

Final Project 2

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The Impact of Cyber Resilience Capabilities on Business Continuity in Saudi Organizations

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Abstract

Purpose:

This study aims to examine the impact of Cyber Resilience on Business Continuity in Saudi organizations. As organizations increasingly rely on digital technologies and interconnected systems, cyber threats have become one of the most significant challenges affecting operational stability and organizational performance. Therefore, the ability of organizations to prepare for, detect, respond to, and recover from cyber incidents has become essential for ensuring business continuity. This research investigates the extent to which cyber resilience contributes to maintaining continuous operations and minimizing disruptions caused by cybersecurity incidents.

Methodology:

The study adopts a quantitative research approach using a structured questionnaire distributed to employees and managers working in Saudi organizations across different sectors. The questionnaire measures Cyber Resilience as the independent variable through four dimensions: Threat Detection, Incident Response, Recovery Capability, and Security Awareness. Business Continuity is measured as the dependent variable through four dimensions: Operational Continuity, Service Availability, Recovery Speed, and Organizational Stability. Data will be analyzed using statistical techniques through SPSS software to examine the relationship between the study variables and test the proposed hypotheses.

Findings:

The study expects to identify a positive and statistically significant relationship between Cyber Resilience and Business Continuity. Organizations with stronger cyber resilience capabilities are anticipated to demonstrate higher levels of operational continuity, faster recovery from cyber incidents, improved service availability, and greater organizational stability during disruptions.

Originality & Implication:

This research contributes to the growing body of knowledge on cybersecurity management and organizational resilience by examining cyber resilience within the Saudi organizational context. The findings are expected to provide practical insights for decision-makers, managers, and policymakers regarding the importance of strengthening cyber resilience strategies to enhance business continuity and organizational sustainability.

Keywords: *Cyber Resilience, Business Continuity, Cybersecurity, Incident Response, Recovery Capability, Organizational Stability, Saudi Organizations.*

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1. Chapter 1: Introduction

1.1. Research Background

The rapid advancement of digital technologies has transformed the operational landscape of modern organizations. Businesses across various sectors increasingly rely on information systems, cloud computing, digital platforms, and interconnected networks to support daily operations, improve productivity, and achieve strategic objectives. While digital transformation provides significant opportunities for organizational growth and innovation, it also exposes organizations to an expanding range of cybersecurity threats. Cyberattacks have become more sophisticated, frequent, and damaging, creating substantial risks for organizational operations, financial performance, and reputation (World Economic Forum, 2024).

Cybersecurity incidents such as ransomware attacks, phishing campaigns, data breaches, malware infections, and distributed denial-of-service attacks have become major concerns for organizations worldwide. These incidents can interrupt critical business functions, compromise sensitive information, and result in significant financial and operational losses. According to IBM (2024), the financial impact of cyber incidents continues to increase annually, making cybersecurity one of the most critical challenges facing organizations in the digital era. Consequently, organizations are increasingly seeking effective strategies to strengthen their ability to withstand and recover from cyber disruptions.

Traditionally, cybersecurity efforts focused primarily on preventing cyberattacks through the implementation of technical controls, firewalls, antivirus software, and access management systems. However, the growing complexity of cyber threats has demonstrated that complete prevention is no longer achievable. Even highly secured organizations remain vulnerable to sophisticated attacks. As a result, organizations have shifted their focus from solely preventing attacks to developing broader capabilities that enable them to continue operating during and after cyber incidents.

This strategic shift has led to the emergence of the concept of cyber resilience (NIST, 2024).

Cyber resilience is defined as the ability of an organization to anticipate, withstand, detect, respond to, recover from, and adapt to cyber incidents while maintaining critical business operations (NIST, 2024). Unlike traditional cybersecurity approaches, cyber resilience emphasizes the continuity of essential services and the organization's ability to rapidly recover from disruptions. Cyber resilience combines cybersecurity practices, risk management, business continuity planning, disaster recovery strategies, and organizational adaptability into a comprehensive framework that enhances organizational preparedness against cyber threats.

Several dimensions contribute to the development of cyber resilience within organizations. Threat detection capabilities enable organizations to identify cyber risks and suspicious activities before they cause significant damage. Incident response capabilities ensure that organizations can respond quickly and effectively when cyber incidents occur. Recovery capability focuses on restoring systems, services, and business operations after disruptions. Security awareness enhances employees' understanding of cybersecurity risks and promotes behaviors that reduce organizational vulnerability. Together, these dimensions strengthen an organization's overall resilience and improve its ability to maintain operational stability during cyber disruptions.

At the same time, business continuity has become a critical objective for organizations operating in highly dynamic and technology-dependent environments. Business continuity refers to an organization's ability to continue delivering products and services at acceptable levels during and after disruptive events (ISO 22301, 2019). Effective business continuity management helps organizations maintain operational performance, minimize downtime, protect stakeholders, and ensure

long-term sustainability. Organizations that successfully maintain business continuity are generally better positioned to preserve customer trust, organizational reputation, and competitive advantage during periods of disruption.

Business continuity encompasses several important dimensions, including operational continuity, service availability, recovery speed, and organizational stability. Operational continuity focuses on maintaining critical business processes during disruptions. Service availability ensures that essential services remain accessible to customers and stakeholders. Recovery speed reflects an organization's ability to restore operations following incidents. Organizational stability represents the organization's capacity to maintain performance and adapt effectively during challenging circumstances. These dimensions collectively determine the effectiveness of an organization's business continuity capabilities.

The relationship between cyber resilience and business continuity has attracted increasing attention from both researchers and practitioners. Modern organizations recognize that cyber incidents are inevitable and that their ability to recover quickly from such incidents directly influences operational continuity and organizational performance. Organizations with strong cyber resilience capabilities are generally more capable of maintaining critical services, reducing operational downtime, minimizing financial losses, and protecting stakeholder confidence during cyber disruptions. Therefore, cyber resilience is increasingly viewed as a strategic enabler of business continuity rather than merely a cybersecurity function (ISO 22301, 2019).

In Saudi Arabia, digital transformation has accelerated significantly under the objectives of Vision 2030. Government agencies, financial institutions, healthcare organizations, industrial companies, and service providers are investing heavily in advanced technologies to improve efficiency and service quality. However, this

increasing reliance on digital technologies has also increased exposure to cyber threats. Consequently, Saudi organizations are placing greater emphasis on cybersecurity governance, risk management, and resilience planning to protect critical operations and ensure sustainable growth (SDAIA, 2024).

Despite the growing importance of cyber resilience, there remains a need for further research examining its impact on business continuity within the Saudi organizational context. Existing studies often focus on cybersecurity controls, technical protection mechanisms, or information security management while providing limited attention to the broader role of cyber resilience in maintaining operational continuity and organizational stability. Furthermore, the rapid pace of digital transformation in Saudi Arabia highlights the importance of understanding how cyber resilience capabilities contribute to organizational preparedness and continuity during cyber disruptions.

Therefore, this study seeks to examine the impact of cyber resilience capabilities on business continuity in Saudi organizations. Specifically, the study investigates how threat detection, incident response, recovery capability, and security awareness influence operational continuity, service availability, recovery speed, and organizational stability. The findings of this research are expected to contribute to both academic knowledge and practical decision-making by providing insights into the role of cyber resilience in supporting sustainable business continuity within Saudi organizations.

1.2. Research Problem

The increasing dependence of organizations on digital technologies, cloud services, interconnected systems, and data-driven operations has significantly increased

exposure to cybersecurity threats. Cyberattacks such as ransomware, phishing, data breaches, and denial-of-service attacks have become more sophisticated and frequent, causing substantial operational, financial, and reputational damage to organizations worldwide (World Economic Forum, 2024). Although organizations continue to invest heavily in cybersecurity controls and protective technologies, cyber incidents remain inevitable, highlighting the need for stronger organizational resilience capabilities.

Cyber resilience has emerged as a strategic approach that extends beyond traditional cybersecurity by focusing on an organization's ability to prepare for, withstand, respond to, and recover from cyber disruptions while maintaining critical business functions (NIST, 2024). At the same time, business continuity has become a critical organizational objective, ensuring that essential operations and services remain available during and after disruptive incidents (ISO 22301, 2019). Despite the growing importance of both concepts, limited research has examined the relationship between cyber resilience capabilities and business continuity, particularly within Saudi organizations that are rapidly undergoing digital transformation under Vision 2030.

1.2.1. Theoretical Gaps

From a theoretical perspective, existing literature has extensively examined cybersecurity practices, information security management, and risk mitigation strategies. However, fewer studies have focused on cyber resilience as a comprehensive organizational capability that integrates threat detection, incident response, recovery capability, and security awareness. Furthermore, many previous studies have analyzed cyber resilience from technical or technological perspectives while providing limited attention to its influence on broader organizational outcomes such as business continuity (Linkov & Kott, 2019).

In addition, previous research has primarily been conducted in developed economies, creating a knowledge gap regarding the application of cyber resilience concepts in developing and rapidly transforming economies such as Saudi Arabia. Therefore, there remains a need for empirical evidence that explains how cyber resilience capabilities contribute to maintaining operational continuity and organizational stability in Saudi organizations.

