1985). According to organizational theory they find out that leaders are the primary source for establishment of organizational culture (Warrick, 2017). Organizational response during a crisis depends on the prevailing organizational culture and leadership (Bowers et al., 2017).

Warrick (2017) study finds that during organizational disruption and challenging moments many experts conclude that culture is the solution to solve problems. When leaders and employs of an organization work collaborate, they share behavior, value and belief which results robust organizational culture (Sow et al., 2017). This indicates that organization must develop well defined structure for organizational culture to respond during the time of crisis (Bowers et al., 2017). From the previous study the fifth and sixth research hypothesis proposed.

Lengnick-Hall (2005) organization culture builds communication, coordinate response and trust. It also holds Learning, flexibility and readiness of employees which are modeled by leaders of organization so it is a bridge between organizational resilience and leadership capability. Denison (1990) found that leadership capability improves organizational outcomes through cultural behavior such as involvement, consistency, adaptability, and mission. Empirical evidence from (Iulian Georgescu et al., 2024) studies assesses the direct effects of SHRM practices on organizational resilience while also investigating the mediating effects of organizational culture on the relationship between these practices and resilience. Additionally, Lim, E. & Gaerlan, A. (2022) another empirical study finds that an organization needs to have leaders who inspire and motivate. This study has shown that leadership influences organizational resilience. Moreover, leaders with high levels of resilience are able to direct the organizations in times of disruption. Based on the review of previous research, the study proposes the seven-research hypothesis.

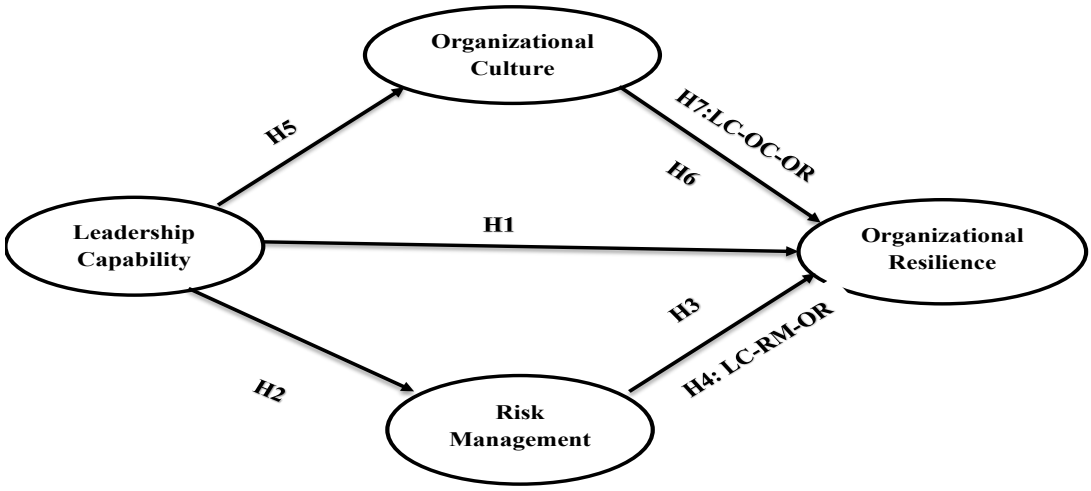
Generally, the above theoretical study and empirical findings showed how leadership capability has a significant role in building organizational resilience not only this but also in building

organizational culture and risk management practice in order for an organization to be resilient in a dynamic environment. Leadership plays an important role.

2.11. Conceptual frame work

The study examines leadership capability and organizational resilience with the mediation of organizational culture and risk management in china communication construction company in Ethiopia. It posits Leadership as the independent variable and organizational resilience as the dependent variable. The conceptual model adapted and modified from two pervious study on mediating role between leadership and organizational resilience. The first one the mediation role of organizational culture adopted from ‘*’Role of culture, leadership, and organizational resilience levels on organizational resilience: a conceptual framework by lim & gaerlan 2022’’ and* the second mediation factor risk management adopted from *‘’ Examining Leadership Capabilities, Risk Management Practices, and Organizational Resilience: The Case of State-Owned Enterprises in Indonesia by Lisdiono et al., 2022’’.*

Figure 1 Conceptual frame work



Source: Adopted from (Lim & Gaerlan, 2022 and Lisdiono et al.,2022)

Table 1 : Hypothesis Summary Table

Hypothesis: H1	There is a significant relationship between Leadership Capabilities and Organizational Resilience.
Hypothesis: H2	There is a significant relationship between Leadership Capability and Risk Management.
Hypothesis: H3	There is a significant relationship between Risk Management and Organizational Resilience.
Hypothesis: H4	Risk Management is mediating the relation between Leadership Capability and Organizational Resilience.
Hypothesis: H5	There is a significant relationship between Leadership Capability and Organizational Culture.
Hypothesis: H6	There is a significant relationship between Organizational Culture and Organizational Resilience
Hypothesis: H7	Organizational Culture Practice is mediating the relation between Leadership Capability and Organizational Resilience

Chapter Three

3. Research Methodology

3.1 Introduction

The previous chapters have identified the research gap and reviewed existing literature on Leadership Capability, Organizational Resilience, Risk Management and organizational Culture. This chapter aims to outline the definitions of the variables, the research design, the sampling approach, data collection methods, and the analysis of the collected data.

3.2 Operational definition of Study Variables

Leadership Capability (LC)

Leadership capability is conceptually defined as the ability of leaders to formulate strategic direction, mobilize organizational resources, inspire employees, and effectively respond to environmental challenges to achieve organizational objectives (Ulrichet al., 1999; Hitt & Ireland, 2002).

Operationally, leadership capability was measured using indicators related to strategic vision, decision-making ability, communication effectiveness, adaptability, employee motivation, and resource management. (Bass et al.,1995).

Organizational Culture (OC)

Organizational culture refers to the shared values, beliefs, assumptions, and norms that influence the behavior of organizational members and shape organizational practices (Schein, 2010).

Operationally, organizational culture was measured through indicators reflecting collaboration, trust, innovation, learning orientation, adaptability, and employee participation (Fahmi et al.,2024).

Risk Management (RM)

Risk management practices refer to the systematic processes through which organizations identify, assess, monitor, control, and communicate risks that may affect the achievement of organizational objectives (David J. Teece, 2007).

Operationally, risk management practices were measured using indicators related to risk identification, risk assessment, risk monitoring, risk mitigation, and risk communication. (Gachanja et al., 2017).

Organizational Resilience (OR)

Organizational resilience is defined as the capability of an organization to anticipate, prepare for, respond to, adapt to, and recover from disruptive events while maintaining essential functions and achieving desired outcomes (Duchek, 2020).

Operationally, organizational resilience was measured using indicators related to preparedness, adaptive capacity, flexibility, response capability, recovery capability, and organizational learning from disruptions. (Jiaoet et al.,2024).

3.3 Research Approach

Research approach is a method in which theory testing and theory building can be identified in case of design research. There are two research approaches exist the first one inductive research approach and the second one is deductive research approach (Saunders et al.,2019).

Deductive research approach exists when there is a set of stated previous theories. From these theories research questions are derived and analyzed to support or argue the theory. (Ketokivi and Mantere 2010). Deductive research approach comes from general to specific conclusions (Saunders et al.,2019).

Inductive research approach exists when assumptions are observed and there is a gap in conclusion so it focuses on theory formation based on patterns and observations (Ketokivi and Mantere 2010). Inductive research approchcomes from specific to the general (Saunders et al.,2019).

This research uses deductive research approach data collected from respondents of China Communications Construction Company (CCCC) to support the hypothesis driven from theories and empirical researches.

3.4 Research Design

Research design is a method for objectives of the study to be achieved. It describes how researcher can plan and draw strategy to collect data, analyze, interpreted and draw conclusions. (Akhtar, 2016). The research designs classified in to three qualitative, quantitative, and mixed methods. Qualitative research is a means for exploring and understanding the meaning phenomena (Akhtar, 2016). In qualitative research design data analysis inductively building from specific to general (Creswell et al.,2018).

Quantitative research is implemented in this research where it is useful for a researcher to collect and analyze quantitative data collected from the respondents. From the interpretation of the results the researcher can make a decision. In Quantitative research design data analyzed deductively from from general to specific (Creswell et al.,2018).

Mixed methods research design that combines both qualitative research approach and quantitative research approach. It includes philosophical assumptions. (Creswell et al.,2018).

This research uses quantitative research design and a cross-sectional study which will examine the relationship between the constructs at a single point in time. A cross-sectional study is selected to enable the researcher to gather data on the variables and study the relationships within a limited timeframe. Data collected from participants and analyzed from the basis of numbers and the hypothesis tested to examine the leadership capability in building organizational resilience through the mediating effects of organizational culture and organizational risk management in the case of China Communications Construction Company (CCCC) in Ethiopia.

3.5 Study Setting Area/Unit of analysis

The studying area of research conducted at China Communication Construction Company (CCCC) local subsidiary in Ethiopia Addis Ababa. The company that has led in transport infrastructure construction and development. CCCC has been involved in the Ethiopian construction industry for more than 30 years, contributing to several projects, including the 216 km Woldiya–Mekelle Railway, the Addis Ababa Ring Road, and the 78 km Ababa to Adama Toll Expressway. CCCC has various projects including the LaGare Central Core Project in Addis Ababa, Leghar, Ethiopian airport projects and extension of Addis Ababa Bole International Airport. CCCC has local offices in the bole airport expansion project. They have more than 500 management level local staff

working on it. From these 500 staff they consist of top level, middle level, operational manager, Project manager, Technician and other managers are directly working on core projects at the offices and site. These employees are believed to provide relevant data for this research.

3.6 Population, Sample Size, and Sampling Technique

The data collected from the target population of CCCC includes top level, middle level, operational manager, Project manager, Technician and other managers of local company employees.

The sampling frame for this research was only local management level employees. This sampling frame was chosen as it is important for the respondents of the research questions to have a good understanding

Sampling techniques are generally divided into two probability and non-probability sampling. Probability sampling ensures that each member of the population has a known, non-zero chance of being selected (Ahmed, 2024). Techniques within this category include simple random sampling, stratified sampling, and cluster sampling (Ahmed, 2024). In contrast, non-probability sampling involves no randomization, meaning not every individual in the population has an equal or known chance of being selected (Ahmed, 2024).

Probability sampling methods used for this research specifically simple random sampling. A simple random sample ensures that each individual in a population has an equal probability of being selected for a smaller subset. It provides a fair and unbiased representation of the population. (Hossan et al., 2023).

