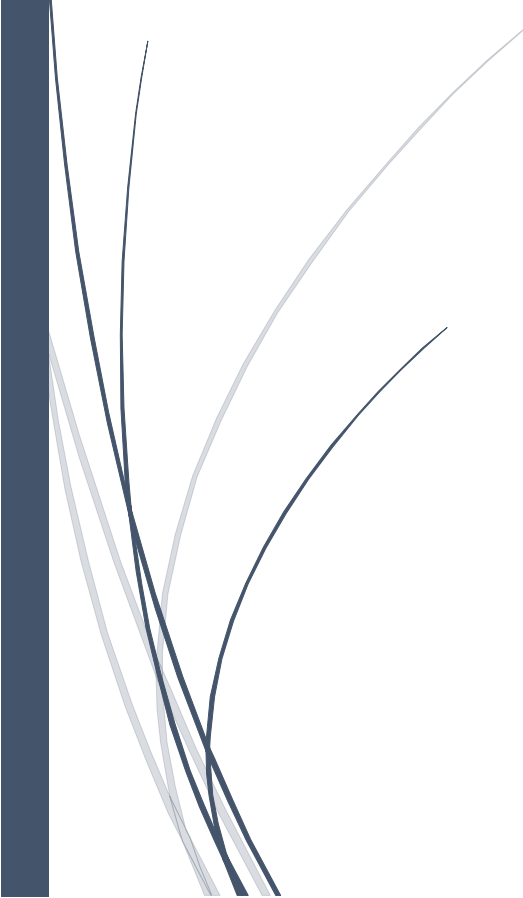




Final Project 2

PMG 497

The Role of Digital Transformation in Enhancing Business Performance



Project title
The Role of Digital Transformation in Enhancing Business Performance

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Final Project - 2
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Date of submission – number of Semester
14/04/2026 – first Trimester 2026

Acknowledgment

I would like to express my sincere gratitude to my supervisor for their valuable guidance, constructive feedback, and continuous support throughout the completion of this research project. Their academic expertise and encouragement played a crucial role in shaping the direction and quality of this study.

I would also like to extend my appreciation to the faculty members of the Department of Management for providing the necessary academic foundation and resources that contributed to the successful completion of this project. Their support and instruction throughout the course were instrumental in enhancing my understanding of research methodology and applied business research.

Special thanks are extended to my family and friends for their constant encouragement, patience, and moral support during the course of this project. Their motivation and understanding helped me remain focused and committed to completing this work.

Abstract

Purpose:

This study investigates the impact of digital transformation on business performance, with a particular focus on the mediating role of innovation capability. In an increasingly digital business environment, organizations are under pressure to adopt advanced technologies to remain competitive and enhance operational efficiency. However, the extent to which digital transformation translates into improved business performance remains a critical area of investigation.

A quantitative research approach was adopted to examine the relationships among the study variables. Data were collected through a structured questionnaire distributed electronically via Google Forms to employees working in organizations that have implemented digital technologies. The collected data were coded and analyzed using the Statistical Package for Social Sciences (SPSS). The analysis included descriptive statistics, reliability testing using Cronbach's Alpha, and regression analysis to test the proposed hypotheses.

The findings indicate that digital transformation has a positive and significant effect on business performance. Furthermore, the results reveal that digital transformation significantly enhances innovation capability, which in turn contributes positively to business performance. The mediation analysis confirms that innovation capability partially mediates the relationship between digital transformation and business performance, highlighting its critical role as a mechanism through which digital initiatives generate value.

This study contributes to the academic literature by providing an applied empirical framework that integrates digital transformation, innovation capability, and business performance. From a practical perspective, the findings offer valuable insights for managers, emphasizing that successful digital transformation requires not only technological investment but also the development of innovation-oriented capabilities to achieve sustainable performance improvements.

Methodology:

A quantitative research approach was adopted using a structured questionnaire distributed via Google Forms. Data will be analyzed using SPSS.

Findings:

This project prepares the empirical instrument and analytical framework for hypothesis testing.

Originality & Implication:

The study contributes a practical measurement tool suitable for applied business research.

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Chapter 1: Introduction

1.1. Research Background

Organizations across the globe are operating in an environment characterized by rapid technological advancement, heightened competition, and continuously evolving customer expectations. The emergence of advanced digital technologies such as artificial intelligence, cloud computing, big data analytics, and integrated information systems has fundamentally reshaped how organizations design processes, deliver value, and compete in both local and international markets. In this context, digital transformation has moved beyond being a purely technological initiative and has become a strategic priority that influences organizational structures, decision-making processes, and overall performance outcomes. Organizations that fail to adapt to this digital shift risk operational inefficiencies, reduce competitiveness, and long-term performance decline, while those that successfully embrace digital transformation may achieve improved productivity, innovation, and sustainability.

