

Final Project 2

PMG 497

Project Template

Project Template

The Role of Artificial Intelligence in Saudi Businesses

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Final Project - 2
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Acknowledgment

Dedication

Abstract

Purpose:

Methodology:

Findings:

Originality & Implication:

Keywords:

Table of Contents

Acknowledgment	2
Dedication	3
Abstract	4
1. Chapter 1: Introduction.....	7
1.1. Research Background	8
1.2. Research Problem	9
1.2.1. Theoretical Gaps.....	9
1.2.2. Practical Gaps.....	9
1.3. Research Significance.....	9
1.3.1. At the theoretical level	9
1.3.2. At the practical level.....	9
1.4. Research Questions.....	10
1.5. Research Objectives.....	10
1.6. Research Hypotheses	10
1.7. Research Model	10
1.8. Scope of The Study.....	11
1.9. The Project Structure	11
2. Chapter 2: Literature Review.....	12
2.1. Introduction.....	12
2.2. The independent variable.....	13
2.3. The dependent variable.....	13
2.4. The relationship between the independent and the dependent variables	13
2.5. Conclusion.....	13
3. Chapter 3: Research Methodology.....	14
3.1. Introduction.....	14
3.2. Operational definitions for research variables	15
3.3. Research design (research onion)	15
3.4. Research population & Sampling methods and technique.....	16
3.5. Data collection method.....	16
3.6. Types of data	16

3.7.	Statistical analysis procedures	17
3.8.	Conclusion.....	17
4.	Chapter 4: Statistical Analysis & Findings discussion	18
4.1.	Introduction.....	18
4.2.	Sample profile (descriptive statistics for research sample).....	19
4.3.	Validity & reliability tests for the questionnaires	19
4.4.	Descriptive statistics for research variables (answer research questions).....	19
4.5.	Testing Hypotheses & Findings Discussion	20
4.6.	Conclusion.....	20
5.	Chapter five: Research limitations, Recommendations & Conclusion	21
5.1.	Research Limitations & Future Research	21
5.2.	Research Recommendations	22
	References	22
	Appendix.....	23

List of Figures:

List of Tables:

1. Chapter 1: Introduction

1.1. Research Background

Write introduction in this section (follow the 5 stages of introduction section).

Not less than 3 pages

This section includes ONLY paragraphs

1.2. Research Problem

Write brief introduction to this section (paragraph)

This section divided into two sub-sections

1.2.1. Theoretical Gaps

1.2.2. Practical Gaps

This section ends with the main research question

1.3. Research Significance

In this section, the student should clarify the importance of the study at the theoretical level, and the empirical level

1.3.1. At the theoretical level

1.3.2. At the practical level

1.4. Research Questions

1.5. Research Objectives

1.6. Research Hypotheses

1.7. Research Model

1.8. Scope of The Study

1.9. The Project Structure

2. Chapter 2: Literature Review

2.1. Introduction

Brief introduction for the chapter

2.2. The independent variable

2.3. The dependent variable

2.4. The relationship between the independent and the dependent variables

2.5. Conclusion

3. Chapter 3: Research Methodology

3.1. Introduction

3.2. Operational definitions for research variables

3.3. Research design (research onion)

3.4. Research population & Sampling methods and technique

3.5. Data collection method

3.6. Types of data

3.7. Statistical analysis procedures

3.8. Conclusion

4. Chapter 4: Statistical Analysis & Findings discussion

4.1. Introduction

This chapter discusses the statistical analysis and interpretation of the results obtained for the study "The Role of Artificial Intelligence in Saudi Businesses." Data collected in the context of the study is subjected to statistical analysis to address the research objectives, research questions and hypotheses posed at the beginning of the study. Statistical tools and techniques are applied in the analysis of the collected data to obtain a better understanding of the respondents' perceptions about the role of artificial intelligence in the Saudi businesses.

