

**AWARENESS OF ADOPTING ARTIFICIAL
INTELLIGENCE (AI) INTO SMALL AND MEDIUM
ENTERPRISES (SMES) IN SELANGOR**

MUHAMMAD ASRAF BIN MOHAMAD SAYOTI (A20A1508)

TANG SHEE EN (A20A2028)

NUR AININ SOFIYA BINTI MAZLISHAM (A20A1669)

NURUL SYUHAIDAH BINTI MUZAFFAR FEISAL (A21B3024)

UNIVERSITI

MALAYSIA

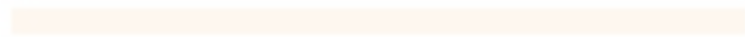
KELANTAN

DEGREE OF
BACHELOR OF ENTREPRENEURSHIP (COMMERCE) WITH HONORS

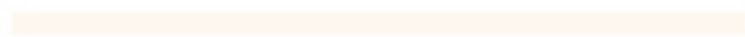
2024



UNIVERSITI



MALAYSIA



KELANTAN



UNIVERSITI
MALAYSIA
KELANTAN

FKP

**AWARENESS OF ADOPTING ARTIFICIAL
INTELLIGENCE (AI) INTO SMALL AND MEDIUM
ENTERPRISES (SMES) IN SELANGOR**

by

Muhammad Asraf Bin Mohamad Sayoti (A20A1508)

Tang Shee En (A20A2028)

Nur Ainin Sofiya Binti Mazlisham (A20A1669)

Nurul Syuhaidah Binti Muzaffar Feisal (A21B3024)

A thesis submitted in fulfillment of the requirements for the degree of
Bachelor of Entrepreneurship (Commerce) with Honors

**Faculty of Entrepreneurship and Business
UNIVERSITI MALAYSIA KELANTAN**

2024

THESIS DECLARATION

I hereby certify that the work embodied in this thesis is the result of the original research and has not been submitted for a higher degree to any other University or Institution.

OPEN ACCESS I agree that my thesis is to be made immediately available as hardcopy or on-line open access (full text)

EMBARGOES I agree that my thesis is to be made available as hardcopy or on-line (full text) for a period approved by the Post Graduate Committee.

Dated from _____ until _____.

CONFIDENTIAL (Contain confidential information under the Official Secret Act 1972)*

RESTRICTED (Contains restricted information as specified by the organization where research was done)*

I acknowledge that Universiti Malaysia Kelantan reserves the right as follows:

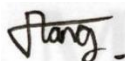
1. The thesis is the property of Universiti Malaysia Kelantan.
2. The library of Universiti Malaysia Kelantan has the right to make copies for the purpose of research only.
3. The library has the right to make copies of the thesis for academic exchange.



SIGNATURE
NAME: MUHAMMAD ASRAF BIN MUHAMAD SAYOTI

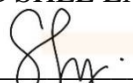


SIGNATURE OF SUPERVISOR
NAME: DR. NOR ASMA BINTI AHMAD



SIGNATURE
NAME: TANG SHEE EN

Date: 25 JANUARY 2024



SIGNATURE
NAME: NUR AININ SOFIYA BINTI MAZLISHAM



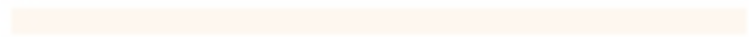
SIGNATURE
NAME: NURUL SYUHDAIDAH BINTI MUZAFFAR FEISAL

Date: 25 JANUARY 2024

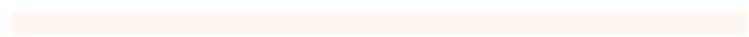
FKPP



UNIVERSITI



MALAYSIA



KELANTAN

ACKNOWLEDGMENT

We extend our heartfelt thanks to everyone who supported and assisted us during our research endeavors.

Firstly, we express our profound gratitude to Dr. Nor Asma Binti Ahmad, our supervisor, for her invaluable guidance, continuous support, and patience throughout the writing process. We deeply appreciate her willingness to dedicate her valuable time to provide us with insightful advice. Dr. Nor Asma Binti Ahmad effectively led us, refining our group's ideas and enabling us to comprehend and complete this academic writing. Thank you for consistently being there whenever we needed assistance.

A special acknowledgment goes to the dedicated members of our group—Asraf, Tang Shee En, Ainin Sofiya, and Nurul Syuhaidah—for their collective effort in successfully completing this task. This research would not have been possible without the collaboration and assistance of these individuals.