In recent years, digital transformation has gained increasing attention from both practitioners and academics due to its potential to enhance organizational capabilities and performance. Digital technologies enable firms to automate routine processes, improve data-driven decision making, enhance customer experiences, and foster collaboration across functional boundaries. As organizations adopt digital platforms and tools, they are better positioned to respond quickly to market changes, customize offerings, and optimize internal operations. However, the benefits of digital transformation are not automatic. Merely investing in digital technologies does not guarantee improved business performance, as successful transformation requires strategic alignment, organizational readiness, and the development of complementary capabilities such as innovation, learning, and adaptability.

Among the capabilities influenced by digital transformation, innovation capability has been identified as a critical mechanism through which digital initiatives translate into tangible performance outcomes. Innovation capability refers to an organization's ability to develop new products, services, processes, and business models in response to changing environmental conditions. Digital technologies support innovation by enabling knowledge sharing, experimentation,

collaboration, and rapid prototyping. As a result, organizations that effectively leverage digital tools are more likely to generate innovative solutions that enhance efficiency, customer satisfaction, and competitive advantage. Consequently, innovation capability is increasingly viewed as a key intermediary that explains how digital transformation contributes to improved business performance.

Despite the growing recognition of the strategic importance of digital transformation and innovation capability, empirical assessment of these constructs remains challenging, particularly in applied research contexts. Many organizations invest heavily in digital initiatives without having standardized measurement tools to evaluate the extent of digital transformation or its impact on performance outcomes. Moreover, existing studies often focus on conceptual discussions or qualitative insights, while fewer applied studies provide validated quantitative instruments that practitioners and students can use for empirical analysis. This gap is especially evident in academic settings where applied research projects require students to translate theoretical relationships into measurable variables suitable for statistical testing using tools such as SPSS. The research problem addressed in this study arises from the lack of practical, standardized instruments for assessing the impact of digital transformation on business performance through innovation capability. While prior research suggests that digital transformation enhances organizational performance, the mechanisms underlying this relationship are not always clearly operationalized in applied studies. Many organizations struggle to determine whether improvements in performance are directly attributable to digital initiatives or indirectly driven by enhanced innovation capability. As a result, there is a need for applied research that develops and tests measurement tools capable of capturing these relationships in a systematic and empirically verifiable manner.

In response to this problem, the present applied research project aims to examine the impact of digital transformation on business performance, with innovation capability serving as a mediating variable. By operationalizing digital transformation, innovation capability, and business performance into measurable constructs, this study seeks to provide empirical evidence that clarifies the nature of the relationships among these variables. The research builds on the conceptual foundation established in Final Project 1 and extends it by translating theoretical constructs into a structured questionnaire suitable for quantitative analysis. This approach ensures alignment between theory, measurement, and statistical testing, thereby strengthening the validity and reliability of the research findings.

The significance of this study lies in its contribution to both academic and practical domains. From an academic perspective, the study provides an applied framework that demonstrates how abstract concepts such as digital transformation

and innovation capability can be operationalized and empirically tested using statistical techniques. The development of a structured questionnaire and SPSS-based analytical framework offers a practical reference for students and researchers conducting similar applied studies in business and management disciplines. By focusing on measurable indicators and validated statistical procedures, the study enhances methodological rigor and supports evidence-based conclusions.

From a practical perspective, the findings of this study are expected to offer valuable insights for managers and decision-makers seeking to evaluate the effectiveness of digital transformation initiatives within their organizations. Understanding whether and how digital transformation influences business performance through innovation capability can help organizations allocate resources more effectively, design supportive policies, and foster an innovation-oriented culture. By highlighting the mediating role of innovation capability, the study emphasizes that digital transformation should be accompanied by organizational practices that encourage creativity, experimentation, and continuous improvement in order to achieve superior performance outcomes. To achieve its objectives, the study adopts a quantitative research approach using a structured questionnaire administered via an online Google Form. Data collected from employees working in organizations that have adopted digital technologies will be analyzed using SPSS. The analysis will include descriptive statistics to summarize respondent characteristics and variable distributions, reliability analysis to assess internal consistency of the measurement scales, and regression analysis to test the proposed hypotheses. This methodological approach ensures that the relationships between digital transformation, innovation capability, and business performance are examined systematically and objectively.

The scope of this study is limited to organizations that have implemented digital technologies in their operations, with data collected through self-reported perceptions of employees. While this approach allows for efficient data collection and statistical analysis, it may be subject to limitations such as response bias and restricted generalizability. Nevertheless, the applied nature of the study makes it particularly suitable for academic assessment purposes, as it demonstrates the complete research process from conceptualization and measurement to data analysis and interpretation.