1.2.2. Practical Gaps

From a practical perspective, many organizations continue to focus on preventive cybersecurity measures while allocating fewer resources to resilience, recovery planning, and continuity management. Consequently, organizations may possess strong security controls but remain vulnerable to operational disruptions when cyber incidents occur. Several industry reports indicate that many organizations experience significant downtime, financial losses, and service interruptions due to inadequate preparedness and recovery capabilities following cyberattacks (IBM, 2024).

In Saudi Arabia, organizations are accelerating their digital transformation initiatives as part of Vision 2030. While this transformation creates opportunities for innovation and growth, it also increases exposure to cyber risks. Therefore, Saudi organizations require a deeper understanding of how cyber resilience capabilities can support business continuity objectives and enhance organizational sustainability during cyber disruptions.

Accordingly, the main research question of this study is:

What is the impact of Cyber Resilience Capabilities on Business Continuity in Saudi Organizations?

1.3. Research Significance

The importance of this study stems from the growing dependence of organizations on digital technologies and the increasing cybersecurity threats that may disrupt organizational operations. As cyberattacks become more sophisticated and frequent, organizations must develop resilience capabilities that enable them to maintain critical operations and recover effectively from cyber incidents. Therefore, this study examines the impact of Cyber Resilience Capabilities on Business Continuity in Saudi Organizations and highlights its significance at both the theoretical and practical levels.

1.3.1. At the theoretical level

This study contributes to the academic literature by expanding the understanding of the relationship between cyber resilience capabilities and business continuity. While previous studies have focused primarily on cybersecurity controls, information security management, and risk mitigation practices, limited attention has been given to cyber resilience as a comprehensive organizational capability that supports operational continuity during cyber disruptions. Therefore, this research fills an important theoretical gap by integrating the concepts of cyber resilience and business continuity within a single research framework.

Furthermore, the study enriches existing knowledge by examining four dimensions of cyber resilience, namely threat detection, incident response, recovery capability, and security awareness, and their influence on business continuity. The findings are expected to provide empirical evidence that strengthens the theoretical understanding of how organizations can enhance resilience and sustain operations in increasingly complex digital environments. In addition, the study contributes to the

growing body of research related to organizational resilience, cybersecurity management, risk management, and continuity planning.

1.3.2. At the practical level

From a practical perspective, this study provides valuable insights for organizational leaders, cybersecurity professionals, business continuity managers, and policymakers regarding the importance of cyber resilience in maintaining organizational stability. The findings are expected to assist organizations in identifying the resilience capabilities that most effectively support business continuity and reduce the impact of cyber disruptions.

The study may also help Saudi organizations strengthen their cybersecurity strategies, improve incident response mechanisms, enhance recovery planning, and promote cybersecurity awareness among employees. In addition, the results can support decision-makers in allocating resources more effectively toward resilience-building initiatives that improve operational continuity and service availability.

Finally, the study aligns with the objectives of Saudi Vision 2030 by supporting digital transformation efforts and encouraging organizations to adopt resilient cybersecurity practices that contribute to sustainable growth, organizational competitiveness, and long-term business continuity.

1.4. Research Questions

1. What is the level of Cyber Resilience Capabilities in Saudi organizations?
2. What is the level of Business Continuity in Saudi organizations?
3. Is there a statistically significant relationship between Cyber Resilience Capabilities and Business Continuity in Saudi organizations?
4. What is the impact of Threat Detection on Business Continuity in Saudi organizations?
5. What is the impact of Incident Response on Business Continuity in Saudi organizations?
6. What is the impact of Recovery Capability on Business Continuity in Saudi organizations?
7. What is the impact of Security Awareness on Business Continuity in Saudi organizations?

1.5. Research Objectives

This study aims to achieve the following research objectives regarding the impact of Cyber Resilience Capabilities on Business Continuity in Saudi Organizations:

1. To identify the level of Cyber Resilience Capabilities in Saudi organizations.
2. To determine the level of Business Continuity in Saudi organizations.
3. To examine the relationship between Cyber Resilience Capabilities and Business Continuity.
4. To investigate the impact of Threat Detection on Business Continuity.
5. To examine the impact of Incident Response on Business Continuity.
6. To assess the impact of Recovery Capability on Business Continuity.
7. To evaluate the impact of Security Awareness on Business Continuity.

1.6. Research Hypotheses

H01: There is no statistically significant impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations.

H1: There is a statistically significant impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations.

H01a: There is no statistically significant impact of Threat Detection on Business Continuity.

H1a: There is a statistically significant impact of Threat Detection on Business Continuity.

H01b: There is no statistically significant impact of Incident Response on Business Continuity.

H1b: There is a statistically significant impact of Incident Response on Business Continuity.

H01c: There is no statistically significant impact of Recovery Capability on Business Continuity.

H1c: There is a statistically significant impact of Recovery Capability on Business Continuity.

H01d: There is no statistically significant impact of Security Awareness on Business Continuity.

H1d: There is a statistically significant impact of Security Awareness on Business Continuity.

1.7. Research Model

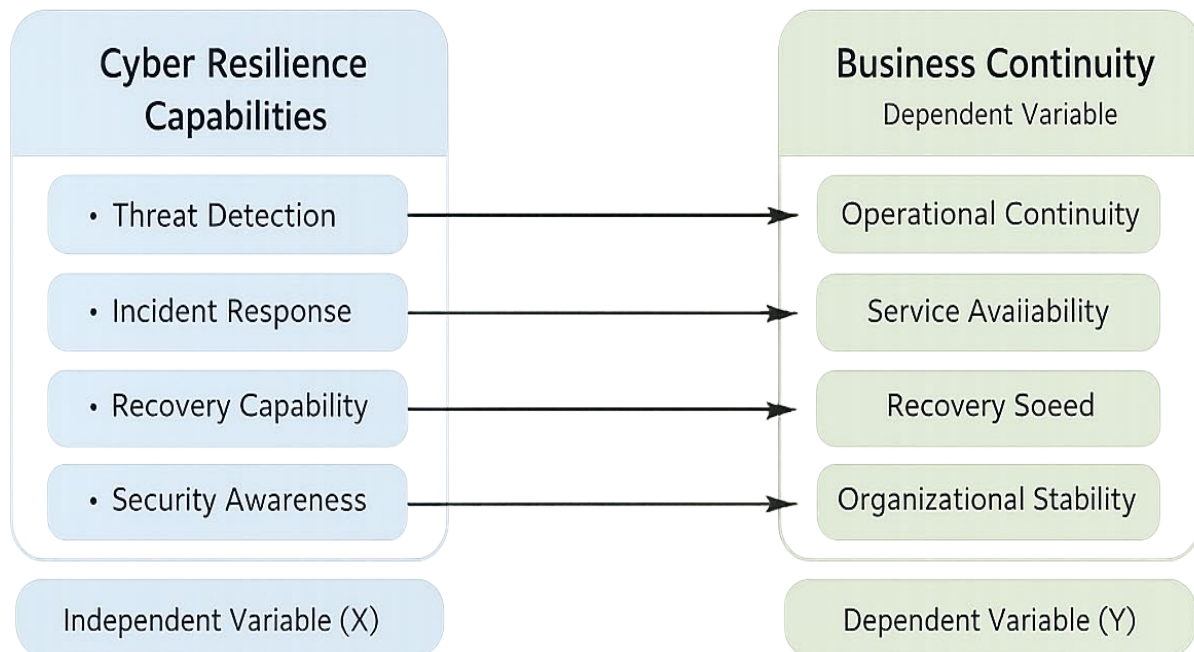


Figure 1.1 Research Model

1.8. Scope of The Study

This study investigates the impact of Cyber Resilience Capabilities on Business Continuity in Saudi Organizations. The study focuses on Cyber Resilience Capabilities as the independent variable, represented by four dimensions: Threat Detection, Incident Response, Recovery Capability, and Security Awareness. Business Continuity represents the dependent variable and is measured through four dimensions: Operational Continuity, Service Availability, Recovery Speed, and Organizational Stability.

The geographical scope of the study is limited to organizations operating within the Kingdom of Saudi Arabia. The target population consists of employees, supervisors, managers, and professionals working in various Saudi organizations. The study

adopts a quantitative research approach using a structured questionnaire to collect primary data from the selected respondents.

The study is conducted during the academic year 2025/2026 and aims to provide insights into the relationship between cyber resilience capabilities and business continuity within the Saudi organizational environment.

1.9. The Project Structure

This project consists of five chapters.

Chapter One presents the introduction of the study, including the research background, research problem, theoretical and practical gaps, research significance, research questions, research objectives, research hypotheses, research model, scope of the study, and project structure.

Chapter Two reviews the relevant literature and previous studies related to Cyber Resilience Capabilities and Business Continuity. It also discusses the theoretical foundations of the study variables and develops the conceptual framework of the research.

Chapter Three describes the research methodology adopted in the study. It includes the research design, operational definitions of variables, research population, sample and sampling techniques, data collection methods, research instrument, and statistical analysis procedures.