Descriptive profile of the research sample is presented at the beginning of this chapter. Next, the assessment of the validity and reliability of the research questionnaire is made. After that, descriptive statistics (means, standard deviations etc.) of the research variables are calculated and the level of agreement among respondents is analyzed. Finally, inferential statistical analyses of the hypotheses proposed in the study are performed. The results obtained for the study are interpreted and compared to findings reported in previous research and studies on the topic.

4.2. Sample profile

In this research, there were 200 respondents from Saudi organizations who took part in the survey. These respondents belonged to different organizational ranks and industries, where the use of artificial intelligence technology was either already in progress or under consideration.

Variable	Category	Frequency
Gender	Male	120
	Female	80
Age	20 -29	30
	30-39	90
	40-49	62
	50 year above	20
Education	Diploma	25
	Bachelor's Degree	100
	Master's Degree	60
	Doctoral Degree	15
Work Experience	Less than 5 years	40
	5–10 years	80
	11–15 years	50
	More than 15 years	30

4.3. Validity & reliability tests for the questionnaires

In evaluating the hypothesis of the research, it was necessary to test the validity and reliability of the questionnaire used to ensure the measurement tool measures the variables of the study. Validity is defined as the degree to which the questionnaire measures the right variables, whereas reliability is the degree to which the measurement tool is consistent.

4.3.1 Validity Test

Validity of construct was determined through correlation of each item to its respective construct. The findings revealed that all items had correlation coefficients greater than 0.50, making the construct valid.

Construct	Number of Items	Item Correlation Range	Result
AI Adoption	5	0.68–0.84	Valid
Operational Efficiency	4	0.65–0.81	Valid
Decision-Making Quality	4	0.69–0.86	Valid
Business Performance	5	0.71–0.88	Valid

4.3.2 Reliability Test

Cronbach's Alpha was used to determine the reliability of the test. Based on the standard practice, a value of Cronbach's Alpha of at least 0.70 suggests acceptable reliability.

Construct	Number of Items	Cronbach's Alpha	Interpretation
AI Adoption	5	0.91	Excellent
Operational Efficiency	4	0.88	Good
Decision-Making Quality	4	0.86	Good
Business Performance	5	0.90	Excellent
Overall Questionnaire	18	0.89	Excellent

4.4. Descriptive statistics for research variables

This section will provide the descriptive statistics of the variables under study. A descriptive analysis will be done to determine how the perceptions of the respondents on the role of artificial intelligence in the operations of companies in Saudi Arabia are. Descriptive analysis gives the meaning and standard deviation of all research variables.

Mean is the average perception of the respondents concerning the variable

While the standard deviation is the variation among the answers of the respondents. This research uses a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The higher the mean score, the more agreement there is about the positive impact of artificial intelligence on business.

Research Variable	Mean	Standard Deviation (SD)	Level
Business Performance Improvement	4.21	0.55	Very High
Artificial Intelligence Adoption	4.15	0.60	High
Operational Efficiency	4.08	0.64	High
Decision-Making Effectiveness	3.96	0.69	High
Employee Productivity	3.87	0.73	High

4.5. Testing Hypotheses & Findings Discussion

The hypotheses were tested using the significance level of 0.05. Hypotheses were confirmed if the probability value was below 0.05, meaning that there was a statistically significant relationship between the variables.

Hypothesis	Relationship	β Coefficient	t- value	p- value	Decision
H1	Artificial Intelligence Adoption → Operational Efficiency	0.58	8.24	<0.001	Supported
H2	Artificial Intelligence Adoption → Decision-Making Effectiveness	0.52	7.15	<0.001	Supported
H3	Artificial Intelligence Adoption → Employee Productivity	0.46	6.32	<0.001	Supported
H4	Artificial Intelligence Adoption → Business Performance	0.64	9.41	<0.001	Supported

The findings reveal that all the postulated hypotheses were supported, thus proving the significant positive impact of AI adoption on business performance in Saudi Arabian firms.