The sample size determination is imperative in research for accurately representing a target population accurately (Krejcie,1970). Yamane's formula for sample calculation that the population size is known and finite is used (Yamene, 1967).

Yamane's sample size calculation is:

$$n = \frac{N}{1 + N\,(e^2)}$$

Where: -

- n = sample size

- N = population size
- e = margin of error

In this study 5% of margin error was applied because in social science research the accepted level of precision is 5%. According to Saunders et al. (2023) 5% margin of error provides a reasonable balance between statistical accuracy and practical considerations such as time, cost, and resource constraints. It states that from the true population there will be ± 5% difference not more than that. The use of a 5% margin of error is also consistent with standard sampling practices applied to social science researchers to ensure valid and reliable interpretation and representation of the research findings.

$$n = \frac{500}{1 + 500\ (0.05)^2} = 222$$

From the sample size calculation formula from the total of 500 employees of CCCC, 222 participants were selected for survey respondents.

3.7 Data Type and Collection Instruments

3.7.1 Data Source and Type

Primary data comes from structured questionnaires distributed to the respondent. Both quantitative and qualitative types are used to capture leadership capability impacts comprehensively.

3.7.2 Data Collection Instruments

Structured questionnaires with Likert-scale items measure resilience factors, field notes document observed practices. These instruments are pre-tested for validity and reliability in the Ethiopian construction context. The survey data was collected using Google Form using the internet. A link for the survey questionnaires was sent to employees working in the main office of the company.

3.8 Method of Data Analysis

For models including latent variables, a component-based partial least squares structural equation modeling (PLS-SEM) is used for predicting complex cause-and-effect relationships (Karnadi ,2023).

PLS-SEM is also advocated in the literature to predict dependent variables, as in this study, to estimate a series of equations within the research model and to establish connections between

variables. PLS-SEM is a reliable and established analytical technique used in this study to perform thorough and robust analysis (Karnadi, 2023).

PLS-SEM provides various advantages over other methods. It is a nonparametric approach that has strong support for the modeling of complex multifactorial models; constructs, indicators, as well as their interrelationships. It is also capable of handling non-normal or skewed data and does not necessitate distributional assumptions and can be adjusted to small or large samples depending on the complexity of the model and the effect sizes. Furthermore, PLS-SEM can work with either primary or secondary data, neither of which requires extensive justification based on measurement theory (Hair et al., 2019).

The research profiled survey respondents and then used simple descriptive statistics to define the characteristics of respondents that gave different responses (percentages, mean, standard deviation). Because the relationships of variables are assumed to have indirect influence, bootstrapping and PLS-SEM were applied to evaluate the significance of the correlations between the variables.

3.9 Model Specification

Drawing on the research variables outlined in the conceptual framework (Chapter 2), the specified model is as follows:

Effect of leadership on mediator

$$Z_{1i} = \alpha_0 + \alpha_1 X_{1i} + u_{z1i}$$

$$Z_{2i} = \gamma_0 + \gamma_1 X_{1i} + u_{z1i}$$

Effect on Resilience

$$Y_i = \beta_0 + \beta_{z1} Z_{1i} + \beta_{z2} Z_{2i} + \beta_x X_i + u_{yi}$$

Were,

$$\alpha_0, \beta_0, and\ \gamma_0, are\ constants$$

$$Y_i = Organizational\ Resilience$$

$$X_i = Leadership\ Capability$$

$$Z_{1i} = Risk\ Management$$

$Z_{2i} = organizational\ culture$

$\alpha_1, \gamma_1 = Coefficient\ of\ Leadership\ capability\ on\ each\ mediator$

β_{z1}, β_{z2}
$= Coefficient\ of\ \ Risk\ Management\ and\ Organizational\ Culture\ on\ leadership\ capablity$

$\beta_{x=} Coefficient\ measuring\ direct\ effect\ of\ Leadership\ capability\ on\ Organizational\ Resilience$

$u_{z1i}, u_{z2i}, u_{yi} = \ are\ error\ terms$

3.10 Measures of the Study

Measurement instruments are essential tools for obtaining reliable, evidence-based knowledge and advancing theoretical understanding across various social science disciplines (Rammstedt & Bluemke, 2019). When developing and selecting an appropriate measurement instrument, (Zikmund W. G., et al, 2016) suggest for the researcher to consider whether it effectively addresses the research questions by ensuring construct validity (measuring the intended concept) and construct reliability (quantifying it consistently).

This section describes the study's independent, mediating, and dependent variables. Leadership Capability is the independent variable, Organizational Resilience is the dependent variable, Organizational Culture and Risk Management are the mediating variables. Following the widely used and effective survey method for data collection (Sekaran U., et al, 2016), a Five-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree) was employed for all variables except demographics.

3.11 Specification of Measurement Constructs and Indicators

A research framework was developed to achieve the general and specific objectives of the study. Four factors were used in this study. These variables were measured using pre-existing measurement tools taken from the available literature. Each construct in this study was measured using established scales, with 10 items for each variable**.** Leadership Capability was assessed using items adapted from (Avolio and Bass, 2020*)*. Risk Management was measured using items adopted from (Gachanja et al. 2017). Organizational culture was evaluated using items derived from (Liu et al. 2022), while Organizational Resilience was measured using items adapted from (Jiao et al. 2024). All measurement items were rated using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree**.**

Table 2: Measurement Instrument Adopted from Pre-existing Literature

Main Variables	Indicator	Reference
Leadership Capability	**Q1.** I re-examine critical assumptions to question whether they are appropriate. **Q2.** I articulate a compelling vision of the future **Q3.** I spend time teaching and coaching **Q4.** I consider the moral and ethical consequences of decisions **Q5.** I get others to do more than they expected to do **Q6.** I treat others as individuals rather than just as a member of a group **Q7.** I seek differing perspectives when solving problems **Q8,** I go beyond self-interest for the good of the group **Q9.** I express confidence that goals will be achieved **Q10.** I am effective in representing others to higher authority	(Avolio and Bass,2020)
Risk Management	**Q1.** The organization has established a comprehensive business risk inventory of the risks that it expects the managers to manage. **Q2.** Tools of identifying risks like scenario analysis and strengths, weaknesses, opportunities and threats (SWOT) analysis are frequently used where the risk identification responsibility is that of the board of directors/executive management team. **Q3.** There exists a linkage between the organizational mission and risk management process	(Gachanja et al. ,2017)

	Q4. The organizations response techniques include risk avoidance, risk reduction, risk sharing, and risk acceptance **Q5.** The organization has a process to integrate the impacts of the major risk types (strategic, operational, financial, hazard, and legal). **Q6.** There exists a risk management implementation team that works with each reporting department to link the organization's strategy to that area's objectives and residual risks in the organization. **Q7.** The organization has a corporate-wide common language for communicating risk-type exposures, control activities, and monitoring efforts. **Q8.** The board of directors is actively involved in the risk management process. **Q9.** The management has put in place measures to evaluate the success of risk management strategies in the organization. **Q10.** Corporate management monitors performance outcomes against intended strategic goals to ensure that corporate activities remain on track and correspond to the set course.	
Organizational Culture	**Q1.** Does the organization emphasize achieving results and completing tasks in a competitive environment? **Q2.** Are employees encouraged to develop new and innovative ways to solve problems? **Q3.** Is there effective coordination among different units or facilities within the organization?	(Liu et al. ,2022)

	Q4. Are their clear mechanisms to ensure accountability among staff members? **Q5.** Does the organization rely on data to guide improvement and decision-making processes? **Q6.** Do employees have opportunities to interact with external organizations to gain new knowledge and improve practices? **Q7.** Are employees' skills and unique contributions recognized and effectively utilized? **Q8.** Can employees freely express their opinions, including opposing views, without fear? **Q9.** Does senior management actively support and prioritize improvements in the companies? **Q10.** Are adequate resources (financial, personnel, and equipment) provided to support primary companies?	
Organizational Resilience	**Q1.** Our organization proactively monitors what is happening in the industry for early warning of emerging issues. **Q2.** Our organization is prepared for emergencies and ready to take advantage of unforeseen opportunities. **Q3.** Our organization is not only capable of observing and identifying tangible changes and imminent crises but also focuses on potential future developments. **Q4.** To deal with the impact of crisis events or other risks, my organization has adopted a series of control measures and plans. **Q5.** A swift transition from regular operations to a crisis response mode can be made by my organization. **Q6.** My organization can quickly obtain the resources needed to deal with unexpected events when a crisis occurs.	(Jiao et al. ,2024)

	Q7. A collective coordination mechanism can be established by my project organization during a crisis to ensure a full-system response. **Q8.** During a crisis, our employees engage in frequent communication to comprehend the situation that the organization is undergoing. **Q9.** Strategies are timely adjusted by my organization in response to changes in the external environment. **Q10.** During or after a crisis event, members of my organization can apply the lessons learned to future work	

3.12 Pilot Study or pre-Test

A pilot study is a pretest investigation carried out prior to the main survey or experiment, aimed at evaluating various components of the research design. In the context of survey research, it is typically performed to assess the appropriateness and effectiveness of the study instrument before its use in the full fieldwork phase (Bujang et al., 2024). Pilot study validates the instrument's effectiveness, confirming its validity and reliability while addressing potential limitations (Zikmund W. G., et al, 2016). According to (Wadood Fazli et al., 2021) most questionnaire constructs are/were adapted from prior studies thus pilot testing is essential to confirm the reliability of these constructs and their corresponding items.

3.12.1 Analysis and Discussion of the pilot study

3.12.1.1 Demographic Data

A pilot study was conducted with N= 50 participants to assess the feasibility and psychometric properties of the survey instrument. The data was analyzed using Smart PLS 4.1.1.8 Since the primary goal of the pilot was to validate the measurement model, structural path analysis was not performed. The researcher evaluated the reflective measurement model by using the following criteria:

Table 3: demographic Data from Pilot Study

Characteristic	Category	Frequency	Percentage
Gender	Male	35	70
	Female	15	30
Age Group	20–30	12	24
	31–40	20	40
	41–50	13	26
	>51	5	10
Education Level	BA/BSc	28	56
	MA/MSc	15	30
	PhD	3	6
	Other	4	8
Role of Management	Top Level	5	10
	Middle Level	10	20
	Project Manager	12	24
	Technician	8	16
	Operational Manager	10	20
	Other	5	10
Service Years (Work Experience)	2–3 Years	12	24
	4–6 Years	18	36
	7–10 Years	13	26
	>10 Years	7	14

Source: survey data 2026

Table 3 shows that the respondent group consisted of 70 % men (35 individuals) and 30% women (15 individuals). Regarding age distribution, 24% were aged 20–30 years (12 individuals), 40% were aged 31–40 years (20 individuals), 26% were aged 41–50 years (13 individuals), and 10% were over 51 years old (5 individuals). In terms of education, 56% held BA/BSc degrees (28 individuals), 30% had MA/MSc degrees (15individuals), 6% possessed a PhD (3 individuals), and 8% had other educational backgrounds (4individuals). For the role of management, 10% Top-level management (5 individuals), 20% (10 individuals) were middle-level managers, 24% (12 individuals) were at project level, 16% (8 individuals) were technicians, 20% (10 individuals) worked in operational management, and other roles consist 10% (5 individuals). According to the given data on work experience, 24 % had 2–3 years of experience (12 individuals), 36% had 4–6

years (18 individuals), 26% had 7–10 years (13 individuals), and 14% had more than 10 years of experience (7 individuals).