Lastly, we express our sincere gratitude and indebtedness to our coordinator and supervisor for their unwavering support, friendliness, and understanding throughout the project's duration. Our appreciation also extends to the respondents who generously devoted their time and effort to read, comprehend, and complete the questionnaires.

TABLE OF CONTENT

COVER PAGE i

BLANK PAGE ii

TITLE PAGE iii

THESIS DECLARATION iv

ACKNOWLEDGMENT v

LIST OF TABLES xi

LIST OF FIGURES xiii

LIST OF ABBREVIATIONSxiv

LIST OF SYMBOLS xv

ABSTRAKxvi

ABSTRACTxvii

CHAPTER 1: INTRODUCTION..... 1

 1.1 Background of the study 1

 1.2 Problem Statement..... 3

 1.3 Research Question 6

 1.4 Research Objectives..... 6

 1.5 Scope of the Study..... 7

 1.6 Significance of Study..... 7

 1.7 Definition of Term..... 8

 1.7.1 Small and Medium Enterprises (SMEs) 8

 1.7.2 Artificance Intelligence (AI)..... 8

FKP

FACULTY ENTREPRENEURSHIP AND BUSINESS

1.7.3 Lack of Expertise	9
1.7.4 Financial Constraint	9
1.7.5 Education and Training	9
1.7.6 Perceived Benefits	10
1.8 Organization of the Proposal	10
CHAPTER 2: LITERATURE REVIEW	11
2.1 Introduction	11
2.2 Underpinning Theory	11
2.3 Previous Studies	12
2.3.1 Awareness of Adopting AI into SME	12
2.3.2 Relationship between Lack of Expertise and Awareness of Adopting AI into SME ...	13
2.3.3 Relationship between Financial Constraints and Awareness of Adopting AI into SME	14
2.3.4 Relationship between Education and Training and Awareness of Adopting AI into SME	15
2.3.5 Relationship between Perceived Benefits and Awareness of Adopting AI into SME ..	15
2.4 Hypotheses Statement	16
2.5 Conceptual Framework	17
2.6 Conclusion	18
CHAPTER 3: RESEARCH METHODS	20
3.1 Introduction	20
3.2 Research Design	20

3.3 Data Collection Methods	21
3.4 Study Population	22
3.5 Sample size	22
3.6 Sampling Techniques	24
3.7 Research Instrument Development	25
3.8 Measurement of the Variables	26
3.9 Procedure for Data Analysis	26
3.9.1 Pilot Test	27
3.9.2 Descriptive Statistic	27
3.9.3 Reliability Test	28
3.9.4 Spearman Correlation	28
3.9.5 Normality Test	29
3.10 Conclusion	29
CHAPTER 4: DATA ANALYSIS AND FINDINGS	31
4.1 Introduction	31
4.2 Preliminary Analysis	31
4.3 Demographic Profile of Respondents	32
4.4 Descriptive Analysis	38
4.4.1 Dependent Variable and Independent Variable	38
4.4.2 Awareness of Adopting AI into SMEs	39
4.4.3 Lack of Expertise	40
4.4.4 Financial Constraints	41

FACULTY ENTREPRENEURSHIP AND BUSINESS

4.4.5 Education and Training..... 43

4.4.6 Perceived Benefits 44

4.5 Validity and Reliability Test 45

4.6 Normality Test..... 46

4.6.1 Awareness of Adopting AI into SMEs..... 46

4.6.2 Lack of Expertise 47

4.6.3 Financial Constraints..... 48

4.6.4 Education and Training..... 49

4.6.5 Perceived Benefits 50

4.7 Hypotheses Testing 51

4.7.1 Hypothesis 1..... 51

4.7.2 Hypothesis 2..... 52

4.7.3 Hypothesis 3..... 52

4.7.4 Hypothesis 4..... 53

4.8 Conclusion 54

CHAPTER 5: DISCUSSION AND CONCLUSION..... 55

5.1 Introduction..... 55

5.2 Key Findings..... 55

5.3 Discussion..... 56

5.3.1 Hypothesis 1..... 57

5.3.2 Hypothesis 2..... 57

5.3.3 Hypothesis 3..... 59

FKP

5.3.4 Hypothesis 4.....	61
5.4 Implications of the Study.....	60
5.5 Limitations of the Study.....	61
5.6 Recommendations/ Suggestion for Future Research.....	62
5.7 Overall Conclusion of the Study.....	63
REFERENCES.....	65
APPENDIX A – Draft of Questionnaire.....	71
APPENDIX B - Gantt Chart.....	75