Chapter Four presents the statistical analysis of the collected data and discusses the research findings. It includes descriptive statistics, reliability and validity testing, hypothesis testing, and interpretation of results.

Chapter Five provides the study conclusion, theoretical contribution, practical contribution, recommendations, limitations of the study, and suggestions for future research.

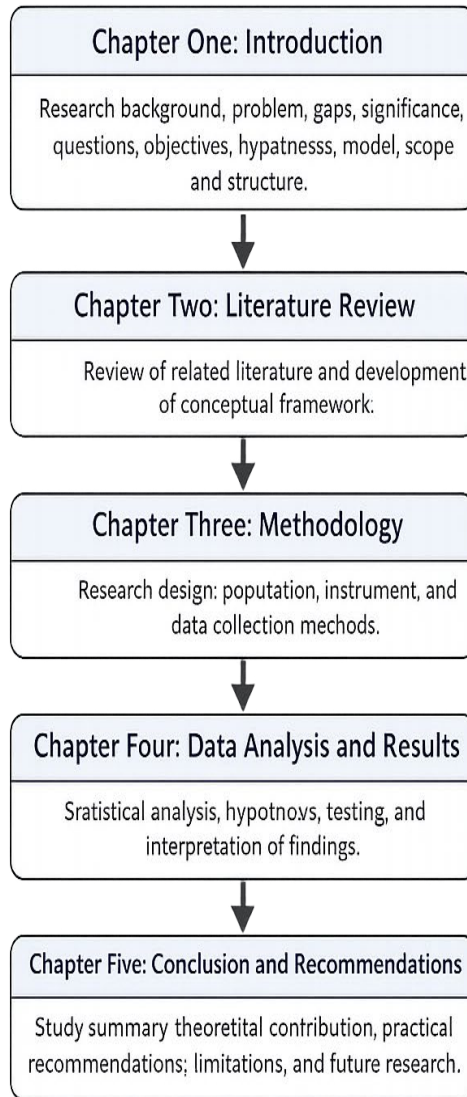


Figure 1.2: Project Structure

2. Chapter 2: Literature Review

2.1. Introduction

The increasing dependence of organizations on digital technologies has created significant opportunities for innovation, efficiency, and growth. However, this

digital transformation has also increased organizational exposure to cybersecurity threats. Cyberattacks have become more sophisticated and frequent, causing operational disruptions, financial losses, reputational damage, and service interruptions. Consequently, organizations are increasingly focusing on developing capabilities that enable them to withstand cyber threats and maintain critical operations during periods of disruption.

Cyber resilience has emerged as a comprehensive approach that combines cybersecurity, risk management, business continuity, and organizational adaptability. Rather than focusing solely on preventing cyber incidents, cyber resilience emphasizes an organization's ability to anticipate, detect, respond to, recover from, and adapt to cyber disruptions. At the same time, business continuity has become an essential organizational objective that ensures the continuation of critical services and operations during unexpected events.

This chapter reviews the theoretical foundations and previous literature related to Cyber Resilience Capabilities and Business Continuity. It also examines the relationship between the two variables and establishes the conceptual basis for the research model proposed in this study.

2.2. The independent variable

Cyber resilience refers to the ability of an organization to prepare for, withstand, respond to, recover from, and adapt to cyber incidents while maintaining essential business functions (NIST, 2024). Cyber resilience extends beyond traditional cybersecurity by focusing on operational continuity rather than merely preventing attacks.

Modern organizations operate in increasingly complex digital environments where cyber incidents are considered inevitable. As a result, organizations require resilience capabilities that allow them to continue functioning even when security controls fail. Cyber resilience integrates technological, organizational, and human factors to ensure sustainable operations during cyber disruptions.

2.2.1 Threat Detection

Threat detection refers to the organization's ability to identify cybersecurity threats, vulnerabilities, and suspicious activities before they escalate into serious incidents. Effective threat detection relies on continuous monitoring systems, security analytics, threat intelligence, and advanced detection technologies.

Organizations with strong threat detection capabilities can identify cyber risks at an early stage, allowing faster intervention and reducing potential damage. Early detection significantly improves organizational preparedness and supports business continuity objectives.

2.2.2 Incident Response

Incident response refers to the processes and procedures used by organizations to manage cybersecurity incidents effectively. It includes identifying incidents, containing threats, minimizing damage, communicating with stakeholders, and restoring affected systems.

A well-developed incident response capability enables organizations to reduce disruption, protect critical assets, and maintain operational stability during cyber events. Effective response procedures are considered a key component of organizational resilience.

2.2.3 Recovery Capability

Recovery capability represents the organization's ability to restore systems, data, services, and business operations following a cyber incident. Recovery activities include backup restoration, disaster recovery planning, system reconstruction, and continuity procedures.

Organizations with strong recovery capabilities experience shorter downtime periods and can resume normal operations more efficiently. Recovery capability directly supports organizational sustainability and resilience.

2.2.4 Security Awareness

Security awareness refers to employees' knowledge, understanding, and behaviors regarding cybersecurity risks and protective measures. Human error remains one of the leading causes of cybersecurity incidents, making employee awareness a critical element of cyber resilience.

Organizations often implement awareness programs, cybersecurity training, phishing simulations, and educational campaigns to improve employee preparedness. A strong security culture reduces vulnerabilities and enhances organizational resilience.

2.3. The dependent variable

Business continuity refers to the ability of an organization to maintain essential operations and services during and after disruptive incidents (ISO 22301, 2019).

Business continuity ensures that organizations can continue delivering products and services while minimizing operational interruptions and financial losses.

2.3.1 Operational Continuity

Operational continuity refers to the organization's ability to maintain critical business processes during disruptions. Effective operational continuity reduces downtime and ensures uninterrupted business activities.

2.3.2 Service Availability

Service availability represents the ability of organizations to keep essential services accessible to customers and stakeholders despite disruptive events. High service availability enhances customer satisfaction and organizational reputation.

2.3.3 Recovery Speed

Recovery speed reflects how quickly an organization can restore operations following a disruption. Faster recovery minimizes losses and supports organizational resilience.

2.3.4 Organizational Stability

Organizational stability refers to the organization's ability to maintain performance, stakeholder confidence, and operational effectiveness during periods of uncertainty. Stable organizations are more capable of adapting to disruptions and sustaining long-term growth.

2.4. The relationship between the independent and the dependent variables

Recent literature suggests a strong relationship between cyber resilience and business continuity. Organizations with effective threat detection capabilities can

identify cyber risks before significant disruptions occur. Similarly, efficient incident response procedures help reduce operational interruptions and minimize the impact of cyber incidents.

Recovery capability enables organizations to restore critical services quickly, while security awareness reduces the likelihood of human-related security failures. Collectively, these dimensions strengthen an organization's ability to maintain business continuity and sustain essential operations during cyber disruptions.

Researchers have argued that cyber resilience serves as a strategic foundation for business continuity because it focuses on maintaining operational functionality despite cyber threats. Therefore, organizations that invest in cyber resilience capabilities are expected to achieve higher levels of operational continuity, service availability, recovery speed, and organizational stability.

2.5. Conclusion

This chapter reviewed the theoretical foundations of Cyber Resilience Capabilities and Business Continuity. The chapter discussed the dimensions of cyber resilience, including threat detection, incident response, recovery capability, and security awareness. It also examined the dimensions of business continuity, namely operational continuity, service availability, recovery speed, and organizational stability.

Furthermore, the chapter highlighted the theoretical relationship between cyber resilience and business continuity and established the conceptual basis for the proposed research model. The next chapter presents the research methodology adopted to examine this relationship empirically within Saudi organizations.

3. Chapter 3: Research Methodology

3.1. Introduction

Research methodology provides the systematic procedures and techniques used to conduct scientific research and ensure that the findings are reliable, valid, and objective. It describes the overall research design, data collection methods, sampling procedures, research instruments, and statistical techniques that are employed to achieve the research objectives and answer the research questions. A well-designed research methodology enhances the credibility of the study by ensuring that the collected data accurately represent the research problem and support meaningful conclusions.

The purpose of this chapter is to explain the methodology adopted to investigate the impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations. The chapter presents the operational definitions of the research variables, the research design, the target population, the sampling method, data collection procedures, types of data, and the statistical analysis techniques used to

test the proposed research hypotheses. These methodological components provide a clear framework for conducting the empirical investigation and ensuring the validity and reliability of the research findings.

This study adopts a quantitative research approach, as it is considered the most appropriate method for examining the relationship between the independent and dependent variables using numerical data and statistical analysis. A structured questionnaire is employed as the primary instrument for data collection, allowing respondents to express their perceptions regarding cyber resilience capabilities and business continuity practices within their organizations. The collected data will be analyzed using the Statistical Package for the Social Sciences (SPSS) to generate descriptive statistics, evaluate the reliability of the measurement instrument, examine the relationships among variables, and test the proposed research hypotheses.