3.12.1.2 Reliability of the Pilot Study Instrument

Indicators for this instrument were adopted from previous research. Although this is the case Cronbach's alpha and composite reliability were used to examine each variable's reliability. The reliability of a measurement model is evaluated with internal consistency and indicator reliability.

As indicated in Table 4 below, the composite reliability for all constructs exceeds 0.7 but remains below 0.95, confirming that all constructs in the study demonstrate adequate internal consistency.

Convergent validity is the degree to which items that constitute a construct have significant associations with each other. The construct it mirrors is the association among conceptually similar indicators (Hair et al., 2022). The average variance extracted (AVE) is the measure of convergent validity for a construct, based on all its associated items (J. F. Hair et al., 2019).

The Average Variance Extracted (AVE) values exceeded 0.50, while composite reliability and rho_a values surpassed 0.70, satisfying the established thresholds (Hair et al., 2017) and confirming adequate convergent validity and reliability.

Table 4: Internal Consistency Reliability and Convergent Validity of the Pilot Test

	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
LC	0.927	0.932	0.939	0.608
OC	0.923	0.932	0.935	0.592
OR	0.93	0.934	0.941	0.613
RM	0.931	0.936	0.942	0.618

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

3.12.1.3 Indicator Reliability /Outer Loading

Outer loadings assess indicator reliability, showing how closely related the indicators are to the construct they measure. Higher outer loadings suggest that the indicators strongly reflect the construct. All outer loadings should be statistically significant and greater than 0.708 ((Hair et al.,

2022) According to Table 5 below LC 2, LC 5, LC 7, OC 4, OC 9, have indicators below 0.708. However, their loading result is within the acceptable threshold. Per Hair et al. (2022), indicators with loadings between 0.4 and 0.7 should only be removed if their deletion improves composite reliability or convergent validity beyond the recommended threshold. But, for this reason the average variance extracted for the above constructs is exceeded 0.50 so the indicator will not be removed.

Table 5: Outer Loading of the Pilot Study

	Leadership Capability (LC)	**Organizational Culture (OC)**	**Organizational Resilience (OR)**	**Risk Management (RM)**
LC_1	0.821			
LC_10	0.792			
LC_2	0.676			
LC_3	0.819			
LC_4	0.811			
LC_5	0.697			
LC_6	0.759			
LC_7	0.686			
LC_8	0.883			
LC_9	0.828			
OC_1		0.702		
OC_10		0.75		
OC_2		0.826		
OC_3		0.834		
OC_4		0.69		
OC_5		0.771		
OC_6		0.803		
OC_7		0.773		
OC_8		0.844		
OC_9		0.678		
OR_1			0.812	
OR_10			0.788	
OR_2			0.784	
OR_3			0.829	
OR_4			0.75	
OR_5			0.777	

	Leadership Capability (LC)	Organizational Culture (OC)	Organizational Resilience (OR)	Risk Management (RM)
OR_6			0.783	
OR_7			0.807	
OR_8			0.75	
OR_9			0.744	
RM_1				0.763
RM_10				0.787
RM_2				0.782
RM_3				0.771
RM_4				0.795
RM_5				0.771
RM_6				0.816
RM_7				0.768
RM_8				0.75
RM_9				0.852

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

3.12.1.4 Discriminant Validity

Discriminant validity test proves that a measure of constructs is empirically distinct, capturing unique phenomena of interest not represented by other measures in a structural equation model (Hair et al., 2010). The evaluation of this measure is based on the Heterotrait-Monotrait ratio (HTMT), which indicates that a construct is empirically distinct from other constructs based on established standards. According to (Henseler et al., 2015), stipulates that for discriminant validity a threshold value of 0.9 should be set. All latent constructs in the study meet this condition as indicated in Table 5 HTMT values ranged from 0.610 to 0.743 which is below the recommended value 0.85 and discriminant validity established this shows constructs are empirically distinct from each other.

Table 6 : Discriminant Validity (HTMT) of Pilot Study

	Leadership Capability (LC)	Organizational Culture (OC)	Organizational Resilience (OR)	Risk Management (RM)
LC				
OC	0.724			
OR	0.743	0.61		

RM	0.677	0.676	0.622	

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

3.13 Ethical Considerations

Ethical research practices center on two core principles: maintaining scientific integrity in the study's design and protecting the rights of research participants. From the start of the research process, ethical considerations must be prioritized, rather than addressed only in later stages (L. Cohen et al., 2007). To this end, the researcher has done and followed the ethical guidelines set by academic institutions and the relevant discipline. Key ethical principles addressed in this study include (Yohannes, 2025).

- Inform respondents about the research idea and its benefits.
- Prevent data gathering for private reasons.
- confidentiality of information collected from the respondents must be secured.
- Avoid any bias in data collection, analysis and interpretation of results.
- Maintain voluntary participation.
- Properly address the source to prevent plagiarism.
- For further study make available the method, assumption, and findings of the research.

Chapter Four

4. Data Analysis and Interpretation

4.1 Introduction

The data analysis and interpretation included a detailed demographic review of the respondent, the measurement model assessment and the structural model assessment in which hypotheses and path coefficients were then evaluated. The analysis of the model used to interpret and find the causal relationship among independent, dependent and mediating variables. The software used for data analysis was Structural Equation Modeling with Smart PLS version 4.1.1.8 to assess the model's constructs.

4.2 Data Examination

Though often considered routine, data screening and examination are vital initial steps in data analysis, especially for Structural Equation Modeling (SEM) (Hair, 2022). Typically, researchers assess missing data, outliers, and normality assumptions during screening (Tabachnick et al, 2013). In this study, data were gathered online using Google Forms, with all questions set as required, ensuring no missing values. The analysis was limited to outlier detection.

4.3 Response Rate

Google form was sent to the respondents with a link to the questionnaire to 222 to obtain responses that answered the research questionnaires. Table 7 below shows out of the total questionnaires sent, 182 people responded to it which is an 81.98 % return rate. Thus, the analysis of the data was based on the 182 responses.

Table 7: Response Rate Table

Distributed questionnaire		**Returned and useful**	
Frequency	Percentage	Frequency	Percentage
222	100	182	81.98

Source: Survey Data (2026)

4.4 Demographic Information

Table 8: Demographic Information Table

Characteristic	Category	Frequency	Percentage
Gender	Male	131	72
	Female	51	28
Age Group	20-30	45	24.7
	31-40	70	38.5
	41-50	47	25.8
	>51	20	11
Education level	BA/BSc	107	58.8
	MA/MSc	56	30.8
	PhD	11	5.8
	Other	8	4.6
Role of Management	Top Level	7	4.1
	Middle Level	27	14.8
	Project Manager	46	25.3
	Technician	46	25.3
	Operational Manager	50	27.5
	Other	5	2.9
Service years (work experience)	2-3 Year	19	10.4
	4 – 6	52	28.6
	7 – 10	53	29.1
	>10	58	31.9

Table 8 shows the respondent group consisted of 72% men (131 individuals) and 28% women (51 individuals). Regarding age distribution, 24.7% were aged 20–30 years (45 individuals), 38.5% were aged 31-40 years (70 individuals), 25.8% were aged 41–50 years (47 individuals), and 11% (20 individuals) were over 51 years old. In terms of education, 58.8% held BA/BSc degrees (107 individuals), 30.8% had MA/MSc degrees (56 individuals), 5.8% possessed a PhD (11 individuals) and 4.6% (8 individuals) had other educational backgrounds.

For the management level, 4.1% (7 individuals) were at Top level management, 14.8% (27 individuals) were Middle Level, 25.3% (46 individuals) were on project management Level, 25.3% (46 individuals) were on Technician, 27.5% (50 individual) work on operational

Management and 2.9% (5 individual) had other leadership role. According to the given data work experience, 10.4% had 2–3 years (19 individuals), 28.6% had 4 – 6 years (52 individuals), 29.1% had 7 – 10years (53individuals) and 31.9% had more than 10 years (58 individuals).

4.5 Descriptive Statics of the study Variable

Descriptive statistics are used to summarize and present the main characteristics of the data in a meaningful way (Andy Field, 2018). They provide simple quantitative descriptions of the variables included in the study, such as the mean, standard deviation, minimum, and maximum values. These measures help researchers understand the distribution, central tendency, and variability of the data before conducting further inferential analysis. (Andy Field, 2018)

The mean represents the average value of responses, indicating the general tendency of respondents' perceptions. The standard deviation measures the dispersion or variability of the data around the mean, showing how consistent or diverse the responses are. Additionally, the minimum and maximum values indicate the range of responses observed in the dataset. (Uma Sekaran et.al ,2016)

From the study non-demographic question in the questioner is evaluated using a 5-point Likert scale, with 5 representing strong agreement and 1 indicating strong disagreement with the items related to the study's latent constructs.

The mean values and standard deviations of these items are presented below in Table 9. Leadership capability, the mean values range from **(**3.176 to 3.324**),** indicating a moderate level of agreement among respondents. The standard deviation values range from (1.108 to 1.234**),** suggesting a relatively high variability, meaning that respondents' opinions are somewhat diverse.

In the case of risk management, it shows mean values between (3.148 and 3.269**)**, which also reflects a moderate perception level. The standard deviation ranges from (1.139 to 1.246**),** indicating considerable dispersion in responses.

In the case of organizational culture, the mean scores range from (3.126 to 3.269)**,** suggesting that respondents have a moderately positive view of the organizational culture. The standard deviation values (from 1.084 to 1.259) indicate variation in responses, though still within an acceptable range.