LIST OF TABLES

Tables	Tittle	Page
Table 3.1	Krejcie and Morgan’s Table of Determining Sample Size	24
Table 3.2	Measurement of Likert Scale	27
Table 4.1	Result of Pilot Test	31
Table 4.2	Respondent’s Gender	33
Table 4.3	Respondent’s Ethnicity	34
Table 4.4	Respondent’s Age	35
Table 4.5	Respondent’s Education Level	36
Table 4.6	Respondent’s Marital Status	37
Table 4.7	Descriptive Statistics for Dependent Variable and Independent Variable	38
Table 4.8	Descriptive Statistics for Awareness of Adopting AI into SMEs	39
Table 4.9	Descriptive Statistics for Lack of Expertise	40
Table 4.10	Descriptive Statistics for Financial Constraints	42
Table 4.11	Descriptive Statistics for Education and Training	43
Table 4.12	Descriptive Statistics for Perceived Benefits	44
Table 4.13	Result of Reliability Test for Dependent Variable and Independent Variable	45
Table 4.14	Result of Normality test for Awareness of Adopting AI into SMEs	46
Table 4.15	Result of Normality test for Lack of Expertise	47
Table 4.16	Result of Normality test for Financial Constraints	48
Table 4.17	Result of Normality test for Education and Training	49
Table 4.18	Result of Normality test for Perceived Benefits	50

Table 4.19	Result of Hypothesis Test for Hypothesis 1	51
Table 4.20	Result of Hypothesis Test for Hypothesis 2	52
Table 4.21	Result of Hypothesis Test for Hypothesis 3	53
Table 4.22	Result of Hypothesis Test for Hypothesis 4	53
Table 5.1	Summary of Correlation Analysis	57



LIST OF FIGURES

Figure	Title	Page
Figure 2.1	Research Framework	18
Figure 4.1	Respondent's Gender	33
Figure 4.2	Respondent's Ethnicity	34
Figure 4.3	Respondent's Age	35
Figure 4.4	Respondent's Education Level	36
Figure 4.5	Respondent's Marital Status	37



LIST OF ABBREVIATIONS

DV	Dependent Variable
IV	Independent Variable
AI	Artificial Intelligence
SME	Small and Medium-sized Enterprises
SPSS	Statistical Package for Social Science
IDC	International Data Corporation
GDP	Gross Domestic Product
TOE	Technical Organizational and Environmental
IS	Information System
IT	Information System
H	Hypothesis

LIST OF SYMBOLS

%	Percent
>	More Than
<	Less Than
=	Equal
&	And
N	Population Size
H	Hypothesis
S	Sample Size
α	Cronbach's Alpha

ABSTRAK

Kajian ini bertujuan untuk meneroka integrasi Kepintaran Buatan (AI) dalam Perusahaan Kecil dan Sederhana (PKS) di Selangor. Reka bentuk penyelidikan menggunakan pendekatan kuantitatif, dan 384 data telah dikumpulkan melalui tinjauan dalam talian menggunakan borang dalam talian daripada pemilik PKS di Selangor, menggunakan pensampelan rawak mudah. Analisis kuantitatif melalui SPSS telah dijalankan untuk menganalisis data yang dikumpul. Keputusan menunjukkan bahawa pembolehubah tidak bersandar seperti kekurangan kepakaran, kekangan kewangan, pendidikan dan latihan, dan faedah yang dirasakan memberi impak yang ketara kepada pemilik PKS di Selangor. Yang penting, penerokaan mendalam tentang kesedaran mengguna pakai kecerdasan buatan ke dalam PKS di Selangor masih belum dipetakan. Analisis kuantitatif dengan SPSS mendedahkan kepentingan pembolehubah yang disebutkan di atas iaitu analisis korelasi Spearman mendedahkan hubungan positif antara pembolehubah bebas (kekurangan kepakaran, kekangan kewangan, pendidikan dan latihan, dan faedah yang dirasakan) dan pembolehubah bergantung (penggunaan kecerdasan buatan ke dalam PKS Selangor). Penemuan ini menunjukkan korelasi positif antara pembolehubah bebas seperti kekurangan kepakaran, kekangan kewangan, pendidikan dan latihan, dan faedah yang dirasakan, menandakan kesan yang besar terhadap faktor-faktor yang menyumbang kepada cabaran dalam menerima pakai AI, menekankan keperluan untuk dasar yang disasarkan untuk menangani cabaran ini dan meningkatkan kesedaran untuk menerima pakai PKS AI di Selangor.