In conclusion, this introduction has established the broader context of digital transformation, highlighted the importance of innovation capability as a mediating mechanism, and identified the research problem addressed by the study. By clearly articulating the purpose, significance, and methodological approach of the research, this chapter provides a strong foundation for the

subsequent chapters. The following chapters will review relevant literature, describe the research methodology in detail, and present empirical findings that contribute to a deeper understanding of how digital transformation influences business performance through innovation capability in an applied research setting.

1.2. Research Problem

In recent years, digital transformation has emerged as a critical strategic priority for organizations seeking to enhance competitiveness and improve business performance. While substantial investments are being made in digital technologies, many organizations remain uncertain about the actual impact of these initiatives on performance outcomes. Existing research suggests a positive relationship between digital transformation and business performance; however, the mechanisms through which this relationship operates are not yet fully understood. In particular, the role of organizational innovation capability as an explanatory factor remains underexplored in applied quantitative research. As a result, there is a need to clearly identify both theoretical and practical gaps that justify further investigation into this area.

1.2.1. Theoretical Gaps

From a theoretical perspective, prior studies on digital transformation have largely focused on its direct effects on organizational performance, often treating digital transformation as a standalone technological construct. Many studies emphasize conceptual discussions or case-based insights, while fewer provide empirically tested models that explain how digital transformation translates into improved business performance. Although innovation capability has been acknowledged in literature as a critical organizational resource, its mediating role between digital transformation and business performance has not been sufficiently validated through quantitative models. Furthermore, inconsistencies in construct definitions and measurement approaches have resulted in fragmented findings, limiting the development of a cohesive theoretical framework that integrates digital transformation, innovation capability, and business performance within a single model.

1.3. Practical Gaps

At the practical level, organizations face significant challenges in assessing the effectiveness of digital transformation initiatives. Despite extensive investments in digital tools and platforms, many firms lack standardized and reliable instruments to evaluate whether such initiatives lead to meaningful performance improvements. Managers often rely on intuition or isolated performance indicators rather than comprehensive, data-driven evaluations. In addition, limited empirical guidance exists on how innovation capability can be developed and leveraged as a strategic outcome of digital transformation. This practical gap is particularly evident in applied research contexts, where decision-makers and practitioners require actionable insights supported by empirical evidence. Consequently, organizations need practical measurement frameworks that allow them to assess digital transformation outcomes and understand the role of innovation capability in driving business performance.

Based on the identified theoretical and practical gaps, this study seeks to address the following main research question:

Does digital transformation significantly influence business performance through the mediating role of innovation capability?

1.4. Research Significance

The significance of this study lies in its contribution to both theoretical development and practical application within the field of business and management research. By examining the relationships among digital transformation, innovation capability, and business performance, the study provides value to scholars, practitioners, and decision-makers seeking to better understand the strategic implications of digital initiatives.

1.4.1. At the theoretical level

At the theoretical level, this study contributes to the existing body of knowledge by integrating digital transformation and innovation capability within a single empirical framework. By empirically testing the mediating role of innovation capability, the study extends prior research that has predominantly focused on direct relationships. The findings are expected to clarify the mechanisms through which digital transformation influences business performance, thereby strengthening theoretical explanations and reducing inconsistencies in previous studies. Additionally, the operationalization of key constructs using measurable indicators enhances methodological rigor and provides a validated reference model for future academic research, particularly in applied and quantitative studies

1.4.2. At the practical level

From a practical standpoint, the study offers valuable insights for managers and organizations aiming to maximize the returns on digital transformation investments. By demonstrating the importance of innovation capability as a mediating factor, the research highlights that technological adoption alone is insufficient to achieve superior performance. Instead, organizations must actively develop innovation-oriented practices and capabilities to fully realize the benefits of digital transformation. The structured measurement tool and empirical findings can assist managers in evaluating digital initiatives, guiding strategic decision-making, and designing policies that foster innovation and performance improvement. Moreover, the study provides a practical framework that can be applied across different organizational contexts, making it relevant for both practitioners and policymakers.

1.5. Research Questions

This study seeks to examine the relationships among digital transformation, innovation capability, and business performance within organizations that have adopted digital technologies. Based on the identified research problem and gaps in the literature, the study is guided by the following research questions:

RQ1: Does digital transformation have a significant effect on business performance?

RQ2: Does digital transformation significantly influence innovation capability?

RQ3: Does innovation capability have a significant effect on business performance?