Finally, organizational resilience records mean values between **(**3.154 and 3.324**),** indicating a moderate level of agreement among respondents regarding the organization's resilience. The standard deviation values range from (1.148 to 1.234), which suggests moderate to high variability in perceptions.

Overall, the descriptive statistics suggest how the participants evaluated Organizational Resilience in terms of Leadership, organization culture and Risk management.

Table 9: Descriptive Statics of the Study Variable

CONSTRUCT	Name	N	Mean	Standard deviation
LEADERSHIP CAPABILITY	LC_1	182	3.203	1.137
	LC_2	182	3.236	1.188
	LC_3	182	3.247	1.129
	LC_4	182	3.324	1.181
	LC_5	182	3.236	1.179
	LC_6	182	3.258	1.165
	LC_7	182	3.203	1.108
	LC_8	182	3.22	1.234
	LC_9	182	3.198	1.155
	LC_10	182	3.176	1.21
RISK MANAGEMENT	RM_1	182	3.148	1.146
	RM_2	182	3.209	1.167
	RM_3	182	3.231	1.196
	RM_4	182	3.176	1.187
	RM_5	182	3.258	1.188
	RM_6	182	3.231	1.139
	RM_7	182	3.269	1.143
	RM_8	182	3.264	1.212
	RM_9	182	3.225	1.153
	RM_10	182	3.176	1.246
ORGANIZATIONAL CULTURE	OC_1	182	3.214	1.259
	OC_2	182	3.269	1.24
	OC_3	182	3.258	1.251
	OC_4	182	3.247	1.084
	OC_5	182	3.242	1.127
	OC_6	182	3.126	1.186
	OC_7	182	3.159	1.241

CONSTRUCT	Name	N	Mean	Standard deviation
	OC_8	182	3.148	1.247
	OC_9	182	3.209	1.236
	OC_10	182	3.209	1.223
ORGANIZATIONAL RESILIENCE	OR_1	182	3.154	1.222
	OR_2	182	3.242	1.234
	OR_3	182	3.181	1.229
	OR_4	182	3.247	1.148
	OR_5	182	3.324	1.158
	OR_6	182	3.242	1.203
	OR_7	182	3.242	1.207
	OR_8	182	3.17	1.176
	OR_9	182	3.225	1.19
	OR_10	182	3.242	1.18

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.6 Evaluation of the Measurement Model

Evaluation of a measurement model is a central step in structural equation modeling (SEM), as it determines whether the observed indicators adequately represent the underlying latent constructs. The process is grounded in measurement theory and involves assessing the reliability and validity of constructs before proceeding to structural relationships (Bollen (1989) and (Borsboom et al. (2003).

A foundational perspective on measurement begins with the nature of latent variables. (Borsboom et al ,2003) argue that latent constructs are not merely statistical abstractions but should be understood as real attributes that causally produce observed responses. Changes applied on latent variables lead to technical variation in its indicators. This shows the logic of construct validity and indicates how researchers evaluate indicator relationships (Coltman et al. ,2008).

A key distinction in measurement model evaluation is between reflective and formative constructs. (Coltman et al. ,2008) emphasize that in reflective models, the latent construct causes the indicators, meaning indicators should be highly correlated and interchangeable. In contrast, formative models assume that indicators collectively form the construct, so indicators need not be correlated and each captures a unique aspect of the concept. This distinction is critical because it

determines the appropriate evaluation criteria. Misclassifying a construct can lead to incorrect conclusions about validity and reliability.

In more recent applications, especially in Partial Least Squares SEM (PLS-SEM) (Hair et al. 2022) outline a systematic approach to measurement model evaluation. For reflective constructs, researchers assess internal consistency reliability (composite reliability), convergent validity (average variance extracted, AVE), and discriminant validity (e.g., Fornell-Larcker criterion or HTMT ratio). Convergent validity ensures that indicators of a construct share a high proportion of variance, while discriminant validity confirms that constructs are empirically distinct from one another.

For formative constructs, (Hair et al. 2022) recommend a different set of criteria, including examining indicator weights, multicollinearity (via variance inflation factors), and the significance and relevance of each indicator. Since formative indicators define the construct, removing an indicator can alter the meaning of the construct, making theoretical justification especially important.

Based on the above discussed determination factors, to determine whether the study constructs are reflective or formative a brief analysis is undertaken by the researcher and the below table 10 shows a summary of the measurement model's specifications.

Table 10: Specification of Constructs

Construct	**References**	**Reflective?**
Leadership capability	*Avolio and Bass, (2020)*	Yes
Risk Management	*Gachanja, C. C. (2017)*	Yes
Organizational Culture	*Fahmi, N., & Ghazali, A. (2024).*	Yes
Organizational Resilience	*Jiao, P., & Bu, W. (2024).*	Yes

4.6.1 Assessment of Reflective Model

Assessment of a reflective measurement model focuses on determining whether a latent construct adequately explains its observed indicators. In reflective models, the direction of causality runs from the construct to the indicators, meaning that changes in the latent variable are expected to cause variation in all its measures (Borsboom et al., 2003) and (Coltman et al.,2008) implies that indicators should be correlated, interchangeable, and share a common underlying theme.

A widely accepted framework for assessing reflective models is provided by (Hair et al. 2022), particularly in the context of Partial Least Squares Structural Equation Modeling (PLS-SEM). The evaluation typically involves four main criteria: indicator reliability, internal consistency reliability, convergent validity, and discriminant validity.

Indicator reliability is assessed by examining the outer loadings of each indicator on its respective construct. High loadings indicate that the indicator shares substantial variance with the construct. As a rule of thumb, loadings above 0.70 are considered acceptable, although values between 0.40 and 0.70 may be retained if they contribute to convergent validity. Low-loading indicators may suggest measurement error or poor alignment with the construct (Hair et al. 2022).

Internal consistency reliability evaluates the extent to which indicators consistently measure the same construct. While Cronbach's alpha has traditionally been used, it assumes equal indicator loadings and may underestimate reliability. Therefore, composite reliability is preferred in SEM, as it accounts for differing loadings. Values between 0.70 and 0.95 are generally considered satisfactory; values above 0.95 may indicate redundancy among indicators (Hair et al. 2022).

Convergent validity refers to the degree to which a construct explains the variance of its indicators. It is commonly assessed using the Average Variance Extracted (AVE), which should exceed 0.50. This indicates that the construct explains more than half of the variance of its indicators on average, supporting the idea that the indicators truly reflect the intended latent variable (Coltman et al.,2008).

Discriminant validity ensures that a construct is empirically distinct from other constructs in the model. One traditional method is the Fornell–Larcker criterion, which requires that a construct's AVE square root be greater than its correlations with other constructs. A more robust approach is

the Heterotrait–Monotrait (HTMT) ratio, where values below 0.85 (or 0.90 in more lenient cases) indicate adequate discriminant validity. This step is crucial to confirm that constructs are not measuring overlapping concepts (Coltman et al., 2008).

In addition to these statistical assessments, theoretical justification remains essential. Reflective indicators should be conceptually consistent and derived from a clear definition of the construct. Rossiter (2005) highlights that measurement quality depends not only on statistical criteria but also on sound construct conceptualization.

4.6.2 Reliability Assessment: Internal Consistency Reliability

Internal consistency reliability refers to the degree to which multiple indicators of a reflective construct are consistent in their measurement of the same underlying latent variable (Coltman et al.,2008). In structural equation modeling (SEM), particularly in Partial Least Squares SEM (PLS-SEM), establishing internal consistency is essential to ensure that a construct is reliably measured before proceeding to validity assessment and structural model evaluation (Hair et al. 2022).

The concept of internal consistency reliability originates from the work of (Lee Cronbach ,1951), who introduced Cronbach's alpha as a measure of the internal structure of tests. Cronbach's alpha evaluates reliability based on the average intercorrelations among indicators, assuming that all items contribute equally to the construct (tau-equivalence). While it remains widely used, this assumption is often unrealistic in SEM applications, where indicators typically have different loadings. As a result, Cronbach's alpha may underestimate or overestimate true reliability.

To overcome these limitations, SEM literature recommends alternative reliability measures. Henseler et al. (2009) emphasize the use of composite reliability (CR) in PLS path modeling. Composite reliability takes into account the actual outer loadings of indicators, providing a more accurate estimate of internal consistency. According to (Joseph F. Hair et al. 2017; 2022), CR values between 0.70 and 0.95 indicate satisfactory reliability. Values below 0.70 suggest insufficient consistency, whereas values above 0.95 may indicate redundancy among indicators. As indicated in Table 11 below, the composite reliability for all constructs exceeds 0.7 but remains below 0.95, confirming that all constructs in the study demonstrate adequate internal consistency.

The Average Variance Extracted (AVE) values exceeded 0.50, while composite reliability and rho_A values surpassed 0.70, satisfying the established thresholds (Hair et al., 2017) and confirming adequate convergent validity and reliability.

Table 11: Internal Consistency Reliability

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
LC	0.919	0.921	0.932	0.58
OC	0.92	0.922	0.933	0.582
OR	0.914	0.916	0.928	0.565
RM	0.916	0.918	0.93	0.57

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.6.3 Reliability Assessment: Indicator Reliability

In addition to assessing internal consistency, the researcher examined the reliability of individual items to verify whether each item aligns with its corresponding theoretical latent construct. Elevated outer loadings on a construct indicate strong similarity among the correlated indicators, which the construct effectively represents.

According to (Hair et al., 2022), outer loadings should ideally be at least 0.708. They also suggest that items with loadings between 0.40 and 0.70 should only be removed if their deletion increases the construct's composite reliability or average variance extracted (AVE) beyond a specified threshold (Hair et al., 2022).

As presented in Table 12 below, some indicators have loadings below 0.70 however, these loadings are close to 0.70 and fall within the acceptable range (Hair et al., 2022). The results indicate that these measurement items demonstrate adequate individual item reliability and meet the established criteria. These items were successfully loaded onto their respective latent variables and exhibited the necessary internal consistency.