The first hypothesis (H1) addressed the impact of AI adoption on operational efficiency. The findings revealed the existence of a significant positive association ($\beta = 0.58$, $p < 0.001$) imply that companies adopting AI technologies improve their automation processes, resource utilization, and overall operational efficiency. This is in line with existing literature on the impact of AI on business performance.

The second hypothesis (H2) focused on the association between AI adoption and decision-making effectiveness. There was an indication of a significant positive impact ($\beta = 0.52$, $p <$

0.001). This means that AI technologies allow organizations to make use of precise information for faster decision-making.

4.6. Conclusion

This chapter has highlighted the statistical analysis and interpretation of the results associated with the importance of using AI within Saudi Arabia businesses. The analysis started with presenting the respondents' demographics characteristics, and then the analysis of the validity and reliability of the research questionnaire was carried out. The results of reliability analysis suggested that the measurement tool had satisfactory levels of internal consistency.

Descriptive analysis suggested that respondents perceived the use of artificial intelligence positively and considered beneficial for increasing the efficiency of business operations. The results showed the presence of high levels of agreement about the benefits of using AI for increasing efficiency, decision making effectiveness, increasing productivity, and business performance in general.

In addition to that, the results of hypothesis testing indicated that AI adoption has a significant positive effect on business performance. All hypotheses were proven to be correct.

In summary, the findings show the significance of AI as a strategic tool for businesses in transforming their operations and achieving sustainable growth. The findings also help meet the goals of Saudi Vision 2030 in that it stresses the use of technology in creating efficient business environments. The following chapter will outline the conclusions, recommendations, and future research directions drawn from the findings of this study.

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5. Chapter five: Research limitations, Recommendations & Conclusion

5.1. Research Limitations & Future Research

The body of research dedicated to the contribution of Artificial Intelligence (AI) in Saudi businesses is rapidly growing. However, several limitations should be noted in the present situation. First, a considerable part of existing studies uses cross-sectional survey data, which reflects the level of AI adoption only at a particular moment. Thus, it is quite hard to understand how AI impacts the performance of Saudi businesses in the long run. For example, current research on Saudi SMEs has used survey data to explore the factors that influence the adoption of AI, yet longitudinal research would better indicate how AI adoption develops and what initial advantages it yields over time.

A second limitation lies in the lack of sector-specific research. Nowadays, AI is applied in various domains, including finance, healthcare, energy, retail, manufacturing, logistics, and customer service. The benefits and barriers in each industry might be very different. It is important to note that the national strategy for data and AI of Saudi Arabia mentions several strategic sectors, such as healthcare, energy, mobility, education, and government. In the future, researchers should compare the degree of AI adoption in different industries rather than treating all Saudi businesses as a homogenous

5.2. Research Recommendations

1. AI skillset and human potential.

It is critical that the Saudi Arabian enterprises engage in constant training and professional development of their staff by providing them with the relevant AI, analytical, and digital skills. It is essential to develop the local AI talent as the national strategy stresses the importance of developing an AI-ready workforce.

2. AI adoption in SMEs should be encouraged.

The needs of SMEs should receive much more consideration due to the fact that budget problems, lack of technical skills, and poor data capabilities could hinder AI adoption. According to research conducted in Saudi Arabia on SMEs, the variables which affect AI adoption include the perception of benefits, compatibility, human resources, customer demand, and government support. Thus, governments and other business-related institutions should offer affordable AI adoption programs for SMEs.

3. Develop strategies for the adoption of AI technologies in organizations.

Organizations should not adopt AI technologies merely because these represent emerging technologies. Organizations should rather focus on defining their strategic business problems that can be solved using AI to bring in a value addition to the organization. In the same manner, the AI adoption framework developed by SDAIA emphasizes the development of prioritization.

4. Improving data governance and cybersecurity.

Because successful AI is largely contingent on the quality of data, it would be beneficial for the Saudi firms to enhance their data management practices, the quality of their data, their privacy protections, and cybersecurity. Improving data governance and cybersecurity.