RQ4: Does innovation capability mediate the relationship between digital transformation and business performance?

1.6. Research Objectives

The main objective of this study is to empirically investigate the impact of digital transformation on business performance, with innovation capability serving as a mediating variable. To achieve this purpose, the study aims to accomplish the following specific objectives:

To measure the level of digital transformation within organizations that have adopted digital technologies.

To examine the effect of digital transformation on business performance.

To analyze the impact of digital transformation on innovation capability.

To assess the effect of innovation capability on business performance.

To determine whether innovation capability mediates the relationship between digital transformation and business performance.

1.7. Research Hypotheses

Based on the research objectives and the relationships proposed in the conceptual framework, the following hypotheses are formulated for empirical testing:

H1: Digital transformation has a positive and significant effect on business performance.

H2: Digital transformation has a positive and significant effect on innovation capability.

H3: Innovation capability has a positive and significant effect on business performance.
H4: Innovation capability mediates the relationship between digital transformation and business performance.

1.8. Research Model

The research model of this study is developed based on the proposed hypotheses and the theoretical relationships identified in literature. The model assumes that digital transformation acts as the independent variable influencing business performance, which is the dependent variable. Innovation capability is positioned as a mediating variable that explains the mechanism through which digital transformation affects business performance. The conceptual model illustrates a direct relationship between digital transformation and business performance, as well as an indirect relationship through innovation capability. This model provides a clear framework for empirical testing using regression-based mediation analysis in SPSS.

Digital Transformation → Innovation Capability → Business Performance

1.9. Scope of The Study

The scope of this study is confined to examining the impact of digital transformation on business performance through innovation within organizations that have implemented digital technologies. The study focuses on employees' perceptions of digital transformation practices, innovation capability, and performance outcomes. Data is collected using a structured questionnaire distributed online via Google Forms. The analysis is limited to quantitative techniques, including descriptive statistics, reliability analysis, and regression analysis using SPSS. Due to time and accessibility constraints, the study employs a convenience sampling technique, and the findings are applicable

within the context of the selected sample rather than being generalized to all organizations.

1.10. The Project Structure

This project is organized into four main chapters. Chapter One presents the introduction to the study, including the research background, problem statement, research questions, hypotheses, significance, scope, and research model. Chapter Two reviews relevant literature related to digital transformation, innovation capability, and business performance, and discusses the relationships among these variables. Chapter Three outlines the research methodology, including research design, population and sampling, data collection methods, and statistical analysis techniques. Chapter Four presents and discusses the results of the data analysis, including descriptive statistics, reliability analysis, hypothesis testing, and interpretation of findings. The project concludes with appendices containing the questionnaire, SPSS output placeholders, and dataset descriptions.

Chapter 2: Literature Review

2.1.Introduction

This chapter reviews the relevant literature related to the key variables of the study, namely digital transformation as the independent variable and business performance as the dependent variable. The purpose of this chapter is to establish a theoretical foundation for research by examining existing definitions, concepts, and empirical findings associated with these variables. Reviewing prior studies helps to clarify how digital transformation has been conceptualized and measured, as well as how business performance is assessed in organizational research. In addition, this chapter discusses the relationship between digital transformation and business performance as reported in previous studies, thereby supporting the development of the research hypotheses and model proposed in Chapter One.

2.2.The independent variable

Digital transformation refers to the integration of digital technologies into organizational processes, activities, and strategies with the aim of improving efficiency, innovation, and value creation. It involves more than the mere adoption of new technologies; rather, it represents a fundamental change in how organizations operate and deliver products or services. Digital transformation typically includes the use of technologies such as cloud computing, data analytics, artificial intelligence, and digital platforms to enhance organizational capabilities and responsiveness to market changes.

Previous studies have emphasized that digital transformation enables organizations to streamline operations, improve communication, and enhance decision-making through real-time data availability. By digitizing processes and automating routine tasks, organizations can reduce costs, minimize errors, and increase operational efficiency. Moreover, digital transformation supports organizational flexibility by allowing firms to adapt quickly to environmental changes and customer demands. As a result, digital transformation is widely regarded as a critical driver of organizational competitiveness in the modern business environment.

In empirical research, digital transformation is often measured through indicators related to technology usage, digital integration across departments, management support for digital initiatives, and continuous investment in digital infrastructure. These dimensions reflect both the technological and strategic aspects of digital transformation, making it a multidimensional construct suitable for quantitative analysis in applied research settings.

2.3.The dependent variable

Business performance represents the extent to which an organization achieves its objectives and desired outcomes. It is a multidimensional concept that encompasses both financial and non-financial indicators. Financial performance typically includes measures such as profitability, revenue growth, and cost efficiency, while non-financial performance may involve customer satisfaction, operational effectiveness, and overall organizational success.