Table 12: Outer Loading

	Leadership Capability (LC)	Organizational Culture (OC)	Organizational Resilience (OR)	Risk Management (RM)
LC_1	0.802			
LC_10	0.769			
LC_2	0.739			
LC_3	0.785			
LC_4	0.771			
LC_5	0.702			
LC_6	0.733			
LC_7	0.736			
LC_8	0.806			
LC_9	0.764			
OC_1		0.765		
OC_10		0.696		
OC_2		0.817		
OC_3		0.827		
OC_4		0.728		
OC_5		0.771		
OC_6		0.737		
OC_7		0.766		
OC_8		0.767		
OC_9		0.748		
OR_1			0.786	
OR_10			0.771	
OR_2			0.71	
OR_3			0.761	
OR_4			0.722	
OR_5			0.751	
OR_6			0.785	
OR_7			0.784	
OR_8			0.694	
OR_9			0.749	
RM_1				0.79
RM_10				0.742
RM_2				0.763
RM_3				0.729
RM_4				0.778
RM_5				0.748

	Leadership Capability (LC)	Organizational Culture (OC)	Organizational Resilience (OR)	Risk Management (RM)
RM_6				0.763
RM_7				0.741
RM_8				0.735
RM_9				0.759

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.6.4 Validity Assessment: Convergent Validity

Convergent validity evaluates the extent to which various indicators, theoretically linked to a common construct, actually exhibit strong correlations or convergence among themselves (Lim, 2024). Convergent validity focuses on empirical evidence showing that multiple measures of a single construct are, as theoretically expected, strongly related to that construct (Lim, 2024). According to (Hair et al., 2022), the items of reflective constructs are treated distinctly to assess the construct, requiring the indicators of a specific construct to converge and account for a substantial portion of shared variance.

The evaluation of convergent validity for reflective indicators relies on the average variance extracted (AVE), which measures the proportion of variance explained by a construct compared to the variance caused by measurement error. The accepted benchmark for AVE is 0.5 or greater (Fornell & Larcker, 1981; Hair et al., 2022). Based on the prior discussion, the researcher evaluated the AVE for indicators loading onto their respective constructs. As shown in Table 13, the AVE for each latent construct in the study exceeds 0.50, indicating that all constructs meet the convergent validity requirements (Hair et al., 2022).

Table 13: Convergent Validity

Latent construct	**Average variance extracted (AVE)**
Leadership Capability (LC)	0.58
Organizational Culture (OC)	0.582
Risk Management, (RM)	0.565

Organizational Resilience (OR)	0.57

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.6.5 Validity Assessment: Discriminant Validity

Discriminant validity assesses whether a latent construct is truly distinct from other constructs in a measurement model. It ensures that a construct captures a unique concept and does not excessively overlap with related variables. In reflective measurement models, this is essential because indicators are assumed to reflect only their specific construct.

According to (Hair et al.,2022), discriminant validity is commonly evaluated using the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio. The Fornell–Larcker approach requires that a construct shares more variance with its own indicators than with other constructs, while HTMT values below 0.85 or 0.90 indicate adequate discriminant validity. Henseler et al. (2009) emphasize that without discriminant validity, constructs may overlap and distort structural relationships in SEM. Therefore, establishing discriminant validity is crucial to ensure that each latent variable represents a conceptually and empirically distinct phenomenon.

4.6.5.1 Hetrotrait-monotrait ratio

The Heterotrait–Monotrait (HTMT) ratio is a modern method for assessing discriminant validity in structural equation modeling, particularly in Partial Least Squares SEM (PLS-SEM). It evaluates the degree of similarity between constructs by comparing the average correlations across different constructs (heterotrait–heteromethod correlations) with the average correlations within the same construct (monotrait–heteromethod correlations). If constructs are truly distinct, the HTMT value should be low, indicating that indicators of different constructs are not overly similar.

According to (Hair et al.,2022), HTMT values below 0.85 (strict criterion) or 0.90 (more lenient criterion) indicate adequate discriminant validity. Values above these thresholds suggest a lack of discriminant validity meaning that constructs may not be empirically distinct.

Henseler et al. (2015) introduced HTMT as a superior alternative to traditional methods such as the Fornell–Larcker criterion, demonstrating that it has higher sensitivity in detecting discriminant

validity problems. Therefore, HTMT is now widely recommended in PLS-SEM as a robust and reliable approach for confirming that latent constructs are conceptually and statistically distinct.

Table 14 indicates that the values are within the acceptable range of validity, the threshold of 0.85. The highest value found in the result is 0.718 between (LC and RM) this shows the constructs are truly different from each other. All latent constructs in the study meet this condition as indicated in Table 5 HTMT values ranged from 0.664 to 0.718 which is below the recommended value 0.85 and discriminant validity established this shows constructs are empirically distinct from each other.

Table 14: Discriminant Validity (HTMT)

	Leadership Capability (LC)	**Organizational Culture (OC)**	**Organizational Resilience (OR)**	**Risk Management (RM)**
LC				
OC	**0.715**			
OR	**0.671**	**0.664**		
RM	**0.718**	**0.683**	**0.644**	

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.6.5.2 Discriminant Validity Fornell- Larcker criterion

The Fornell–Larcker criterion was employed to evaluate the discriminant validity of the constructs in the measurement model. Discriminant validity refers to the extent to which a construct is truly distinct from other constructs by empirical standards (Fornell & Larcker, 1981). According to this criterion, the square root of the Average Variance Extracted (AVE) of each construct should be greater than the correlations between that construct and other constructs in the model (Hair et al., 2022).

As shown in the table 15 below the square root of AVE values for Leadership Capability (0.762), Organizational Culture (0.763), Organizational Resilience (0.752), and Risk Management (0.755) are greater than their corresponding inter-construct correlations. For instance, the square root of AVE for Leadership Capability (0.762) exceeds its correlations with Organizational Culture (0.661), Organizational Resilience (0.620), and Risk Management (0.664). Likewise, the square

root of AVE values for organizational culture (0.763) exceeds its correlation with Leadership Capability (0.661), Organizational Resilience (0.614), and Risk Management (0.631). This demonstrates adequate discriminant validity for Organizational Culture.

Organizational Resilience (OR) showed a square root of AVE value of 0.755, which is greater than its correlations with Leadership Capability (0.620), Organizational Culture (0.614), and Risk Management (0.595). Therefore, Organizational Resilience possesses sufficient discriminant validity.

Likewise, Risk Management (RM) had a square root of AVE value of 0.755, which exceeds its correlations with Leadership Capability (0.664), Organizational Culture (0.631), and Organizational Resilience (0.595). This confirms that Risk Management is distinct from the other constructs in the model.

Therefore, the findings indicate that the constructs satisfy the Fornell–Larcker criterion and demonstrate adequate discriminant validity, confirming that each construct is empirically distinct and captures a unique aspect of the conceptual model.

Table 15: Discriminant Validity Fornell-Larcker Criterion

	Leadership Capability (LC)	**Organizational Culture (OC)**	**Organizational Resilience (OR)**	**Risk Management (RM)**
LC	0.762			
OC	0.661	0.763		
OR	0.62	0.614	0.755	
RM	0.664	0.631	0.595	0.752

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.6.5.3 Cross Loading

The cross-loading analysis was conducted to further assess discriminant validity among the constructs. According to the cross-loading criterion, an indicator should load more highly on its assigned construct than on any other construct in the model (Hair et al., 2022).

The results in table 16 indicate that all indicators achieved higher loadings on their respective constructs compared to their cross-loadings with other constructs. For example, the Leadership

Capability (LC) items demonstrated strong loadings on the LC construct, ranging from 0.702 to 0.806, while their loadings on Organizational Culture (OC), Organizational Resilience (OR), and Risk Management (RM) were comparatively lower.

Similarly, the Organizational Culture (OC) indicators loaded highest on the OC construct, with values ranging from 0.696 to 0.827, exceeding their correlations with the other constructs. The Organizational Resilience (OR) items also showed stronger loadings on OR, ranging from 0.694 to 0.786, compared to their loadings on LC, OC, and RM. Likewise, the Risk Management (RM) indicators loaded highest on the RM construct, with values between 0.729 and 0.790, while maintaining lower cross-loadings on the remaining constructs.

Overall, the findings confirm that all measurement items are more strongly associated with their intended constructs than with other constructs in the model. Therefore, the cross-loading results provide evidence of adequate discriminant validity and support the distinctiveness of the study variables (Fornell & Larcker, 1981; Hair et al., 2022).

Table 16: Discriminant Validity Cross Loading

	Leadership Capability (LC)	**Organizational Culture (OC)**	**Organizational Resilience (OR)**	**Risk Management (RM)**
LC_1	0.802	0.57	0.536	0.611
LC_2	0.739	0.486	0.458	0.462
LC_3	0.785	0.55	0.488	0.512
LC_4	0.771	0.517	0.446	0.498
LC_5	0.702	0.458	0.371	0.491
LC_6	0.733	0.477	0.463	0.489
LC_7	0.736	0.492	0.464	0.422
LC_8	0.806	0.499	0.525	0.543
LC_9	0.764	0.482	0.48	0.542
LC_10	0.769	0.488	0.47	0.461
OC_1	0.444	0.765	0.441	0.451
OC_2	0.557	0.817	0.463	0.502
OC_3	0.552	0.827	0.549	0.536
OC_4	0.48	0.728	0.468	0.46
OC_5	0.442	0.771	0.444	0.472
OC_6	0.483	0.737	0.43	0.47

	Leadership Capability (LC)	Organizational Culture (OC)	Organizational Resilience (OR)	Risk Management (RM)
OC_7	0.522	0.766	0.412	0.502
OC_8	0.518	0.767	0.504	0.461
OC_9	0.541	0.748	0.523	0.507
OC_10	0.48	0.696	0.431	0.444
OR_1	0.513	0.523	0.786	0.455
OR_2	0.419	0.385	0.71	0.407
OR_3	0.473	0.44	0.761	0.42
OR_4	0.491	0.444	0.722	0.511
OR_5	0.499	0.472	0.751	0.389
OR_6	0.434	0.42	0.785	0.467
OR_7	0.455	0.486	0.784	0.491
OR_8	0.44	0.463	0.694	0.398
OR_9	0.414	0.427	0.749	0.392
OR_10	0.502	0.532	0.771	0.521
RM_1	0.539	0.497	0.485	0.79
RM_2	0.49	0.397	0.403	0.763
RM_3	0.409	0.369	0.426	0.729
RM_4	0.589	0.522	0.446	0.778
RM_5	0.503	0.523	0.389	0.748
RM_6	0.501	0.49	0.52	0.763
RM_7	0.487	0.496	0.519	0.741
RM_8	0.482	0.437	0.403	0.735
RM_9	0.502	0.517	0.469	0.759
RM_10	0.487	0.495	0.413	0.742

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.6.6 Hetro Trait Mono Trait (HTMT) Confidence Interval

The HTMT (Heterotrait–Monotrait Ratio) confidence interval results were examined to assess discriminant validity among the study constructs. According to the HTMT criterion, discriminant

validity is established when HTMT values are below the recommended threshold (0.85 or 0.90) and when the bootstrap confidence intervals do not include the value 1.00 (Henseler et al.,2015).