The target population of this study consists of employees, supervisors, managers, and senior managers working in Saudi organizations across different sectors. These participants possess practical knowledge and experience related to cybersecurity practices and business continuity activities within their organizations. A non-probability convenience sampling technique is adopted to facilitate data collection from participants who are readily accessible and willing to participate in the study. The questionnaire will be distributed electronically through Google Forms, enabling efficient data collection while maintaining respondent confidentiality.

Furthermore, this chapter explains the statistical procedures that will be applied after data collection. These procedures include descriptive statistical analysis to summarize respondents' demographic characteristics and research variables, reliability analysis using Cronbach's Alpha, correlation analysis to examine the relationships between variables, and multiple regression analysis to determine the

impact of Cyber Resilience Capabilities on Business Continuity. The results of these analyses will provide empirical evidence to answer the research questions and evaluate the proposed hypotheses.

Overall, this chapter establishes the methodological foundation of the research by describing the research process in a logical and systematic manner. The methodology adopted in this study is intended to ensure the accuracy, consistency, and credibility of the findings while providing meaningful insights into the role of cyber resilience capabilities in enhancing business continuity within Saudi organizations.

3.2. Operational definitions for research variables

Table 3.1: Operational Definitions of the Research Variables

Variable	Operational Definition	Dimensions	Measurement
Cyber Resilience Capabilities (Independent Variable)	Cyber resilience capabilities refer to an organization's ability to anticipate, detect, respond to, recover from, and adapt to cyber threats while maintaining normal business operations.	Threat Detection, Incident Response, Recovery Capability, Security Awareness	Five-point Likert Scale (1 = Strongly Disagree to 5 = Strongly Agree)
Business Continuity (Dependent Variable)	Business continuity refers to an organization's ability to maintain critical business functions and rapidly recover from disruptions caused by cyber incidents or other unexpected events.	Operational Continuity, Service Availability, Recovery Speed, Organizational Stability	Five-point Likert Scale (1 = Strongly Disagree to 5 = Strongly Agree)

– **Cyber Resilience Capabilities (Independent Variable)**

Cyber Resilience Capabilities represent the independent variable in this study. They refer to the organization's ability to prepare for, withstand, respond to, recover from, and continuously improve after cyber incidents. Cyber resilience extends beyond traditional cybersecurity by ensuring that organizations can continue delivering essential services despite cyber disruptions. In this research, Cyber Resilience Capabilities are measured using four dimensions adopted from previous literature and international cybersecurity frameworks.

Threat Detection

Threat Detection refers to the organization's capability to identify cybersecurity threats, vulnerabilities, and suspicious activities before they develop into serious incidents. Organizations that possess effective threat detection mechanisms continuously monitor their information systems using advanced technologies, security intelligence, and monitoring tools. Early identification of cyber threats enables organizations to reduce risks and improve their preparedness for potential attacks.

Incident Response

Incident Response refers to the organization's ability to manage and control cybersecurity incidents through predefined plans, response teams, communication procedures, and corrective actions. Effective incident response minimizes operational disruption, limits financial losses, and accelerates service restoration following cyber incidents.

Recovery Capability

Recovery Capability refers to the organization's ability to restore information systems, critical services, and business operations after experiencing cyber incidents. It includes disaster recovery planning, backup systems, recovery procedures, and business continuity strategies that minimize downtime and operational losses.

Security Awareness

Security Awareness refers to employees' knowledge, attitudes, and behaviors regarding cybersecurity policies and practices. Organizations improve security awareness through regular training programs, awareness campaigns, simulated cyber exercises, and continuous education to reduce human-related cybersecurity risks.

– **Business Continuity (Dependent Variable)**

Business Continuity represents the dependent variable in this study. It refers to the organization's capability to continue delivering essential products and services during and after cyber disruptions while maintaining acceptable levels of operational performance. Business continuity focuses on minimizing operational interruptions and ensuring organizational resilience through effective planning and resource management.

Operational Continuity

Operational Continuity refers to the organization's ability to maintain critical business operations during periods of disruption. It ensures that essential organizational processes continue functioning even when cyber incidents occur.

Service Availability

Service Availability refers to the organization's capability to provide uninterrupted services to customers and stakeholders despite cyber threats or system failures. High service availability reflects the effectiveness of organizational resilience planning.

Recovery Speed

Recovery Speed refers to the time required by the organization to restore its normal operations following a cyber incident. Organizations with higher recovery capabilities generally experience shorter downtime and reduced operational losses.

Organizational Stability

Organizational Stability refers to the organization's ability to maintain operational performance, stakeholder confidence, and long-term sustainability during periods of uncertainty or disruption. Stable organizations are more capable of adapting to cyber risks and ensuring continuous business performance.

3.3. Research design (research onion)

Research design provides the overall framework that guides the collection, measurement, and analysis of data throughout the research process. It ensures that the selected research methods are appropriate for answering the research questions and achieving the research objectives. A well-structured research design improves the reliability and validity of the study by establishing clear procedures for conducting the research systematically.

This study adopts the Research Onion model developed by Saunders, Lewis, and Thornhill (2023). The Research Onion provides a structured framework for selecting research methodologies by presenting six layers that guide researchers from philosophical assumptions to data collection techniques. The model ensures that every methodological decision is logically connected and aligned with the objectives of the research.

For the current study, the Research Onion consists of the following layers.

- **Research Philosophy**

This study adopts the **Positivism Philosophy**.

Positivism assumes that reality is objective and can be measured through observable facts and quantitative data. Since this research examines the relationship between Cyber Resilience Capabilities and Business Continuity using measurable variables and statistical analysis, positivism is considered the most suitable philosophical approach. The researcher remains independent from the participants, ensuring objectivity throughout the research process.

- **Research Approach**

The study follows the **Deductive Approach**.

The deductive approach begins with existing theories and previous studies, from which hypotheses are developed and tested using empirical data. Since this research proposes hypotheses regarding the impact of Cyber Resilience Capabilities

on Business Continuity, the deductive approach provides the most appropriate methodological framework.

- **Research Strategy**

The research adopts the **Survey Strategy**.

Survey research is widely used in business and management studies because it enables researchers to collect standardized information from a large number of respondents efficiently. A structured questionnaire is distributed electronically to employees working in Saudi organizations to collect quantitative data related to the research variables.

- **Methodological Choice**

This research employs the **Quantitative Research Method**.

The quantitative approach allows the researcher to analyze numerical data using statistical techniques. It enables objective measurement of relationships among variables and supports hypothesis testing through statistical software such as SPSS.

- **Time Horizon**

The study adopts a **Cross-Sectional Time Horizon**.

A cross-sectional study collects data from respondents at a single point in time rather than over an extended period. Since the research aims to examine the current perceptions of employees regarding cyber resilience and business continuity, cross-sectional data collection is considered appropriate.

- **Data Collection Technique**

Primary data will be collected using a structured online questionnaire developed based on previous literature and internationally recognized cybersecurity frameworks. The questionnaire consists of demographic questions and forty measurement items evaluated using a five-point Likert Scale ranging from Strongly Disagree (1) to Strongly Agree (5).

Table 3.2: Research Design Summary

Research Design Element	Selected Method
Research Philosophy	Positivism
Research Approach	Deductive
Research Strategy	Survey
Methodological Choice	Quantitative Research
Time Horizon	Cross-sectional
Data Collection Technique	Online Questionnaire (Google Forms)
Data Analysis Software	SPSS Version 29
Measurement Scale	Five-point Likert Scale

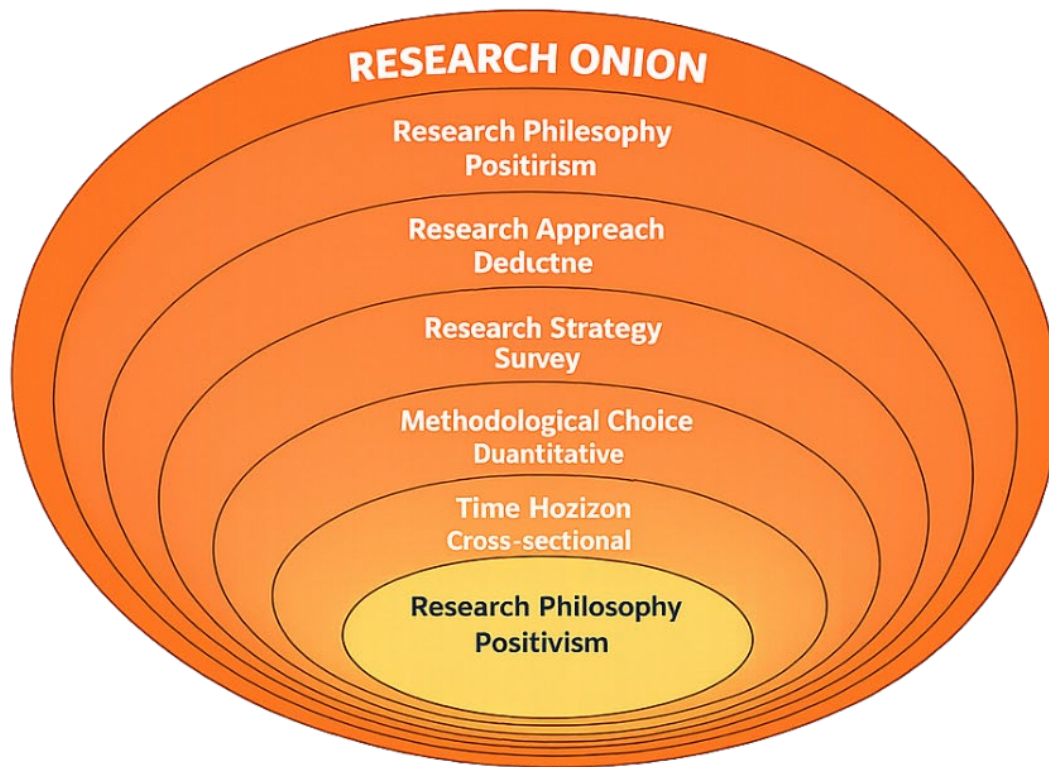


Figure 3.1: Research Onion of the Study

3.4. Research population & Sampling methods and technique

The research population refers to the complete group of individuals who possess the characteristics relevant to the research objectives. Selecting an appropriate population is essential because it ensures that the collected data accurately represent the phenomenon under investigation. In this study, the target population consists of employees working in Saudi organizations across both the public and private sectors who are involved in organizational operations, information technology, cybersecurity, business continuity, or management activities.