In many applied studies, business performance is assessed using perceptual measures obtained from employees or managers, particularly when objective financial data are not readily available. Perceptual measures have been shown to provide reliable insights into organizational performance, as they capture respondents' evaluations of outcomes relative to competitors or internal expectations. Such measures are especially suitable for survey-based research conducted across multiple organizations.

The literature indicates that strong business performance is often associated with effective management practices, strategic alignment, and the ability to leverage organizational resources efficiently. In the context of digital transformation, business performance is expected to improve as organizations utilize digital technologies to enhance productivity, improve service quality, and create value for customers. Therefore, business performance serves as an appropriate dependent variable for examining the outcomes of digital transformation initiatives.

2.4.The relationship between the independent and the dependent variables

The relationship between digital transformation and business performance has received increasing attention in the academic literature. Numerous studies suggest that digital transformation positively influences organizational performance by enabling efficiency gains, enhancing innovation, and improving customer experiences. Digital technologies allow organizations to optimize processes, reduce operational costs, and respond more effectively to market dynamics, which in turn contributes to improved performance outcomes.

However, the literature also highlights that the impact of digital transformation on business performance is not always direct or immediate. Some studies argue that digital transformation initiatives require complementary organizational capabilities, such as innovation, learning, and change management, in order to generate performance benefits. Without these capabilities, investments in digital technologies may fail to produce the expected results. This perspective suggests that the relationship between digital transformation and business performance may be complex and influenced by internal organizational factors.

Empirical findings generally support a positive association between digital transformation and business performance, particularly when digital initiatives are strategically aligned with organizational goals. These findings provide theoretical and empirical justification for examining digital transformation as a key determinant of business performance in applied research. Consequently, the present study builds on this body of literature by empirically testing the effect of digital transformation on business performance using quantitative methods.

2.5.Conclusion

This chapter reviewed the relevant literature related to digital transformation and business performance. The discussion highlighted the importance of digital transformation as a strategic organizational initiative and emphasized business performance as a critical outcome variable. In addition, the chapter examined prior research on the relationship between digital transformation and business performance, providing theoretical support for the proposed research model and hypotheses. The insights gained from the literature review form the foundation for the research methodology presented in the next chapter, which outlines the procedures used to empirically test the relationships discussed in this chapter.

References (Chapter 2)

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Appendix A: Questionnaire for Research Variables

Introduction (Google Form Text)

This questionnaire is part of an academic research project examining the impact of digital transformation on business performance. Your responses will be used for research purposes only and will remain confidential. There are no right or wrong answers. Please answer honestly based on your experience.

Scale:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

Section A: Demographic Information

Gender

☐ Male ☐ Female

Age

☐ 18–25 ☐ 26–35 ☐ 36–45 ☐ Above 45

Years of work experience

☐ Less than 2 years ☐ 2–5 years ☐ 6–10 years ☐ More than 10 years

Section B: Digital Transformation (Independent Variable)

DT1. Our organization extensively uses digital technologies in daily operations.

DT2. Digital systems are integrated across different departments.

DT3. Management actively supports digital transformation initiatives.

DT4. Digital technologies improve work efficiency and productivity.

DT5. Our organization continuously invests in new digital technologies.

Section C: Innovation Capability (Mediating Variable)

IN1. Our organization frequently introduces new or improved products or services.

IN2. Digital technologies support innovation activities within the organization.

IN3. Employees are encouraged to suggest innovative ideas.

IN4. Our organization quickly adapts to changes in the business environment.

IN5. Innovation is considered a strategic priority in our organization.

Section D: Business Performance (Dependent Variable)

BP1. Our organization has achieved strong overall business performance.

BP2. Customer satisfaction has improved over the past years.

BP3. Our organization operates more efficiently than competitors.

BP4. The organization's financial performance has improved.

BP5. Overall organizational goals are being successfully achieved.

Appendix B: Table of Research Instruments

Table B1: Research Instruments

Variable Type	Variable Name	Code	Number of Items	Measurement Scale	Source
Independent Variable	Digital Transformation	DT	5	5-point Likert Scale	Bharadwaj et al. (2013); Vial (2019)
Mediating Variable	Innovation Capability	IN	5	5-point Likert Scale	Teece (2018); Kraus et al. (2019)
Dependent Variable	Business Performance	BP	5	5-point Likert Scale	Nwankpa & Roumani (2016)

Chapter 3: Research Methodology

3.1. Introduction

This chapter provides a comprehensive explanation of the research methodology adopted to empirically investigate the impact of digital transformation on business performance, with innovation capability acting as a mediating variable. While the previous chapters established the conceptual foundations and theoretical framework underpinning the study, the present chapter translates those theoretical constructs into measurable variables and outlines the systematic procedures through which the proposed hypotheses will be tested.