The results indicate in Table 17 that all HTMT values ranged from 0.644 to 0.718, which are below the recommended threshold of 0.85. Specifically, the HTMT value between OC and LC was 0.715, between OR and LC was 0.671, between OR and OC was 0.664, between RM and LC was 0.718, between RM and OC was 0.683, and between RM and OR was 0.644.

Furthermore, the bootstrap confidence intervals for all construct pairs did not include the value 1.00 this shows the two constructs are considered statistically distinct. But if its value there is evidence that the constructs may not be different shows there is lack of discriminant validity one contains. For example, the confidence interval for OC and LC ranged from 0.639 to 0.783, while RM and OR ranged from 0.548 to 0.729. Since none of the upper confidence interval values exceeded 1.00, discriminant validity among all constructs is confirmed.

Overall, the HTMT confidence interval analysis demonstrates that the constructs are empirically distinct from one another, indicating satisfactory discriminant validity in the measurement model (Henseler, Ringle, & Sarstedt, 2015).

Table 17: HTMT Confidence Interval

	Original sample (O)	**Sample mean (M)**	**95% Confidence Interval**	
			LL	**UL**
OC <-> LC	0.715	0.714	0.639	0.783
OR <-> LC	0.671	0.671	0.589	0.745
OR <-> OC	0.664	0.665	0.576	0.747
RM <-> LC	0.718	0.717	0.635	0.791
RM <-> OC	0.683	0.682	0.598	0.757

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience, UL- Upper Limit LL- Lower Limit)

4.7 Evaluation of the Structural Model

Once the measurement model evaluation is satisfactory, the subsequent step in analyzing PLS-SEM results involves examining the structural model (Hair et al., 2019). The structural model of

the present study includes Leadership Capability as an independent variable, organizational Culture and Risk Management as mediating variables, and Organizational resilience as the dependent variable. The evaluation of the structural model is mainly employed to test the proposed hypotheses and determine the explanatory strength of the research model. It also encompasses the model's predictive capability and the relationships between independent and dependent variables (Hair et al., 2022).

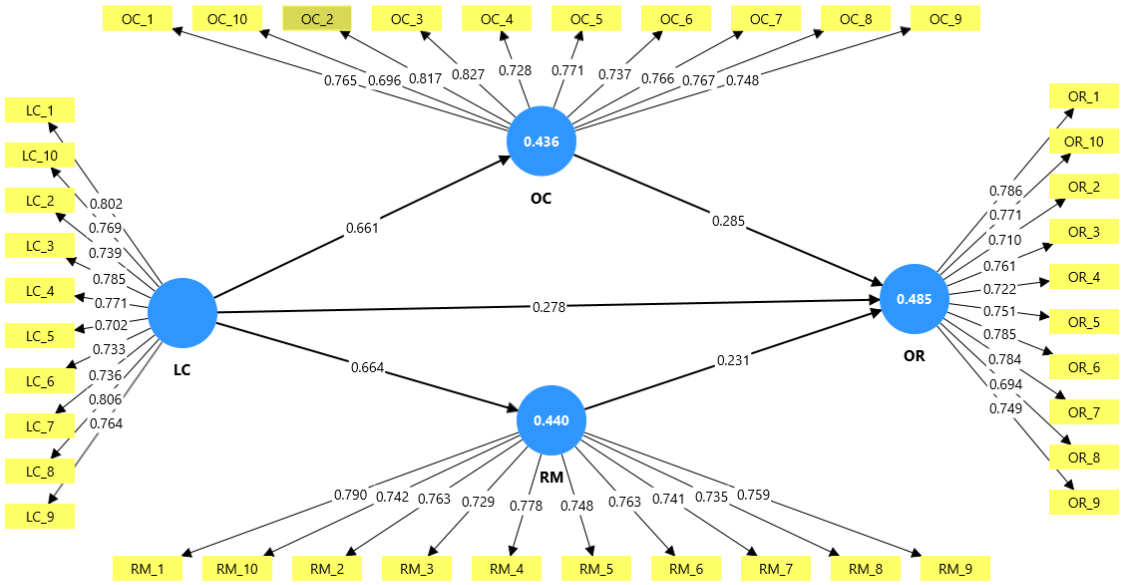


Figure 2 Working Model of the research

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

4.7.1 Assessment of Collinearity Issues between Constructs

4.7.1 The Variance Inflation Factor (VIF)

The Variance Inflation Factor (VIF) values were assessed to examine the presence of multicollinearity among the predictor constructs in the structural model. The results show that all VIF values ranged from 1.000 to 2.162, which are well below the commonly recommended threshold of 5.0 (Hair et al., 2019).

Table 18: Collinearity Statics (VIF)

	VIF
LC -> OC	**1**
LC -> OR	**2.162**
LC -> RM	**1**
OC -> OR	**2.011**
RM -> OR	**2.026**

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

Specifically, table 18 shows the VIF values were 1.000 for LC → OC, 2.162 for LC → OR, 1.000 for LC → RM, 2.011 for OC → OR, and 2.026 for RM → OR. These findings indicate that multicollinearity is not a concern because VIF < 5 in the model, suggesting that the predictor constructs are sufficiently independent within acceptable range and suitable for further structural model analysis.

4.7.2 Assessment of the Significance and Relevance of the Structural Relationships

4.7.2.1 Direct Hypothesis Test Results

The relevance of the hypothesized relationship was established by measuring the significance of the p value for each path with a threshold of $p < 0.05$ and inference has been drawn based on this value. The result of hypothesis testing is shown below in Table 19.

Table 19 : Direct Hypothesis Test Result

Relationships	**Path Coefficient (Beta value)**	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**
LC -> OC	0.661	0.665	0.041	16.088	0.000
LC -> OR	0.278	0.276	0.09	3.107	0.002
LC -> RM	0.664	0.667	0.044	15.212	0.000
OC -> OR	0.285	0.289	0.082	3.471	0.001
RM -> OR	0.231	0.234	0.077	2.976	0.003

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

Hypothesis (H1): Leadership Capabilities and Organizational Resilience have positive significant relation.

Table 19 shows a positive significant relationship between Leadership capability and Organizational Resilience. The findings show that Leadership capability improves organizational resilience. This relationship is considered statically significant with ($\beta = 0.278$, P= 0.002, t=3.107) below the specified significance level, thereby supporting the hypothesis. Adaptive leadership theory (Heifetz, 1994) supports this result, explaining that leaders who effectively manage change, uncertainty, and complex challenges enable organizations to adapt and remain resilient in turbulent environments. A company's leadership capabilities may help ensure the company's resilience. Organizational resilience relies on a strong leadership style that encourages unified and interdependent teams to work together (Leslie et al 2010). Organizational Resilience Theory emphasizes that organizations become resilient through capabilities such as anticipation, coping, adaptation, and learning. Leadership capability is considered a major driver of these resilience processes (Duchek, 2020). This hypothesis's result support Organizational Resilience Theory (ORT) and also Adaptive Leadership Theory (ALT).

Hypothesis (H2): Leadership Capability and Risk Management have positive significant relation.

The result presented in table 19 indicates Leadership Capability has a positive significant influence on Risk Management. The finding shows that improvements in leadership capability strength organizational risk management. The relationship is statistically significant, as indicated by the path coefficient ($\beta = 0.664$, $t = 15.212$, $p = 0.000$), which is below the recommended significance level of 0.05. Therefore, the hypothesis stating that there is a significant relationship between Leadership Capability and Risk Management Practice is supported.

According to Upper Echelons Theory (Hambrick & Mason, 1984) This theory states leaders can adjust and implement methods for organizational performance. Leaders' characteristics, experiences, and decision-making abilities. Capable leaders influence the quality and effectiveness of organizational risk management practices and also the ERM theory emphasizes that leadership and management commitment are essential for identifying, evaluating, and controlling

organizational risks. Effective leadership capability strengthens risk management implementation across the organization and also the Enterprise Risk Management Theory (ERM) by (COSO, 2004) emphasizes that leadership and management commitment are essential for identifying, evaluating, and controlling organizational risks. Effective leadership capability strengthens risk management implementation across the organization. The hypothesis outcome supports both theories.

Hypothesis (H3): Risk Management and Organizational Resilience have significant relation

The finding in table 19 shows Risk Management has a positive significant relationship with Organizational Resilience. Organizations that develop strong dynamic capabilities can continuously adapt to uncertainty and disruptions. As a result, effective risk management strengthens resilience by ensuring flexibility, innovation, and rapid recovery in the face of challenges (David J. Teece, 2007).

From the given output it is statistically significant with path coefficient ($\beta = 0.231$, $t = 2.976$, $p = 0.003$), which is below the recommended significance level of 0.05. Therefore, the hypothesis stating that there is a significant relationship between Risk Management Practice and Organizational Resilience is supported.

Companies risk management main goal finally to achieve organizational resilience. Identifying risk and have a solution for them is use full is the process of creating resilient company. (Linkovet et.al,2014). Company resilience and risk management is inseparable.

High reliability organization theory focuses on organizations that function in dynamic and challenging environment yet maintain consistent and reliable performance (Weick et al.,2015). It emphasizes continuous monitoring, error detection, and learning as essential components of risk management. Thus, hypothesis's support high reliability organization theory.

Note: H4 and H7 discussed in the mediation analysis part

Hypothesis (H5): Leadership Capability and Organizational Culture have significant relation

The table 19 describing hypothesis (H5) showed positive significant relation leadership capability and organizational culture. The finding states that leadership capability improves organizational culture. This relationship is considered statistically significant with the value of (β = 0.661, t=16.088, P= 0.000) below the specified significance level, thereby supporting the hypothesis. According to Transformational Leadership Theory, leaders who demonstrate vision, inspiration, and support for innovation can develop organizational culture that encourages employee engagement and collaboration (Burns, 1978; Bass, 1985). This hypothesis's outcome is consistent with Transformational leadership theory (TLT) and Organizational Culture Theory (OCT). Similarly, Organizational Culture Theory highlights that leaders are the primary architects of organizational culture, as they establish core values and reinforce desired behaviors through their actions and decisions (Edgar H. Schein,2010). Thus, the hypothesis support both Transformational Leadership Theory (TLT) and also Organizational Culture Theory (OCT).

Hypothesis (H6): Organizational Culture and Organizational Resilience have positive significant relation.