ABSTRACT

The present investigation seeks to explore the integration of Artificial Intelligence (AI) in Small and Medium Enterprises (SMEs) in Selangor. The research design employs a quantitative approach, and 384 data points were collected through an online survey using Google Forms from SME owners in Selangor, employing simple random sampling. Quantitative analysis with SPSS revealed the aforementioned variables' significance which is the Spearman correlation analysis revealed a positive relationship between the independent variables (lack of expertise, financial constraints, education and training, and perceived benefits) and the dependent variables (adoption of artificial intelligence into Selangor SMEs). The findings reveal positive correlation between independent variables such as lack of expertise, financial constraints, education and training, and perceived benefits, signifying a substantial impact on the factors contributing to the challenges in adopting the AI, highlighting the need for targeted policies to address these challenges and enhance awareness of adopting AI SMEs in Selangor.

CHAPTER 1: INTRODUCTION

The chapter begins with background of the study followed by the problem statements, research objectives, research questions, significance of the study, definitions of terms, and ends with the summary of the chapter.

1.1 Background of the study

AI is a range of technologies or software that empower computers to perform many advanced functions, such as visual perception, understand, language translation, speech recognition and so on. AI systems can gain knowledge from data and generate recommendations or predictions based on the information (Laskowski & Tucci, 2023). The origin of AI can be traced back to the 1950s, with innovators like Alan Turing and John McCarthy laying the theoretical basic. Turing proposed the notion of a universal machine that could imitate any other machine, leading to the development of the famous "Turing Test" as a benchmark for assessing the ability of machine to display intelligent behavior indistinguishable from that of a human (Anyoha, 2017).

AI is transforming how companies run, and this change is being seen in numerous different areas. AI is a thing nowadays due to several key factors including big data, advancements in computing technology, economic advantages, and consumer demand. Big data is important for the company to help them understand their existing customers and explore someone else's customers (Segal, 2022). This is because the proliferation and widespread transmission of digital data in all forms, provides a rich source of information for artificial intelligence models. So the more data available, the more knowledge and information the AI system can learn and gain. This allows it to integrate all old and new information and make accurate predictions or decisions for the company. So it might help companies increase their

performance. However, in order to improve effectiveness of the operation of companies, AI has made great contributions to it. This is because as computing power advances, companies will be able to use the least amount of labor to complete the most complex tasks, such as analyzing huge amounts of data and performing huge data transfers (Haleem et al., 2022). This is all due to factors such as Moore's Law and hardware innovation in AI systems. Only in this way can computing power increase exponentially.

AI enables SMEs to gain valuable insights from their data. SMEs form the backbone of Malaysia's economy, contributing significantly to economic growth, employment, and innovation. According to The Star (2023), SMEs made up 97% of all business establishments in the country as of 2023. These enterprises operate across various sectors, including manufacturing, services, agriculture, and retail. According to the World Bank (2021) showed that 61% of small businesses and 62% of medium businesses in Malaysia increased their use of digital platforms. Additionally, 54% of small businesses and 81% of medium businesses invested in digital solutions. This shift towards digitalization reflects the growing recognition among SMEs of the importance of technologies like AI to enhance their competitiveness and efficiency in a quickly changing business environment. AI algorithms analyze user data and behavior on digital platforms to deliver personalized content, product recommendations, and offers. This helps in tailoring the user experience to personal preferences, increasing the likelihood of conversions.

Today, AI is still not yet widely adopted among local organizations in Malaysia, with only a modest 15% to 20% of companies actively incorporating it into their operations. It will gradually become one of the trends, ranging from healthcare to logistics industries (Paul, 2022). This is because many different fields have realized the power and future of AI. Powerful search engines, big data, powerful computing power and predictive capabilities, and other functions have become one of the reasons why many companies use it. A good instance of AI adoption

in Malaysia can be seen in the widespread adoption of AI-powered chatbots for customer service purposes (Nagayah, 2023). AI-driven chatbots are being used to effectively solve client inquiries, particularly in the e-commerce platforms and telecom sectors.