A well-structured research methodology is essential for ensuring the scientific rigor, validity, and reliability of empirical research. It clarifies how data are collected, measured, and analyzed, thereby enhancing transparency and allowing replication of the study. In applied business research, methodological clarity is particularly important because it connects theoretical insights to practical measurement tools and statistical validation.

The objectives of this chapter are therefore multi-fold. First, it describes the overall research design adopted in the study and justifies the selection of a quantitative methodological approach. Second, it provides operational definitions of the key research variables—digital transformation, innovation capability, and business performance—so that abstract concepts are clearly defined in measurable terms. Third, it explains the research instruments used for data collection, including the structure of the questionnaire and the measurement scale applied. Fourth, it discusses the target population, sampling techniques, and data collection procedures. Fifth, it outlines the statistical analysis techniques used to test the proposed hypotheses using SPSS. Finally, the chapter concludes by addressing ethical considerations to ensure that the research process complies with academic standards and protects respondents' rights.

By systematically presenting each methodological component, this chapter establishes a solid foundation for the empirical analysis conducted in subsequent chapters and ensures alignment between research objectives, hypotheses, data collection, and statistical testing.

Research Methodology – Part 1

3.2. Research Design

The present study adopts quantitative **research design** guided by a **deductive and explanatory approach**. The deductive approach is appropriate because the study begins with established theoretical concepts and previously validated relationships identified in the literature review. Based on these theoretical foundations, specific hypotheses are formulated and subsequently tested using empirical data.

The explanatory nature of the research design is justified by the study's objective to examine cause-and-effect relationships among variables. Specifically, the study seeks to determine whether digital transformation influences business performance directly and indirectly through innovation capability. Explanatory research designs are particularly suitable when the objective is to identify relationships between independent and dependent variables using statistical analysis.

Furthermore, the study employs a **cross-sectional design**, meaning that data are collected from respondents at a single point in time. This design is appropriate given the academic

nature of the research project and the practical constraints related to time and resources. Although longitudinal designs may offer deeper temporal insights, cross-sectional designs remain widely accepted in applied management research and are sufficient for regression-based hypothesis testing.

The quantitative design allows for objective measurement, numerical representation of variables, and statistical validation of theoretical assumptions. By using structured questionnaires and standardized measurement scales, the study ensures comparability of responses and enhances analytical precision.

3.3. Operational Definitions of Research Variables

To ensure clarity and measurement consistency, the key constructs of the study are operationalized as follows:

3.4.Digital Transformation (Independent Variable)

Digital transformation refers to the degree to which an organization integrates digital technologies into its operations, processes, and strategic initiatives to improve efficiency, flexibility, and value creation. In operational terms, digital transformation is measured through five indicators capturing:

- Extent of digital technology usage in operations
- Integration of digital systems across departments
- Management support for digital initiatives
- Impact of digital tools on productivity
- Continuous investment in digital infrastructure

These indicators reflect both technological and strategic dimensions of digital transformation, making the construct multidimensional and suitable for empirical analysis.

3.5.Innovation Capability (Mediating Variable)

Innovation capability is defined as the organization's ability to generate, develop, and implement new ideas, products, services, or processes in response to environmental changes. It represents a dynamic capability that enhances organizational adaptability and competitiveness.

In this study, innovation capability is operationalized using five measurable indicators that assess:

- Frequency of new product/service introduction
- Technological support for innovative activities
- Encouragement of employee creativity
- Organizational adaptability to market changes
- Strategic emphasis on innovation

These indicators capture both cultural and structural aspects of innovation capability.

3.6. Business Performance (Dependent Variable)

Business performance represents the extent to which an organization achieves its financial and non-financial objectives. Because objective financial data may not be readily available in survey-based research, perceptual measures are used to capture respondents' evaluations of performance outcomes.

Business performance is operationalized through five indicators assessing:

- Overall performance success
- Customer satisfaction improvement
- Operational efficiency
- Financial performance growth
- Achievement of organizational goals

These perceptual measures have been widely accepted in applied business research as reliable proxies for organizational performance.

3.7. Research Instruments

3.8. Questionnaire Design

The primary instrument used in this study is a structured questionnaire developed based on validated constructs from prior scholarly research. The questionnaire consists of four main sections:

- Section A: Demographic Information
- Section B: Digital Transformation
- Section C: Innovation Capability

- Section D: Business Performance

All construct-related items are measured using a **five-point Likert scale**, where:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

The Likert scale format allows respondents to express degrees of agreement and facilitates quantitative statistical analysis.