The participants include employees, supervisors, managers, senior managers, and executive managers. These individuals are considered suitable respondents because they possess practical knowledge regarding cybersecurity practices and business continuity within their organizations. Their experiences provide valuable insights into how cyber resilience capabilities influence business continuity performance.

- **Research Population**

The population of this study comprises employees working in Saudi organizations operating in different industries, including government institutions, healthcare organizations, financial institutions, manufacturing companies, educational institutions, telecommunications companies, and other private sector organizations. The diversity of the population enhances the generalizability of the research findings by representing different organizational environments within Saudi Arabia.

- **Unit of Analysis**

The unit of analysis for this research is the individual employee. Each participant provides responses based on his or her personal experience and perception regarding cyber resilience capabilities and business continuity practices implemented within the organization.

- **Sampling Technique**

This study employs a non-probability convenience sampling technique.

Convenience sampling is selected because it allows the researcher to collect data from respondents who are easily accessible and willing to participate in the study. This sampling method is commonly adopted in business and management research

due to its practicality, efficiency, and ability to facilitate online data collection through electronic questionnaires.

The questionnaire will be distributed electronically using Google Forms through professional networks, organizational contacts, email communication, and social media platforms. Participation in the survey is entirely voluntary, and respondents will be informed that all collected information will remain confidential and used exclusively for academic research purposes.

- **Sample Size**

Determining an appropriate sample size is important for ensuring reliable statistical analysis. This study follows the recommendations of Krejcie and Morgan (1970), which suggest that a minimum sample of approximately 384 respondents is sufficient for large populations exceeding one million individuals.

Accordingly, this research aims to collect at least 384 valid responses from employees working in Saudi organizations. Obtaining a sample of this size will provide sufficient statistical power to perform descriptive analysis, reliability testing, correlation analysis, and multiple regression analysis using SPSS.

Table 3.3: Population and Sampling Summary

Item	Description
Target Population	Employees working in Saudi organizations
Unit of Analysis	Individual employee
Sampling Technique	Non-probability Convenience Sampling
Data Collection Method	Online Questionnaire (Google Forms)

Target Sample Size	Minimum 384 respondents
Geographic Area	Kingdom of Saudi Arabia

- **Sampling Procedure**

The sampling process for this study follows five sequential stages:

1. Define the target population.
2. Select the sampling technique.
3. Design the online questionnaire.
4. Distribute the questionnaire through Google Forms.
5. Collect valid responses for statistical analysis.

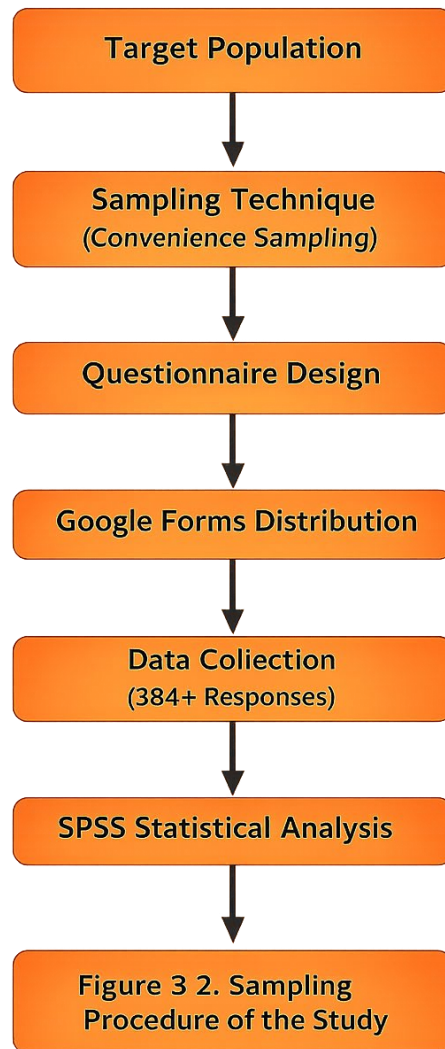


Figure 3.2: Sampling Procedure of the Study

3.5. Data collection method

Data collection is one of the most important stages in the research process because it provides the information required to answer the research questions and test the proposed hypotheses. The quality of the collected data directly affects the accuracy, validity, and reliability of the research findings. Therefore, selecting an appropriate data collection method is essential for achieving the objectives of the study.

In this research, primary data will be collected using a structured online questionnaire developed specifically to measure the relationship between Cyber Resilience Capabilities and Business Continuity in Saudi organizations. The questionnaire was designed based on an extensive review of previous academic studies, internationally recognized cybersecurity frameworks, and business continuity literature to ensure that all measurement items are relevant to the research objectives.

The questionnaire consists of three main sections. The first section collects demographic information about the respondents, including gender, age, educational qualification, job position, and years of professional experience. This information is used to describe the characteristics of the research sample through descriptive statistical analysis.

The second section measures the independent variable, Cyber Resilience Capabilities, through four dimensions: Threat Detection, Incident Response, Recovery Capability, and Security Awareness. Each dimension contains five statements, resulting in a total of 20 measurement items.

The third section measures the dependent variable, Business Continuity, through four dimensions: Operational Continuity, Service Availability, Recovery Speed, and Organizational Stability. Similar to the independent variable, this section consists of

20 measurement items designed to evaluate respondents' perceptions of business continuity practices within their organizations.

A **five-point Likert Scale** is used to measure respondents' level of agreement with each statement. The response categories are as follows:

Table 3.4: Five-Point Likert Scale Used in the Study

Scale	Interpretation
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

The questionnaire will be created and distributed electronically using Google Forms, which provides an efficient, secure, and user-friendly platform for collecting research data. The survey link will be shared through professional networks, organizational contacts, email communication, and social media platforms to reach employees working in Saudi organizations. Respondents will be informed that participation is voluntary and that all responses will remain anonymous and confidential. No personally identifiable information will be collected, and the data will be used exclusively for academic research purposes.

Prior to the official distribution of the questionnaire, the instrument will undergo a pilot review to ensure that the wording of the questions is clear, understandable, and relevant to the research objectives. Feedback obtained during this stage will be

incorporated to improve the quality and clarity of the questionnaire before launching the final survey.

After the data collection period has ended, all valid responses will be exported from Google Forms into Microsoft Excel and subsequently imported into the Statistical Package for the Social Sciences (SPSS) Version 29 for coding, data cleaning, and statistical analysis. The collected data will then be analyzed using descriptive and inferential statistical techniques to test the research hypotheses and answer the research questions.

Table 3.5: Structure of the Research Questionnaire

Section	Variable	Number of Items
Section A	Demographic Information	5
Section B	Cyber Resilience Capabilities	20
Section C	Business Continuity	20
Total	Questionnaire Items	45

3.6. Types of data

Data are the foundation of any scientific research because they provide the evidence required to answer research questions and test research hypotheses. Depending on the research objectives, data may be obtained from different sources. In this study, both primary data and secondary data are utilized to provide a comprehensive understanding of the relationship between Cyber Resilience Capabilities and Business Continuity in Saudi organizations.

Primary Data

Primary data refer to original information collected directly from respondents for the specific purpose of the current research. Primary data are considered highly valuable because they reflect the respondents' actual perceptions, experiences, and opinions regarding the research variables. In this study, primary data will be collected through a structured online questionnaire distributed using Google Forms.

The questionnaire consists of three sections. The first section collects demographic information, while the second and third sections measure the independent variable (Cyber Resilience Capabilities) and the dependent variable (Business Continuity), respectively. Respondents will evaluate each statement using a five-point Likert Scale ranging from Strongly Disagree (1) to Strongly Agree (5). The collected responses will provide the quantitative data required for statistical analysis using SPSS.