The sixth hypothesis (H6) tests found positive significant relationship between OC and OR (β= 0.285, t = 3.471, p= 0.001) in table 19. Which implies that organizational culture improves organizational resilience. This supports the idea that organizational work culture builds by the leader and align with the company "mission", "values", "principles" and "visions" (Morales et al., 2019). Organizations can effectively resilient to disruptions by modifying their culture (Bundy et al., 2017; Tasic et al., 2019). The culture in the organization has the tendency to develop or decline employee's resilience (Seville, 2018).

4.7.2.2 Mediation Analysis Output (Indirect Effects)

Mediation happens another construct, acting as a mediator exist between independent and dependent variable (Hair et al., 2022). For this study mediation analysis part test, the effect of both organizational culture and risk management in between leadership and resilience.

Table 20: Mediation Analysis Output (Indirect effect)

Hypothesis	Original sample (O)	Sample Mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Result
LC -> OC -> OR	0.188	0.192	0.055	3.408	0.001	Complementary Partial Mediation
LC -> RM -> OR	0.153	0.157	0.055	2.782	0.005	Complementary Partial Mediation

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

Hypothesis (H4): **Risk Management mediate the relation between Leadership Capability and Organizational Resilience.**

The indirect effect of leadership capability on organizational resilience through risk management was statistically significant as shown in table 20 above ($\beta = 0.153$, $t = 2.782$, $p = 0.005$). This result indicates that risk management significantly mediates the relationship between leadership capability and organizational resilience. The positive path coefficient shows that stronger leadership capability enhances effective risk management practices, which subsequently improve organizational resilience.

According to Dynamic Capability Theory, leadership capability enables managers to establish effective risk management systems, and these risk management practices help organizations anticipate, absorb, adapt to, and recover from disruptions, thereby strengthening organizational resilience (David J. Teece, 2007) thus the hypothesis is consistent with the theory.

The hypothesis supports that risk management practice partially mediates the relationship between leadership capability and organizational resilience also described by Enterprise Risk Management theory that states organizations become resilient when risks are systematically identified, assessed, controlled, and monitored across the organization, while leadership capability fosters a strong risk culture, strategic risk awareness, effective resource allocation for risk mitigation, and proactive decision-making, thereby improving risk management practices that ultimately enhance organizational resilience (Coso, 2004).

Hypothesis (H7): Organizational Culture mediate the relation between Leadership Capability and Organizational Resilience.

The indirect effect of Leadership Capability on Organizational Resilience through Organizational Culture was found to be significant as shown in table 20 above ($\beta = 0.188$, $t = 3.408$, $p = 0.001$). This indicates that Organizational Culture partially mediates the relationship between Leadership Capability and Organizational Resilience. The positive coefficient suggests that improved leadership capability enhances organizational culture, which in turn strengthens organizational resilience. Since the indirect effect is statistically significant ($p < 0.05$), the mediating role of organizational culture is supported.

According to Organizational Culture Theory a strong, adaptive culture mediates the relationship between leadership and resilience by promoting shared understanding, coordination, and commitment (Schein, 2010). In addition, Dynamic Capabilities Theory suggests that Leadership capabilities contribute to the development of such dynamic capabilities, but it is organizational culture that facilitates their effective deployment (David J. Teece, 2007). Empirical evidence from (Iulian Georgescu et al., 2024) studies demonstrated that organizational culture must integrate with leadership activities to enhance resilience with the firm. The findings from the study shows strategic human resource management aligned with organizational culture shows significant result during organizational crisis. Lim, E. & Gaerlan, A. (2022) another empirical study finds that organization must have leaders that enhance organizational resilience. The findings also show that leaders can influence culture through motivation and inspiration to the employee this shows effective leader can survive an organization during time of crisis. The above hypothesis supports and is consistent with the theories.

The mediation is considered partial because Leadership Capability Influences Organizational Resilience both directly and indirectly through Organizational Culture. This implies that while organizational culture explains part of the relationship, leadership capability still has an independent direct effect on organizational resilience.

The mediation is classified as complementary partial mediation because both the direct effect and the indirect effect are significant and point in the same positive direction (Hair et al.,2021). This suggests that Leadership Capability affects Organizational Resilience directly, while also indirectly influencing it through Risk Management practices. Therefore, Risk Management

explains part of the relationship between Leadership Capability and Organizational Resilience, but not the entire relationship.

When both the direct and indirect effects are significant, we can say a competitive mediation analysis is done. Complementary mediation describes a situation in which the direct effect p3 and the indirect effect p1· p2 points in the same direction (Hair et al.,2021). Hence, p1 · p2·p3 product is positive we can conclude that complementary analysis done.

4.7.3 Explanatory Power (R^2)

According to Hair et al. (2022), the third step in evaluating a structural model focuses on examining the model's ability to explain the data. The coefficient of determination, commonly denoted as R^2, measures the proportion of variance in the dependent variable that is explained by the independent variables (Chicco et al., 2021). It represents the combined effect of exogenous latent variables on the endogenous variable, with values ranging from 0 to 1, where higher values indicate greater predictive accuracy (J. F., Jr., Hair et al., 2022). The number of explanatory variables influences R^2 values, with more variables typically leading to higher R^2 values and fewer variables resulting in lower R^2 values.

Table 21: Explanatory power (R^2)

	R-square (R^2)	**R-square adjusted**
Organizational Culture	0.436	0.433
Organizational Resilience	0.485	0.476
Risk Management	0.44	0.437

The R-square (R^2) values express how variation in the independent variable results variation in the dependent variable and how it explained by the independent variable. The results in table 21 above show that OC has an R^2 value of 0.436, indicating that 43.6% of the variation in OC is explained by the model. Similarly, RM has an R^2 value of 0.440, meaning that 44% of its variations explained by the predictor construct(s). OR has the highest explanatory power with an R^2 value of 0.485,

showing that 48.5% of the variation in OR is explained by the model. The adjusted R^2 values are slightly lower than the R^2 values, with 0.433 for OC, 0.437 for RM, and 0.476 for OR, indicating a stable model.

According to (Chin, 1998), R^2 values of 0.67, 0.33, and 0.19 are considered substantial, moderate, and weak, respectively. Cohen (1988) proposed that R^2 values of 0.26, 0.13, and 0.02 indicate significant, mild, and weak explanatory power, respectively. The findings in Table indicate that the R^2 values for two of the endogenous variables exceed 0.26, demonstrating medium explanatory power for the model, as per Cohen (1988).

4.7.4 Predictive Relevance (Q2)

It is evaluated through its predictive relevance score, which confirms the predictive significance of endogenous construct. According to Chin (1998) and Henseler et al. (2015), a model is considered well-constructed and predictively meaningful if its Q^2 values are greater than zero. Hair et al. (2022) and Cohen (1988) classify predictive relevance values of 0.02, 0.15, and 0.35 as weak, moderate, and robust, respectively. Table 22 indicates the predictive relevance of the constructs.

Table 22 below shows Organizational Culture (OC) has a Q^2 value of 0.427, Risk Management (RM) with a Q^2 value of 0.428 shows Strong predictive power, Organizational Resilience (OR) has a Q^2 value of 0.373 which shows a Strong predictive power. These results highlight the strong predictive power of the two constructs and suggest a satisfactory model fit. The absence of negative indices further confirms that the model has power of predictive relevance (Tenenhaus et al., 2005).

Table 22: Predictive Relevance Q^2

	Q^2predict	**RMSE**	**MAE**
Organizational Culture	0.427	0.765	0.623
Risk Management	0.428	0.765	0.604
Organizational Resilience	0.373	0.799	0.664

4.7.4 Effect size(F^2)

To assess the explanatory contribution of each exogenous variable in the model, the change in R^2 is calculated when a specific exogenous construct is excluded, a measure known as effect size (f^2). This effect size quantifies the extent to which each exogenous variable influences the dependent variable by showing its impact on the R^2 value of the explained variable. It reflects the strength or magnitude of the relationship between latent variables.

By removing an explanatory variable from the PLS path model, the change in squared correlation values is evaluated to determine if the removed variable significantly affects the R^2 of the dependent variable. According to Cohen (1988), an effect size (f^2) of 0.35 indicates a substantial impact, 0.15 a medium impact, and 0.02 a minimal impact at the structural level. The effect size (f^2) results in table 23 indicate the extent to which each predictor construct contributes to the endogenous constructs. Based on (Cohen's, 1988) guidelines (0.02 = small, 0.15 = medium, 0.35 = large), LC has a large effect on OC ($f^2 = 0.774$) and RM ($f^2 = 0.787$). However, LC has a small effect on OR ($f^2 = 0.070$). Similarly, OC ($f^2 = 0.078$) and RM ($f^2 = 0.051$) show small effects on OR. Overall, LC is the strongest predictor in the model, while the remaining relationships demonstrate small effect sizes.

Table 23: Effect Size f2

	Leadership Capability (LC)	**Organizational Culture (OC)**	**Organizational Resilience (OR)**	**Risk Management (RM)**
LC		0.774	0.07	0.787
OC			0.078	
OR				
RM			0.051	

(LC – Leadership Capability, OC – Organizational Culture, RM- Risk Management, OR – Organizational Resilience)

Chapter Five

5. Conclusion, Recommendation and Future Research Direction

5.1 Conclusion

Empirical finding shows that construction company in order to be resilient in dynamic environment it must prepare for emergencies, proactively monitor emerging issue, adopted feedback mechanisms and allocate resource to deal with unexpected events were observed. This shows the findings are aligned with dynamic capability theory and extend it to more applicable in construction organization.

The study also emphasizes leadership capabilities like set strategies and plan, crisis management capability, team management mechanisms which contributes to improvement of organizational resilience and it supports hypothesis one and extend transformational leadership theory implementation in construction companies. Additionally, from the finding in construction companies like CCCC leaders are the main factors for companies to be resilient because the environments are complex and challenging needs adaptation, learning and decision making to new emerging factors are needed.

The empirical findings reveal that organizational culture in construction company CCCC encourages employees to develop new ways to solve problems, coordination among workers, opportunities to interact with external organizations to gain new knowledge and experiences, utilization of employee unique skill, freedom to express opinions in exchange helps to enhance company resilience. within the company this result supports the hypothesis six and extends the applicability of transformational leadership theory in construction firms.

This research adds more insights on risk management and organizational resilience. From a dynamic capability theory and high reliability theory view, especially in the construction industry operating in a dynamic environment like CCCC. The finding supports hypothesis four through identifying strengths, weaknesses, opportunities and threats (SWOT) analysis. Organizations response techniques include risk avoidance, risk reduction, risk sharing, and risk acceptance additionally measures to evaluate the success of risk management strategies in the organization. measures to evaluate the success of risk management strategies in the organization were observed.