According to data from Microsoft and IDC Asia Pacific, AI will increase Malaysia's productivity by as much as 60% by 2021. The use of AI also helps SMEs create more efficient economic activities with less labor, thereby reducing operating costs. In addition, according to the SME Corporation, the SME sector contributes 36.6% of the country's GDP. This needs to be credited to the Malaysian government for providing entrepreneurs with artificial intelligence capabilities to help SMEs achieve their growth goals (Industry ARC). The application of AI will improve efficiency of employees' work and boost the company's revenue, thereby achieving a win-win situation.

1.2 Problem Statement

The integration of AI into businesses is a topic of immense significance and potential in Malaysia, where technological advancements are reshaping industries. However, a critical issue that demands attention is the formidable cost associated with implementing AI in small and medium-sized local businesses. However, to implement AI into the business industry especially in Selangor there are several challenges. Such as lack of expertise and financial constraint.

The widespread adoption of AI faces a significant challenge due to the scarcity of expertise in the field. While there is a growing recognition of the transformative potential of AI across various sectors, the shortage of skilled professionals capable of developing, implementing, and managing AI systems hinders the seamless integration of these technologies into Malaysian industries. This deficiency in AI expertise is acknowledged by industry experts and policymakers alike. According to a report by the World Economic Forum (WEF) on the

Future of Jobs, the demand for AI and machine learning specialists is escalating globally, and Malaysia is no exception to this trend. The report emphasizes the urgency for nations to address the skills gap by investing in education and training programs to cultivate a workforce equipped with the necessary AI competencies (World Economic Forum, "The Future of Jobs Report 2020). Overcoming this expertise deficit is crucial for Malaysia to fully capitalize on the potential benefits of AI and stay competitive in the global technological landscape.

AI technologies have the potential to transform business operations across diverse sectors, offering numerous advantages such as enhanced efficiency, data-driven decision-making, and improved customer experiences. As highlighted by Jiatong and Taesoo (2021), enterprises can incorporate AI into their routines in innovative ways, leveraging its capabilities to support dynamic capabilities and collaboratively create value. Despite the increasing adoption of AI by firms seeking to enhance and adapt their organizational processes, there is a dearth of theoretically grounded or empirically validated data guiding organizations in their strategic orientation. While the benefits of AI adoption are substantial, the associated substantial upfront investments pose a significant challenge for SMEs in Malaysia.

One of the challenges of AI adoption is financial constraint. This is because SMEs in Malaysia frequently encounter a challenging situation stemming from their constrained financial resources (Tan, 2020). These businesses must strategically allocate their funds to sustain their daily operations, maintain a competitive edge, and navigate regulatory and market challenges. AI, though promising, necessitates substantial budgets for data infrastructure, software development, employee training, and ongoing maintenance. However, the adoption of AI technologies, while promising, poses a significant financial burden on these SMEs. It necessitates substantial budgets not only for the acquisition of AI-related technology but also for essential components such as data infrastructure, software development, employee training, and the continuous maintenance of AI systems (Chong, 2021).

The conundrum lies in the undeniable long-term advantages of AI, while SMEs grapple with immediate financial obstacles (Wong, 2020). The challenge of sourcing capital, whether through loans, grants, or other means, and ensuring a positive return on investment can be daunting. Consequently, SMEs may find themselves in a position where they understand the potential of AI but struggle to justify the upfront costs and allocate budgets for its implementation. Acquiring the necessary capital, be it through loans, grants, or alternative means, and assuring a favorable return on investment, can be an intimidating task (Chen, 2019). This financial quandary not only affects individual businesses but also has broader implications for the overall competitiveness and innovation capacity of the SME sector in Malaysia. Therefore, addressing this challenge is essential for promoting inclusive economic growth and ensuring that SMEs can harness the transformative potential of AI without being stifled by substantial cost barriers.