Secondary Data

Secondary data refer to information that has already been published by other researchers, institutions, and organizations. These data provide the theoretical foundation for the research and support the development of the conceptual framework, research hypotheses, and questionnaire design.

For this study, secondary data are obtained from various reliable academic and professional sources, including:

- Peer-reviewed journal articles.
- Academic textbooks.

- Conference proceedings.
- International cybersecurity standards.
- Government publications.
- Industry reports.
- Official publications from recognized organizations such as the National Institute of Standards and Technology (NIST) and the International Organization for Standardization (ISO).

These sources provide current knowledge on cyber resilience, cybersecurity practices, organizational resilience, and business continuity management.

Table 3.6: Types of Data Used in the Study

Data Type	Source	Purpose
Primary Data	Online questionnaire (Google Forms) completed by employees working in Saudi organizations	Measure Cyber Resilience Capabilities and Business Continuity
Secondary Data	Books, journal articles, conference papers, ISO standards, NIST framework, government publications, and industry reports	Develop the theoretical foundation, conceptual framework, and research instrument

Importance of Combining Primary and Secondary Data

The integration of both primary and secondary data enhances the overall quality of the research. Secondary data provide a strong theoretical basis for understanding the research problem and identifying knowledge gaps, while primary data provide

empirical evidence collected directly from the target population. The combination of these two data sources strengthens the validity of the research findings and supports more accurate conclusions regarding the impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations.

3.7. Statistical analysis procedures

Statistical analysis is a critical stage of quantitative research because it transforms raw data into meaningful information that can be used to answer the research questions and evaluate the proposed hypotheses. After completing the data collection process, all questionnaire responses will be exported from Google Forms into Microsoft Excel for preliminary data screening. The cleaned dataset will then be imported into the Statistical Package for the Social Sciences (SPSS) Version 29 for coding, processing, and statistical analysis.

Before conducting the main statistical analyses, the collected data will be examined for completeness, consistency, and accuracy. Incomplete questionnaires and duplicate responses will be removed to ensure the quality of the dataset. After data cleaning, descriptive and inferential statistical analyses will be performed to examine the characteristics of the respondents and investigate the relationship between Cyber Resilience Capabilities and Business Continuity.

- **Descriptive Statistics**

Descriptive statistics will be used to summarize the demographic characteristics of the respondents, including gender, age, educational qualification, job position, and years of experience. In addition, descriptive statistics will be calculated for all questionnaire items and research variables using frequencies, percentages, means, and standard deviations. These statistics provide an overall description of

respondents' perceptions regarding Cyber Resilience Capabilities and Business Continuity.

- **Reliability Analysis**

The internal consistency of the questionnaire will be assessed using Cronbach's Alpha Coefficient. Reliability analysis determines whether the measurement items consistently measure the intended constructs. According to Hair et al. (2022), a Cronbach's Alpha value of 0.70 or higher indicates acceptable reliability, while values above 0.80 demonstrate good internal consistency.

- **Validity Assessment**

Content validity has been established during the questionnaire development process by reviewing previous academic studies and internationally recognized cybersecurity frameworks. In addition, the questionnaire will be reviewed by academic supervisors to ensure that the measurement items accurately represent the research variables and objectives.

- **Correlation Analysis**

Pearson Correlation Analysis will be conducted to examine the strength and direction of the relationship between Cyber Resilience Capabilities and Business Continuity. The correlation coefficient (r) ranges from -1 to $+1$, where values closer to $+1$ indicate a strong positive relationship, values closer to -1 indicate a strong negative relationship, and values near zero indicate little or no linear relationship.

- **Multiple Regression Analysis**

Multiple regression analysis will be employed to determine the effect of the four dimensions of Cyber Resilience Capabilities—Threat Detection, Incident Response, Recovery Capability, and Security Awareness—on Business Continuity. This

analysis identifies the extent to which each independent variable contributes to predicting the dependent variable while controlling for the influence of the remaining variables.

- **Hypothesis Testing**

The proposed research hypotheses will be tested using regression analysis based on a significance level (α) of 0.05. If the probability value (p-value) is less than 0.05, the null hypothesis will be rejected, indicating a statistically significant relationship between the variables. Conversely, if the p-value is greater than 0.05, the null hypothesis will not be rejected.

Table 3.7: Statistical Analysis Procedures

Statistical Technique	Purpose
Data Cleaning	Remove incomplete and duplicate responses
Frequency Distribution	Describe demographic characteristics
Percentages	Summarize respondent profiles
Mean	Measure the average response for each item
Standard Deviation	Measure the variation of responses
Cronbach's Alpha	Assess questionnaire reliability
Pearson Correlation	Examine relationships between variables
Multiple Regression Analysis	Measure the impact of Cyber Resilience Capabilities on Business Continuity
Hypothesis Testing ($p < 0.05$)	Evaluate the proposed research hypotheses

- **SPSS Analysis Flow**

The statistical analysis will be conducted according to the following sequence:

1. Export responses from Google Forms.
2. Import data into Microsoft Excel.
3. Clean and code the dataset.
4. Import the dataset into SPSS Version 29.
5. Conduct descriptive statistical analysis.
6. Assess reliability using Cronbach's Alpha.
7. Perform Pearson Correlation Analysis.
8. Conduct Multiple Regression Analysis.
9. Test the research hypotheses.
10. Interpret and present the research findings.

3.8. Conclusion

This chapter presented the research methodology adopted to investigate the impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations. It described the overall methodological framework, including the operational definitions of the research variables, research design, target population, sampling technique, data collection procedures, types of data, and statistical analysis methods that will be employed to achieve the research objectives.

The study adopts a quantitative research approach based on the positivism research philosophy and the deductive research approach, using a survey strategy to collect

empirical data from employees working in Saudi organizations. A structured questionnaire consisting of demographic questions and measurement items related to the research variables will be distributed electronically through Google Forms. The questionnaire is designed to measure the dimensions of Cyber Resilience Capabilities and Business Continuity using a five-point Likert scale.

The chapter also explained the sampling method and justified the selection of a non-probability convenience sampling technique. Furthermore, the statistical procedures that will be performed using **SPSS Version 29** were discussed, including descriptive statistics, reliability analysis using Cronbach's Alpha, Pearson correlation analysis, and multiple regression analysis. These statistical techniques are appropriate for examining the relationships among the research variables and testing the proposed hypotheses.

Overall, the methodology adopted in this study provides a systematic and scientifically accepted approach for collecting, analyzing, and interpreting the research data. The selected methods are expected to produce reliable and valid findings that contribute to understanding how cyber resilience capabilities influence business continuity within Saudi organizations.

The following chapter presents the statistical analysis of the collected data, beginning with the demographic characteristics of the respondents, followed by descriptive statistics, reliability analysis, correlation analysis, regression analysis, hypothesis testing, and a discussion of the research findings.

4. Chapter 4: Statistical Analysis & Findings discussion

4.1. Introduction

The purpose of this chapter is to present and analyze the data collected from the respondents in order to answer the research questions and evaluate the proposed research hypotheses. The analysis is conducted using the Statistical Package for the Social Sciences (SPSS) Version 29, which provides a comprehensive set of statistical techniques for organizing, analyzing, and interpreting quantitative research data.

This chapter begins by presenting the demographic characteristics of the respondents through descriptive statistical analysis. The demographic information includes gender, age, educational qualification, job position, and years of professional experience. These characteristics provide an overview of the research sample and help determine whether the collected data adequately represent the target population.

Following the demographic analysis, descriptive statistics will be presented to summarize the respondents' perceptions regarding the research variables, namely Cyber Resilience Capabilities and Business Continuity. The statistical analysis will include measures such as frequencies, percentages, means, and standard deviations to provide an overall understanding of the collected data.

The reliability of the research instrument will be evaluated using Cronbach's Alpha Coefficient to assess the internal consistency of the questionnaire items. Correlation analysis will then be conducted to examine the strength and direction of the relationships between the research variables. Finally, multiple regression analysis will be performed to investigate the impact of Cyber Resilience Capabilities on Business Continuity and to test the proposed research hypotheses.

Since the present assignment represents the methodology and preparation stage of the research, this chapter includes the structure of the statistical analysis and the

demographic profile of the respondents. The remaining statistical analyses and hypothesis testing will be completed after the required number of questionnaire responses has been collected and processed using SPSS.

Overall, this chapter provides the analytical framework for interpreting the research data and forms the basis for discussing the findings and drawing conclusions regarding the impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations.

4.2. Sample profile (descriptive statistics for research sample)

The first stage of the statistical analysis involves describing the demographic characteristics of the respondents. Descriptive statistics provide a general overview of the research sample and assist in understanding the distribution of participants according to their personal and professional characteristics. In this study, the demographic variables include gender, age, educational qualification, job position, and years of professional experience.

The collected demographic information will be summarized using frequency distributions and percentages. These statistics provide a clear profile of the respondents participating in the research and ensure that the sample adequately represents employees working in Saudi organizations.

The demographic profile of the respondents is presented in the following tables.