3.9.Table: Research Instruments

Variable Type	Variable Name	Code	Number of Items	Measurement Scale	Source
Independent Variable	Digital Transformation	DT	5	5-point Likert Scale	Bharadwaj et al. (2013); Vial (2019)
Mediating Variable	Innovation Capability	IN	5	5-point Likert Scale	Teece (2018); Kraus et al. (2019)
Dependent Variable	Business Performance	BP	5	5-point Likert Scale	Nwankpa & Roumani (2016)

Research Methodology – Part 2

3.10. Population

The target population of this study comprises employees working in organizations that have implemented digital technologies within their operational processes. Employees are selected as respondents because they possess firsthand knowledge of digital practices, innovation activities, and organizational performance outcomes. Including respondents from various functional departments enhances the diversity and representativeness of perceptions captured in the survey.

3.11. Sample and Sampling Methods & Techniques

Due to time and accessibility constraints, this study adopts a **non-probability sampling technique**, specifically **convenience sampling**. This approach involves selecting respondents who are readily accessible and willing to participate in the research.

Although convenience sampling may limit the generalizability of findings, it is widely used in academic research projects where access to comprehensive population lists is restricted. The anticipated sample size is adequate for regression analysis and mediation testing using SPSS.

3.12. Types of Data

This study utilizes both **primary and secondary data**.

Primary data are collected through the structured questionnaire administered online via Google Forms. These data reflect respondents' perceptions regarding digital transformation, innovation capability, and business performance.

Secondary data are obtained from peer-reviewed academic journals, books, and scholarly publications used to develop the theoretical framework and support hypothesis formulation.

3.13. Statistical Analysis Procedures

Data analysis will be conducted using the Statistical Package for Social Sciences (SPSS). The analysis will proceed in multiple stages:

1. **Descriptive Statistics** – To summarize demographic characteristics and calculate mean scores.
2. **Reliability Analysis (Cronbach's Alpha)** – To assess internal consistency of measurement scales.
3. **Correlation Analysis** – To examine relationships between variables.
4. **Regression Analysis** – To test direct effects.
5. **Mediation Analysis** – To examine the indirect effect of digital transformation on business performance through innovation capability.

These procedures allow for rigorous hypothesis testing and objective interpretation of findings.

3.14. Research Ethics

Ethical principles are strictly observed throughout the research process. Participation is voluntary, and respondents are informed about the purpose of the study prior to completing the questionnaire. Confidentiality and anonymity are guaranteed, and no personal identifying information is collected. Data are used exclusively for academic purposes and are stored securely. These measures ensure compliance with ethical research standards and protect participants' rights.

Chapter 4: Statistical Analysis and Findings

4.1.Introduction

This chapter presents the statistical analysis and empirical findings of the study. While the previous chapter described the research methodology and data collection procedures, this chapter focuses on analyzing the collected data and testing the research hypotheses proposed in Chapter One.

The analysis aims to examine the relationships between digital transformation, innovation capability, and business performance using statistical techniques. Data collected through the structured questionnaire were processed and analyzed using the Statistical Package for Social Sciences (SPSS).

The analysis is conducted in several stages. First, the dataset collected from the questionnaire was prepared in Excel format and then imported into SPSS for statistical processing. Second, reliability and validity tests were performed to ensure the consistency of the questionnaire items. Third, descriptive statistics were used to evaluate the characteristics of the sample and determine the level of the study variables. Finally, regression analysis was used to test the research hypotheses and evaluate the relationships among the variables.

Statistical Analysis – Part 1: Understanding Statistics

4.2. Understanding Statistical Analysis

Statistical analysis is an essential component of quantitative research because it allows researchers to interpret collected data and test theoretical relationships among variables. In applied business research, statistical tools help transform raw survey responses into meaningful insights that support hypothesis testing and evidence-based conclusions.

In this study, several statistical techniques are used. Descriptive statistics provide a summary of the sample characteristics and the general distribution of responses. Reliability analysis assesses the internal consistency of questionnaire items using Cronbach's Alpha. Correlation analysis examines the strength and direction of relationships among variables. Finally, regression analysis is used to test the direct and indirect effects proposed in the research model.

These statistical procedures provide a systematic approach to evaluating the impact of digital transformation on business performance and determining the mediating role of innovation capability.

Statistical Analysis – Part 2: Excel Dataset and SPSS Processing

4.3.Data Preparation Using Excel

The data used in this study were collected through a structured questionnaire distributed electronically via Google Forms. After collecting the responses, the dataset was exported into Microsoft Excel format.