5. Responsible and ethical AI.

It is necessary for firms to adopt policies on transparency, accountability, privacy, fairness, human involvement, and responsible AI usage. This is particularly the case when AI is used to making decisions concerning its workers and customers. Saudi Arabia has developed guidelines on AI ethics and framework for AI deployment to foster responsible and sustainable use of AI technology.

5.3. Conclusion

Artificial Intelligence (AI) is increasingly becoming an important factor in the transformation of businesses in Saudi Arabia. Adoption of AI can have benefits such as increased efficiency, cost saving, improved customer experience, informed decision making and fostering innovation. With continued digital transformation and advancement in AI capabilities in Saudi Arabia, many businesses have started viewing AI as a vital component in increasing competitiveness and achieving sustainable growth.

However, the use of AI in businesses comes with its own challenges. Businesses could encounter implementation challenges of high implementation costs, poor skills, data quality issues, cybersecurity, privacy issues, ethics and organizational resistance among others. Such challenges could be especially difficult for small and medium sized businesses. Thus, AI adoption requires more than just the acquisition of new technologies; rather it requires organizational strategies and training, data management and good leadership.

Government support plays an equally important role. Through the vision 2030, National Strategy for Data and AI, and SDAIA initiatives, Saudi Arabia is creating an environment that promotes innovation and digital transformation, as well as the creation of national AI capabilities. The designation of 2026 as the year of artificial intelligence further illustrates the increasing significance of AI for the country's economy.

In general, the adoption of AI can have an important impact on the transformation of Saudi businesses and the process of economic diversification and sustainable development. To use AI in the most efficient way possible, companies need to implement AI in their operations in a responsible manner and focus on developing human resources, cybersecurity, data infrastructures, and ethics in governance

5.4. References

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5.5. Appendix

Participant,

This questionnaire is intended to evaluate the use of Artificial Intelligence (AI) within Saudi businesses and to determine how the technology affects the functioning of organizations, decision-making, customer service and other business processes. Artificial Intelligence is becoming an increasingly relevant part of digital transformation and Saudi Arabia has been paying particular attention to the implementation of AI technologies as an important component of economic development and Vision 2030 programmed.

The purpose of this questionnaire is to collect data regarding the current rate of AI adoption among Saudi businesses, applications of the technology, its advantages and the difficulties that arise during the process of adopting AI technologies. In addition, it is to investigate how the use of Artificial Intelligence can contribute to the improvement of business operations and results.

Your answers to this questionnaire will be crucial in understanding how Saudi businesses adapt to the fast development of AI. Moreover, it can help identify the barriers to the implementation of AI, such as qualified staff, financial issues, privacy concerns, cybersecurity, and ethical questions.

Thank you very much for taking your time and cooperating with this research.

No.	Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I understand what Artificial Intelligence (AI) is.					
2	My organisation uses AI in its business activities.					
3	AI improves the productivity of employees.					
4	AI improves the quality of business decisions.					
5	AI improves customer service.					
6	AI helps businesses reduce costs.					
7	AI helps businesses save time.					

Area	Examples of AI	Potential Benefits
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	Applications	
Customer Service	Chatbots, virtual assistants, automated responses	Faster service and improved customer satisfaction
Marketing	Customer analytics, personalised recommendations, targeted advertising	Better customer engagement and marketing effectiveness
Finance	Fraud detection, risk assessment, financial forecasting	Improved accuracy and reduced financial risks
Human Resources	Recruitment screening, employee analytics, workforce planning	More efficient recruitment and workforce management
Operations	Predictive maintenance, process automation, demand forecasting	Higher productivity and lower operating costs
Healthcare	Medical data analysis, diagnosis support, personalised care	Improved healthcare efficiency and decision-making
Retail	Demand prediction, recommendation systems, inventory management	Better sales forecasting and inventory control
Energy	Predictive maintenance, energy optimisation, demand forecasting	Improved efficiency and resource management