Next, one of the challenges in adopting AI into SMEs in Malaysia is lack of knowledge and skills McKinsey (2019). Many SMEs may not be fully aware of the potential benefits and applications of AI in their businesses. Lack of knowledge about AI technologies and their potential impact can be a barrier to adoption. Business owners and decision-makers need to be educated about how AI can be integrated into their operations and the advantages it can bring. In the landscape of AI adoption in Malaysia, a significant impediment lies in the realm of education and training, as emphasized by the Organisation for Economic Co-operation and Development (OECD). The OECD's Economic Surveys: Malaysia 2019 report highlights the necessity for Malaysia to enhance its education system to meet the demands of the digital era, emphasizing the importance of equipping students and professionals with AI-related skills (OECD, "Economic Surveys: Malaysia 2019," 2019). The current challenge involves a gap in the incorporation of AI-centric curricula within educational institutions and a deficiency in specialized training programs for the workforce. Overcoming this educational hurdle is

imperative for Malaysia to cultivate a skilled talent pool capable of navigating the complexities of AI, fostering innovation, and ensuring sustained economic development in the age of digital transformation.

1.3 Research Question

The questions of the present study were stated as follow:

1. Is there any relationship between lack of expertise in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor?
2. Is there any relationship between financial constraint in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor?
3. Is there any relationship between education and training in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor?
4. Is there any relationship between perceived benefits in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor?

1.4 Research Objectives

The objectives of the present study were stated as follow:

1. To identify the relationship between lack of expertise in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.
2. To identify the relationship between financial constraint in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

3. To identify the relationship between education and training in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.
4. To identify the relationship between perceived benefits in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

1.5 Scope of the Study

This study will be conducted throughout Selangor. Selangor is the most developed and populous state in Malaysia, known for its urbanization, modern infrastructure, and diverse economic activities. It will focus on SMEs owner in urban area. The population is SMEs owner of Selangor in Malaysia. Moreover, the survey will be carried out online, the data will be obtained through an online questionnaire. This study chose a convenient way for sampling. The respondents surveyed through questionnaires.

1.6 Significance of Study

This study aims to investigate the awareness of adopting AI into SMEs in Selangor. This study will be significant for SME owner in Selangor. With the existence of AI in their company will definitely bring big changes in business such as increasing efficiency, quality and competitiveness while addressing various challenges of the SME industry. SME entrepreneurs are more at ease using a manual system and may feel a little less at ease with it. They thus begin to have more trust in what is taking place in front of them.

The significance of the study can give awareness to SME traders in adopting AI in SMEs. This awareness allows SME traders to be more inclined towards AI and allows them to strengthen their business.

In order to better understand the awareness of adopting AI into SMEs in Selangor, this study will analyze this prevalence whether it stems from lack of expertise, financial constraints, education and training and perceived benefits. Each related point will raise awareness of the use of AI for SME traders. Next proving the use of AI is proven to be an effective technology.

1.7 Definition of Term

1.7.1 Small and Medium Enterprises (SMEs)

Malaysia declared 2017 to be the Year of Promotion of Start-ups and SMEs in recognition of the vital role and contribution that SMEs play in the development of the nation's labor market and growth (Thaker et al., 2020). The majority of businesses in Malaysia are SMEs (Kuriakose & Tiew, 2022). Malaysians have access to employment options through SMEs. This shows that businesses of this kind are the backbone of the nation's economy (Ahmad et al., 2020). SMEs are divided into a variety of sectors, such as manufacturing and services.

1.7.2 Artificance Intelligence (AI)

AI is Artificial Intelligence, AI is a technology that aims to replicate human intellectual capacity in computer systems (Hassani et al., 2020). AI gives computers the ability to learn from their experiences, recognize patterns, come to conclusions, and carry out difficult jobs rapidly and effectively (Chen et al., 2020). AI is capable of efficiently and precisely analyzing vast volumes of data. This enables better decision-making and more accurate predictions (Thaduri, 2020).

1.7.3 Lack of Expertise

The term "lack of expertise" refers to a lack of knowledge or experience in a specific subject or profession. It can be used to describe someone who is unfamiliar with a certain subject, skill, or profession. According to Ikumoro (2019), SMEs have yet to fully appreciate the benefits of modern digital tools. As a result, they are not reaping the benefits of opportunities such as tools supplied, which is primarily due to a lack of technological understanding.

1.7.4 Financial Constraint

A financial constraint is something that limits a route of economic action and must instead be accommodated. It will have an impact on the ability of a business to borrow in order to invest, expand its production capacity, and raise its productivity. Financial constraints, according to Wu (2022), have a significant detrimental impact on the same. Furthermore, financial constraints reduce the importance of digital money.