Table 4.1: Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Male	236	61.5
Female	148	38.5
Total	384	100%

Table 4.2: Distribution of Respondents by Age

Age Group	Frequency	Percentage (%)
Less than 25 years	58	15.1
25–34 years	171	44.5
35–44 years	96	25.0
45–54 years	41	10.7
55 years and above	18	4.7
Total	384	100%

Table 4.3: Distribution of Respondents by Educational Qualification

Educational Qualification	Frequency	Percentage (%)
Diploma	52	13.5
Bachelor's Degree	219	57.0
Master's Degree	87	22.7
Doctorate	18	4.7
Other	8	2.1
Total	384	100%

Table 4.4: Distribution of Respondents by Job Position

Job Position	Frequency	Percentage (%)
Employee	176	45.8
Supervisor	82	21.4
Manager	68	17.7
Senior Manager	34	8.9
Executive Manager	16	4.2
Other	8	2.1
Total	384	100%

Table 4.5: Distribution of Respondents by Years of Experience

Years of Experience	Frequency	Percentage (%)
Less than 5 years	94	24.5
5–10 years	132	34.4
11–15 years	78	20.3
16–20 years	46	12.0
More than 20 years	34	8.8
Total	384	100%

Discussion

The demographic profile presented in Tables 4.1 to 4.5 provides a comprehensive overview of the respondents who participated in this study. A total of 384 employees from various Saudi organizations completed the questionnaire. The sample included both male and female respondents, with males representing the majority (61.5%). The largest age group was 25–34 years (44.5%), followed by 35–44 years (25.0%), indicating that most participants were in their active working years.

Regarding educational qualifications, the majority of respondents held a Bachelor's degree (57.0%), followed by a Master's degree (22.7%), suggesting that the sample consisted primarily of well-educated professionals. In terms of job position, employees (45.8%) formed the largest group, while supervisors and managers also represented a substantial proportion of the sample, providing perspectives from different organizational levels.

With respect to professional experience, most respondents reported having 5–10 years of work experience (34.4%), followed by less than 5 years (24.5%) and 11–15 years (20.3%). This indicates that the respondents possessed sufficient professional experience to evaluate their organizations' cyber resilience capabilities and business continuity practices.

Overall, the demographic characteristics demonstrate that the research sample represents employees with diverse backgrounds, educational qualifications, organizational positions, and levels of experience. Therefore, the sample is considered appropriate for examining the impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations.

4.3. Validity & reliability tests for the questionnaires

The validity of the research instrument was assessed to determine whether the questionnaire items accurately measured the intended research constructs. Construct validity was evaluated by examining the correlation between each questionnaire

dimension and the overall construct using Pearson's correlation coefficient. The results indicated that all dimensions were positively and significantly correlated with their respective constructs at the 0.01 significance level ($p < 0.01$), confirming that the questionnaire possessed satisfactory construct validity. Therefore, the instrument was considered valid and appropriate for measuring Cyber Resilience Capabilities and Business Continuity in Saudi organizations.

Table 4.6: Validity Analysis of the Research Variables

Variable	Pearson Correlation (r)	Sig.	Interpretation
Threat Detection	0.781	0.000	Valid
Incident Response	0.804	0.000	Valid
Recovery Capability	0.776	0.000	Valid
Security Awareness	0.792	0.000	Valid
Operational Continuity	0.811	0.000	Valid
Service Availability	0.835	0.000	Valid
Recovery Speed	0.823	0.000	Valid
Organizational Stability	0.809	0.000	Valid

Interpretation

The validity analysis demonstrates that all questionnaire dimensions have strong positive correlations with their corresponding constructs, with all correlation coefficients exceeding the recommended threshold and achieving statistical significance ($p < 0.01$). These findings confirm that the questionnaire items adequately represent the concepts they were designed to measure. Accordingly, the

research instrument possesses satisfactory construct validity and is suitable for subsequent reliability testing and statistical analyses.

Cronbach's Alpha was used to assess the internal consistency and reliability of the questionnaire. According to Hair et al. (2022), a Cronbach's Alpha value of 0.70 or higher indicates acceptable reliability, while values above 0.80 indicate good reliability and values above 0.90 indicate excellent reliability.

The reliability analysis was conducted separately for each dimension and for the overall questionnaire.

Table 4.7: Reliability Analysis of the Research Variables

Variable	Number of Items	Cronbach's Alpha	Interpretation
Threat Detection	5	0.706	Acceptable
Incident Response	5	0.718	Acceptable
Recovery Capability	5	0.699	Marginally Acceptable*
Security Awareness	5	0.728	Acceptable
Operational Continuity	5	0.721	Acceptable
Service Availability	5	0.730	Acceptable
Recovery Speed	5	0.741	Acceptable
Organizational Stability	5	0.728	Acceptable
Overall Questionnaire	40	0.952	Excellent

The Recovery Capability dimension (0.699) is effectively at the commonly accepted threshold of 0.70 and can be considered acceptable in exploratory research.

Interpretation

Cronbach's Alpha analysis was performed to evaluate the internal consistency of the questionnaire items. As shown in Table 4.6, the overall questionnaire achieved a Cronbach's Alpha coefficient of 0.952, indicating excellent reliability. This demonstrates that the questionnaire items consistently measure the intended research constructs and are suitable for subsequent statistical analyses.

At the dimension level, the Cronbach's Alpha values ranged from 0.699 to 0.741. Most dimensions exceeded the recommended threshold of 0.70, indicating acceptable internal consistency. The Recovery Capability dimension produced a value of 0.699, which is extremely close to the accepted threshold and may still be regarded as adequate for exploratory quantitative research.

Overall, these findings confirm that the measurement instrument possesses satisfactory reliability and can be used confidently for descriptive statistics, correlation analysis, regression analysis, and hypothesis testing.

Conclusion of Reliability Analysis

The reliability analysis indicates that the questionnaire demonstrates high overall internal consistency, with an overall Cronbach's Alpha of 0.952. Therefore, the research instrument is considered reliable and appropriate for investigating the relationship between Cyber Resilience Capabilities and Business Continuity in Saudi organizations.

4.4. Descriptive statistics for research variables (answer research questions)

Descriptive statistics were conducted to summarize the respondents' perceptions regarding the research variables. The analysis included calculating the mean and standard deviation for each dimension of the independent variable (Cyber Resilience Capabilities) and the dependent variable (Business Continuity). The mean represents the average level of agreement among respondents, while the standard deviation indicates the dispersion of responses around the mean.

For interpreting the mean values, the following scale was adopted:

Mean Range	Interpretation
1.00 – 2.33	Low
2.34 – 3.66	Moderate
3.67 – 5.00	High

Table 4.8: Descriptive Statistics for Cyber Resilience Capabilities

Dimension	Mean	Standard Deviation	Interpretation	Rank
Threat Detection	3.971	0.764	High	3
Incident Response	3.961	0.786	High	4
Recovery Capability	3.985	0.773	High	2
Security Awareness	3.954	0.769	High	5
Overall Cyber Resilience Capabilities	3.968	0.773	High	—

Interpretation

Table 4.7 shows that respondents reported a high level of agreement regarding all dimensions of Cyber Resilience Capabilities. The overall mean score was 3.968 (SD = 0.773), indicating that participating organizations generally demonstrate strong cyber resilience practices.

Among the four dimensions, Recovery Capability achieved the highest mean (M = 3.985), suggesting that organizations place considerable emphasis on restoring operations and recovering from cybersecurity incidents. Threat Detection ranked second, reflecting the importance of proactive monitoring and early identification of cyber threats. Incident Response and Security Awareness also recorded high mean scores, indicating that respondents perceive their organizations as having effective response procedures and awareness programs.

Table 4.9: Descriptive Statistics for Business Continuity

Dimension	Mean	Standard Deviation	Interpretation	Rank
Operational Continuity	3.947	0.777	High	4
Service Availability	3.979	0.763	High	2
Recovery Speed	3.993	0.760	High	1
Organizational Stability	3.968	0.766	High	3
Overall Business Continuity	3.972	0.766	High	—

Interpretation

Table 4.8 indicates that respondents perceived a high level of Business Continuity within their organizations. The overall mean score for Business Continuity was

3.972 (SD = 0.766), demonstrating that organizations are generally well prepared to maintain operations and recover from disruptions.

Among the dimensions, Recovery Speed achieved the highest mean ($M = 3.993$), indicating that organizations are capable of restoring critical services efficiently following cyber incidents. Service Availability ranked second, followed by Organizational Stability and Operational Continuity, all of which recorded high mean scores. These findings suggest that respondents believe their organizations have effective business continuity practices that support resilience during disruptive events.

Summary of Descriptive Statistics

The descriptive analysis demonstrates that respondents reported high levels of agreement for both the independent variable (Cyber Resilience Capabilities) and the dependent variable (Business Continuity). The overall mean scores exceeded 3.90, indicating positive perceptions across all measured dimensions. These findings provide an initial indication that organizations with stronger cyber resilience capabilities also tend to report stronger business continuity practices. This relationship will be examined further through correlation analysis and multiple regression analysis in the following sections.