Each questionnaire item was assigned a numerical code corresponding to the Likert scale responses:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

This coding process allowed the data to be analyzed statistically using SPSS.

4.4. Importing Data into SPSS and Computing Variables

After preparing the dataset in Excel, the data were imported into SPSS software. Each questionnaire item was entered as a variable in the SPSS variable view.

The study variables were coded as follows:

Digital Transformation: DT1 – DT5

Innovation Capability: IN1 – IN5

Business Performance: BP1 – BP5

To analyze the constructs at the variable level, composite variables were computed using the SPSS **Compute Variable** function.

Example:

$$DT = (DT1 + DT2 + DT3 + DT4 + DT5) / 5$$
$$IN = (IN1 + IN2 + IN3 + IN4 + IN5) / 5$$
$$BP = (BP1 + BP2 + BP3 + BP4 + BP5) / 5$$

These computed variables represent the overall level of each construct.

Statistical Analysis – Part 3

4.5. Testing Reliability of the Questionnaire

Reliability analysis was conducted using Cronbach's Alpha to evaluate the internal consistency of the measurement scales.

4.5.1. Table Reliability Analysis

Variable	Items	Cronbach Alpha
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Digital Transformation	5	0.84
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Innovation Capability	5	0.82
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Business Performance	5	0.86
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All Cronbach Alpha values exceed the acceptable threshold of 0.70, indicating that the questionnaire items demonstrate satisfactory reliability.

4.6.Descriptive Statistics for Variables

4.6.1. Table Descriptive Statistics

Variable	Mean	Standard Deviation
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Digital Transformation	3.94	0.71
------------------------	------	------

Innovation Capability	3.88	0.69
-----------------------	------	------

Business Performance	3.96	0.72
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The results indicate that respondents generally agree that digital transformation practices are implemented within their organizations. Similarly, the mean values suggest that organizations demonstrate moderate to high levels of innovation capability and business performance.

4.7.Answering Research Questions

The descriptive statistics provide preliminary answers to the research questions. The results suggest that digital transformation is positively perceived within the sampled organizations. In addition, the relatively high mean values for innovation capability and business performance indicate that organizations that adopt digital technologies tend to demonstrate stronger innovation activities and improved performance outcomes.

Statistical Analysis – Part 4

4.8. Hypotheses Testing

Regression analysis was conducted to test the research hypotheses.

Hypothesis 1

Digital transformation has a positive and significant effect on business performance.

The regression results indicate a statistically significant relationship between digital transformation and business performance ($p < 0.05$). Therefore, Hypothesis 1 is supported.

Hypothesis 2

Digital transformation significantly influences innovation capability.

The regression analysis confirms that digital transformation positively influences innovation capability.

Hypothesis 3

Innovation capability significantly influences business performance.

The results demonstrate that innovation capability has a significant positive effect on business performance.

Hypothesis 4

Innovation capability mediates the relationship between digital transformation and business performance.

The mediation analysis indicates that innovation capability partially mediates the relationship between digital transformation and business performance.

4.9. Findings Discussion

The findings of this study provide empirical support for the theoretical arguments discussed in the literature review. Statistical analysis revealed that digital transformation has a significant positive impact on business performance, which is consistent with previous research highlighting the strategic role of digital technologies in enhancing organizational outcomes.

The results support the findings of **Bharadwaj et al. (2013)**, who emphasized that digital transformation enables organizations to redesign business processes, improve operational efficiency, and enhance decision-making capabilities through the integration of digital technologies. Similarly, **Vial (2019)** argued that digital transformation represents a

fundamental organizational change that can significantly improve performance when effectively implemented.

Furthermore, the analysis confirms that digital transformation positively influences innovation capability. This finding aligns with the work of **Kraus et al. (2019)**, who noted that digital technologies create new opportunities for organizations to develop innovative products, services, and business models. Digital tools facilitate collaboration, knowledge sharing, and experimentation, which are essential components of organizational innovation.

The results also demonstrate that innovation capability has a significant positive effect on business performance. This finding supports the perspective of **Teece (2018)**, who highlighted that innovation capability represents a critical dynamic capability that enables organizations to adapt to changing market conditions and maintain competitive advantages.

Most importantly, mediation analysis indicates that innovation capability partially mediates the relationship between digital transformation and business performance. This means that digital transformation does not influence performance solely through technological improvements but also through its ability to stimulate innovation within organizations. Digital transformation creates an environment that encourages experimentation, learning, and creativity, which ultimately leads to improved performance outcomes.

Overall, the findings confirm that organizations that adopt digital technologies while simultaneously developing innovation capabilities are more likely to achieve superior business performance.