From this we can conclude the evidence from the research extends the use of Upper Echelons theory and high reliability theory in the construction sector.

Generally, for project-based organizations in volatile emerging market contexts, these findings suggest that organizational resilience is a multi-layered construct requiring simultaneous attention to leadership, culture, and risk systems. Regarding the hypothesis of the study, H1 ($\beta = 0.278$, $t=3.107$, $P= 0.002$) was supported, indicating that leadership has a significant effect on organizational resilience. H2 ($\beta = 0.664$, $t = 15.212$, $p = 0.000$) was supported by showing that leadership capability has a significant effect on risk management. H3 ($\beta = 0.231$, $t = 2.976$, $p = 0.003$), was supported in confirming that risk management has a significant effect on organizational resilience. H4 ($\beta = 0.231$, $t = 2.976$, $p = 0.003$) was the mediation analysis that supports risk management and it mediates significantly the relation between leadership capability and organizational resilience. H5 ($\beta = 0.661$, $t=16.088$, $p= 0.000$) was supported in demonstrating that leadership has a significant effect on organizational culture. H6 ($\beta=0.278$, $t=3.107$, $p=0.002$) was supported by indicating that organizational culture has significant effect on organizational resilience and finally H7 ($\beta = 0.188$, $t = 3.408$, $p = 0.001$) was a mediation analysis also it supported by confirming that organizational culture significantly mediates and has effect on leadership and organizational resilience. From the empirical research we can conclude that all the hypothesis is supported.

5.2 Recommendation

Drawing from the findings of this study, several practical recommendations can be offered to CCCC and similar construction organizations seeking to strengthen their organizational resilience.

The research was conducted at China Communication Construction Company (CCCC) local subsidiary in Ethiopia Addis Ababa so cross-cultural management structure (Chinese expatriate leadership and Ethiopian local staff), leadership development programs should incorporate cultural competence and cross-cultural communication training.

The current study confirmed risk management as a key mediating pathway to resilience, but this only holds when risk processes are genuinely embedded in daily operations rather than confined to compliance documents. CCCC should move toward a framework where risk identification, monitoring, and mitigation are continuous activities tied to project realities, not periodic exercises disconnected from how teams actually work.

Cultural recommendation is also from the findings (OC_6, mean 3.126), (OC_7, mean 3.159) and (OC_8, mean 3.148) show low value so it would give insight for leaders in order to further strengthen organization culture within the construction company by promoting culture of trust, transparency and ethical behavior, employee wellbeing, supportive work place, job satisfaction and organizational commitment that enables employees to respond effectively to emerging challenges and opportunities.

Findings OR items on collective coordination (OR_7, mean 3.24) and frequent crisis communication (OR_8, mean 3.17) showed lower scores, suggesting communication mechanisms require targeted improvement.

From the finding of the study it is recommended for policy makers in Ethiopian construction sector regulators and the Ministry of Infrastructure it is recommended to consider embedding resilience capacity requirements into contractor certification standards

5.3 Future Research Direction

Future research may extend the current conceptual model by integrating additional mediating variables like innovation capability, employee engagement, organizational learning and dynamic capability and also environmental uncertainty, resource availability, organizational structure and technology capability are some of the moderating variables between leadership capability and organizational resilience that can strength the study and contributes to new findings.

The research for the future can be conducted and the findings of the proposed framework will be used in some working environments like the health care sector, manufacturing industries, bank and finance, supply and logistic organization that needs long term organizational resilience. Existing empirical research suggests that resilience-building mechanisms may differ across sectors due to variations in organizational structures, operational risks, and environmental pressures.

Future studies would benefit from methodological diversification. This research relied on a quantitative cross-sectional research design encouraged to employ mixed-methods approaches that combine quantitative and qualitative techniques. While quantitative methods provide robust statistical evidence, qualitative approaches can offer deeper insights into how organizational members perceive and experience resilience-building processes. Such methodological combination would improve both theoretical development and practical understanding of organizational resilience. Longitudinal study also provided continuous adaptation and learning rather than a static organizational attribute that develops dynamic capability in return to enhance organizational resilience.

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Appendix

Addis Ababa University

College of Business and Economics

Department of Management

Masters of Business Administration

Dear Employees,

This questionnaire is designed to collect data on the study titled Leadership Capability and Organizational Resilience in the Construction Sector the Mediation Role of Organizational Culture and Risk Management at China Communication Construction Company Ethiopia. The questionnaire uses a five-point Likert scale: Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree. Your participation is voluntary and by continuing, you consent to participate in this study. Please answer the following questions honestly and to the best of your ability.

Thank you in advance for your cooperation and participation in the study!

Part One: Demographic Questions

Direction: The following are some items about your background information. In some of the items you are required to write the necessary information in the blank space provided, but in others you are required to indicate your responses by encircling the number of your appropriate answer.

A1. Gender?

☐ Male ☐ Female

A2. Age?

☐ 20-30 years ☐ 31-40 years ☐ 41-50 years ☐ 51-65 years

A3. Education Level

☐ BA/BSC ☐ MSC ☐ PHD ☐ Other: _____

A4. What is your role OF Management at CCCC?

☐ Top-Level ☐ Middle-Level ☐ Project ☐ Technician ☐ Operational ☐ Other: _____

A5. How many years have you worked with CCCC?

☐ 2 -3 year ☐ 4–6 years ☐ 7–10 years ☐ More than 10 years

Part two

Direction: Read each item carefully and indicate your level of agreement/ disagreement to each statement and put your answer using a tick (√) mark on the space provided in front of each statement. The numbers in the table indicate

1: Strongly Disagree 2: Disagree 3: Neutral 4: Agree 7: Strongly Agree

A: Organizational Resilience (Dependent Variable)

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
Q1	Our organization proactively monitors what is happening in the industry for early warning of emerging issues.	☐	☐	☐	☐	☐
Q2	Our organization is prepared for emergencies and ready to take advantage of unforeseen opportunities.	☐	☐	☐	☐	☐
Q3	Our organization is not only capable of observing and identifying tangible changes and imminent crises but also focuses on potential future developments.	☐	☐	☐	☐	☐
Q4	To deal with the impact of crisis events or other risks, my organization has adopted a series of control measures and plans.	☐	☐	☐	☐	☐
Q5	A swift transition from regular operations to a crisis response	☐	☐	☐	☐	☐

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
	mode can be made by my organization.					
Q6	My organization can quickly obtain the resources needed to deal with unexpected events when a crisis occurs.	☐	☐	☐	☐	☐
Q7	A collective coordination mechanism can be established by my project organization during a crisis to ensure a full-system response.	☐	☐	☐	☐	☐
Q8	During a crisis, our employees engage in frequent communication to comprehend the situation that the organization is undergoing.	☐	☐	☐	☐	☐
Q9	Strategies are timely adjusted by my organization in response to changes in the external environment.	☐	☐	☐	☐	☐
Q10	During or after a crisis event, members of my organization can apply the lessons learned to future work	☐	☐	☐	☐	☐

B: Organizational culture (Mediating factor)

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
Q1	Does the organization emphasize achieving results and completing tasks in a competitive environment?	☐	☐	☐	☐	☐
Q2	Are employees encouraged to develop new and innovative ways to solve problems?	☐	☐	☐	☐	☐

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
Q3	Is there effective coordination among different units or facilities within the organization?	☐	☐	☐	☐	☐
Q4	Are their clear mechanisms to ensure accountability among staff members?	☐	☐	☐	☐	☐
Q5	Does the organization rely on data to guide improvement and decision-making processes?	☐	☐	☐	☐	☐
Q6	Do employees have opportunities to interact with external organizations to gain new knowledge and improve practices?	☐	☐	☐	☐	☐
Q7	Are employees' skills and unique contributions recognized and effectively utilized?	☐	☐	☐	☐	☐
Q8	Can employees freely express their opinions, including opposing views, without fear?	☐	☐	☐	☐	☐
Q9	Does senior management actively support and prioritize improvements in the company?	☐	☐	☐	☐	☐
Q10	Are adequate resources (financial, personnel, and equipment) provided to support primary companies?	☐	☐	☐	☐	☐

C: Risk Management (Mediating factor)

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
Q1	The organization has established a comprehensive business risk inventory of the risks that it expects the managers to manage.	☐	☐	☐	☐	☐
Q2	Tools of identifying risks like scenario analysis and strengths, weaknesses, opportunities and threats (SWOT) analysis are frequently used where the risk identification responsibility is that of board of directors/executive management team.	☐	☐	☐	☐	☐
Q3	There exists a linkage between the organizational mission and risk management process.	☐	☐	☐	☐	☐
Q4	The organizations response techniques include risk avoidance, risk reduction, risk sharing, and risk acceptance.	☐	☐	☐	☐	☐
Q5	The organization has a process to integrate the impacts of the major risk types (strategic, operational, financial, hazard, and legal).	☐	☐	☐	☐	☐
Q6	There exists a risk management implementation team that works with each reporting department to link the organization's strategy to that area's objectives and residual risks in the organization.	☐	☐	☐	☐	☐
Q7	The organization has a corporate-wide common language for communicating risk-type exposures, control activities, and monitoring efforts.	☐	☐	☐	☐	☐

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
Q8	The board of directors is actively involved in the risk management process.	☐	☐	☐	☐	☐
Q9	The management has put in place measures to evaluate the success of risk management strategies in the organization.	☐	☐	☐	☐	☐
Q10	Corporate management monitors performance outcomes against intended strategic goals to ensure that corporate activities remain on track and correspond to the set course.	☐	☐	☐	☐	☐

D: Leadership Capability (Independent variable)

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
Q1	I re-examine critical assumptions to question whether they are appropriate	☐	☐	☐	☐	☐
Q2	I articulate a compelling vision of the future	☐	☐	☐	☐	☐
Q3	I spend time teaching and coaching	☐	☐	☐	☐	☐
Q4	I consider the moral and ethical consequences of decisions	☐	☐	☐	☐	☐
Q5	I get others to do more than they expected to do	☐	☐	☐	☐	☐

NO	Statement	Strongly Disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly Agree (1)
Q6	I treat others as individuals rather than just as a member of a group	☐	☐	☐	☐	☐
Q7	I seek differing perspectives when solving problems	☐	☐	☐	☐	☐
Q8	I go beyond self-interest for the good of the group	☐	☐	☐	☐	☐
Q9	I express confidence that goals will be achieved	☐	☐	☐	☐	☐
Q10	I am effective in representing others to higher authority	☐	☐	☐	☐	☐