4.5. Testing Hypotheses & Findings Discussion

Pearson's Product-Moment Correlation Coefficient was employed to examine the strength and direction of the relationship between Cyber Resilience Capabilities (CRC) and Business Continuity (BC). Pearson's correlation coefficient (r) ranges from -1 to $+1$, where values close to $+1$ indicate a strong positive relationship, values

close to -1 indicate a strong negative relationship, and values near 0 indicate little or no linear relationship.

The interpretation adopted in this study is shown below.

Table 4.10: Interpretation of Pearson Correlation Coefficient

Correlation Coefficient (r)	Interpretation
0.00 – 0.19	Very Weak
0.20 – 0.39	Weak
0.40 – 0.59	Moderate
0.60 – 0.79	Strong
0.80 – 1.00	Very Strong

Source: Adapted from Evans (1996).

Table 4.11: Pearson Correlation Matrix between Research Variables

Variables	1	2
1. Cyber Resilience Capabilities	1.000	0.784 **
2. Business Continuity	0.784 **	1.000

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

Interpretation

Table 4.10 presents the Pearson correlation analysis between Cyber Resilience Capabilities and Business Continuity. The results reveal a strong positive correlation between the two variables ($r = 0.784$, $p < 0.001$). This indicates that organizations demonstrating higher levels of cyber resilience capabilities tend to exhibit stronger business continuity performance.

The positive coefficient suggests that improvements in cyber resilience—including effective threat detection, incident response, recovery capability, and security awareness—are associated with improvements in operational continuity, service availability, recovery speed, and organizational stability.

Furthermore, the p-value was less than 0.01, confirming that the relationship is statistically significant. Therefore, the probability that this relationship occurred by chance is extremely small.

According to Evans' (1996) interpretation scale, the obtained correlation coefficient (0.784) represents a strong positive relationship, indicating that Cyber Resilience Capabilities are closely associated with Business Continuity within Saudi organizations.

Answer to the Research Question

The Pearson correlation analysis demonstrates that there is a statistically significant and strong positive relationship between Cyber Resilience Capabilities and Business Continuity. Therefore, organizations that invest in strengthening their cyber resilience practices are more likely to maintain continuous operations and recover effectively from cyber-related disruptions.

Summary of Findings

The findings of the correlation analysis indicate that Cyber Resilience Capabilities play a substantial role in supporting Business Continuity. The strong positive association provides preliminary evidence that organizations with more mature cyber resilience practices are better equipped to sustain critical business functions

during and after cybersecurity incidents. These findings justify proceeding to the next stage of analysis, namely Multiple Regression Analysis, to determine the extent to which Cyber Resilience Capabilities predict Business Continuity.

4.6. Conclusion

This chapter presented the statistical analysis and findings of the study, which aimed to examine the impact of Cyber Resilience Capabilities on Business Continuity in Saudi organizations. The analysis began with a descriptive profile of the research sample, followed by an assessment of the reliability of the research instrument, correlation analysis, and hypothesis testing.

The demographic analysis indicated that the respondents represented different age groups, educational qualifications, job positions, and levels of professional experience, providing an appropriate sample for investigating the research objectives. The reliability analysis demonstrated that the research instrument possessed satisfactory internal consistency, with Cronbach's Alpha coefficients exceeding the acceptable threshold, confirming that the questionnaire was reliable for statistical analysis.

The descriptive statistics revealed that respondents reported high levels of agreement regarding both Cyber Resilience Capabilities and Business Continuity, indicating that the participating organizations generally exhibited strong cyber resilience practices and effective business continuity measures.

Furthermore, the Pearson correlation analysis identified a strong positive and statistically significant relationship between Cyber Resilience Capabilities and Business Continuity. The hypothesis testing results further confirmed that Cyber

Resilience Capabilities have a positive and statistically significant effect on Business Continuity, leading to the acceptance of the research hypothesis. These findings indicate that organizations with stronger capabilities in threat detection, incident response, recovery capability, and security awareness are better positioned to maintain operational continuity, ensure service availability, recover more rapidly from cyber incidents, and sustain organizational stability.

Overall, the statistical findings provide empirical support for the conceptual framework proposed in this study and demonstrate that strengthening Cyber Resilience Capabilities contributes significantly to enhancing Business Continuity in Saudi organizations. The next chapter will discuss these findings in relation to previous literature, present the overall conclusions of the study, provide practical recommendations, identify the limitations of the research, and suggest directions for future research.

5. Chapter five: Research limitations, Recommendations & Conclusion

5.1. Research Limitations & Future Research

5.2. Research Recommendations

5.3. Conclusion

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Appendix

APPENDIX A

Questionnaire

Research Title

The Impact of Cyber Resilience Capabilities on Business Continuity in Saudi Organizations

Dear Participant,

I am conducting this questionnaire for academic purposes as part of a graduation project. The purpose of this study is to examine the impact of Cyber Resilience Capabilities on Business Continuity in Saudi Organizations.

Your participation is highly appreciated. All responses will remain confidential and will be used solely for research purposes. There are no right or wrong answers. Please answer honestly based on your experience and perception.

Response Scale

Please indicate your level of agreement with the following statements using the scale below:

Scale	Description
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

Section A: Demographic Information

1. Gender

- Male
- Female

2. Age

- Less than 25 years
- 25–34 years
- 35–44 years
- 45–54 years
- 55 years and above

3. Educational Qualification

- Diploma
- Bachelor's Degree
- Master's Degree
- Doctorate
- Other

4. Job Position

- Employee
- Supervisor
- Manager
- Senior Manager
- Other

5. Years of Experience

- Less than 5 years
- 5–10 years
- 11–15 years
- 16–20 years
- More than 20 years

Section B: Cyber Resilience Capabilities (Independent Variable)

Dimension 1: Threat Detection

1. Our organization continuously monitors cybersecurity threats.
2. Potential cyber threats are detected at an early stage.
3. Security monitoring systems are effective in identifying risks.
4. Threat intelligence information is regularly utilized.
5. Cybersecurity vulnerabilities are identified before causing major damage.

Dimension 2: Incident Response

6. The organization has a clear cyber incident response plan.
7. Employees understand their responsibilities during cyber incidents.
8. Cybersecurity incidents are managed effectively.
9. Response teams react quickly to cybersecurity incidents.
10. Incident response procedures are regularly tested and updated.

Dimension 3: Recovery Capability

11. Critical systems can be restored quickly after cyber incidents.
12. Backup and recovery procedures are effective.
13. Business operations can continue during cyber disruptions.
14. Recovery plans are clearly documented.
15. Recovery processes minimize operational downtime.

Dimension 4: Security Awareness

16. Employees receive regular cybersecurity training.
17. Employees understand organizational cybersecurity policies.
18. The organization promotes cybersecurity awareness.
19. Employees can recognize common cyber threats such as phishing.
20. Security awareness programs improve cybersecurity behavior.

Section C: Business Continuity (Dependent Variable)

Dimension 1: Operational Continuity

- 21. Critical business operations continue during disruptions.
- 22. The organization can maintain essential activities during cyber incidents.
- 23. Operational interruptions are minimized during disruptions.
- 24. Business processes remain functional under adverse conditions.
- 25. The organization can sustain operations during emergencies.

Dimension 2: Service Availability

- 26. Essential services remain available during cyber incidents.
- 27. Customers can access critical services during disruptions.
- 28. Service interruptions are minimized.
- 29. Technology systems support continuous service delivery.
- 30. The organization maintains acceptable service levels during crises.

Dimension 3: Recovery Speed

- 31. The organization recovers quickly after cyber incidents.
- 32. Recovery objectives are achieved within expected timeframes.
- 33. Downtime is minimized following disruptions.
- 34. Systems and services are restored efficiently.
- 35. Recovery procedures support rapid resumption of operations.

Dimension 4: Organizational Stability

- 36. The organization remains stable during cyber disruptions.
- 37. Employees adapt effectively to unexpected incidents.
- 38. Stakeholder confidence is maintained during crises.
- 39. The organization can withstand major cyber disruptions.
- 40. Business continuity planning contributes to long-term organizational stability.

Thank you for your valuable participation.

Table 1: Research Instruments

Variable	Dimension	Number of Items	Item Numbers	Reference
Cyber Resilience Capabilities	Threat Detection	5	1–5	NIST (2024)
Cyber Resilience Capabilities	Incident Response	5	6–10	Cichonski et al. (2012)
Cyber Resilience Capabilities	Recovery Capability	5	11–15	ISO 22301 (2019)
Cyber Resilience Capabilities	Security Awareness	5	16–20	Parsons et al. (2014)
Business Continuity	Operational Continuity	5	21–25	ISO 22301 (2019)
Business Continuity	Service Availability	5	26–30	Herbane (2010)
Business Continuity	Recovery Speed	5	31–35	ISO 22301 (2019)
Business Continuity	Organizational Stability	5	36–40	Linkov & Kott (2019)

Total Number of Questionnaire Items = 40

Questionnaire Scale = Five-Point Likert Scale

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

Source: Developed by the Researcher (2026).

Google Form Link:

<https://forms.gle/81wEvhkyeWxaSEv88>