1.7.5 Education and Training

The terms training and education reflect some of the subject's ideological diversity (Kelly, 2019). A person's level of education or training is the highest level of studies completed or currently being completed, regardless of whether this level was completed or the studies are provisionally or definitely unfinished. The type and duration of training required for effective fulfilment of the categorization level's duties. The process of obtaining skills and information through formal schooling, on-the-job training, or exposure to procedures is referred to as training. According to Ngibe (2019), education and training have an impact on SMEs' innovation.

1.7.6 Perceived Benefits

Perceived benefits are opinions of the favourable results associated with actions taken in reaction to an actual or imagined threat. Perceived benefits are closely tied to the price-value equation; some examples include status, convenience, the deal, brand, quality, choice, and so on. Perceived benefits are a positive or reinforcing outcome of an activity. The perceived benefits' motivational value is dependent on previous personal experiences or outcomes experienced by others (Gabal, 2020).

1.8 Organization of the Proposal

This study is divided into five chapters. Chapter 1 is the introduction chapter. It consists of “background of the study, problem statement, research question, research objectives, scope of the study, the significance of the study, definition of term and organization of the proposal”. Chapter 2 is about the literature review. It includes “introduction, underpinning theory, previous studies, hypotheses statement, conceptual framework, and conclusion”. Chapter 3 is the research methods. It comprises an “introduction, research design, data collection methods, study population, sample size, sampling techniques, research instrument development, measurement of the variables, a procedure for data analysis and conclusion”. Chapter 4 is the data analysis and findings. It includes “introduction, preliminary analysis, demographic profile of respondents, descriptive analysis, validity and reliability test, normality test, hypotheses testing and conclusion”. Chapter 5 is about the discussion and conclusion. It consists of “introduction, key findings, discussion, implications of the study, limitations of the study and recommendations for future research”.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Firstly, this chapter focuses on the theory used in this research which is technical, organizational, and environmental (TOE). Next, this chapter also discusses the dependent variable (DV) and independent variables (IV) in detail. This chapter ended with a summary.

2.2 Underpinning Theory

The purpose of the underpinning theory is to explain "how" and "why" certain things happen. The basic theory of the study is often seen as a lens. The underpinning theory is defined by Gregor (2002) as the theory that helps researchers in the information system (IS) to understand social contexts.

Organizational IT adoption is explained by several ideas. A wide, comprehensive paradigm for assessing technology adoption is the technical, organizational, and environmental (TOE) framework developed by Depietro et al. (1990) (Gangwar et al., 2015). The TOE has three settings. According to Depietro et al. (1990), the technological context explains the features and accessibility of the technology that affect the decision to use it. The organization, its innate qualities, and its internal decision-making procedures are all described in the organizational context. The setting in which the organization functions is known as the environmental context. One critique levelled at the framework is its lack of clarity on its primary constructs (Wang et al., 2010).

Alan Turing established two avenues for the advancement of artificial intelligence. First, the "learning machine" method points out that in order for computers to become intelligent, they must be able to test a wide range of situations and gather as much data as they can in order to learn how to handle complicated issues. The "intelligent machine" path, in which

a machine has completely evolved intelligence through its original programming, is in contrast to this method. In the early 21st century, artificial intelligence (AI) systems were first "intelligent machines," with processing capacity enabling "learning machines." AI is already present in many aspects of daily life, such as search and AdSense algorithms and self-driving automobiles (Haenlein, 2019).

The adoption decision passes through the awareness, deliberation, and intention to adopt phases before the adoption decision is taken, in accordance with the organizational innovation adoption framework developed by (Frambach et al., 2002). By taking into account supplier marketing initiatives and social networks as important factors affecting perceived innovative traits, it expands on the TOE framework. The management category is added to the IT adoption in SME framework (Nguyen, 2009), highlighting the significant influence that management and decision-makers have on adoption choices in SMEs.

Adoption of technology may be defined as the identification of a need, a choice, an attempt to apply, and complete application of innovation as a remedy (Gallivan, 2001). Stated differently, it pertains to the selection of technology that a company will employ or the option to embrace and implement a new idea (Dincbas et al., 2021). The primary focus of current research on the low rate of technology adoption in Malaysian SMEs is the need for further investigation into the reasons behind this phenomenon.

2.3 Previous Studies

2.3.1 Awareness of Adopting AI into SME

According to AlBar (2019), SMEs can play an important role in the national economies of emerging countries. Furthermore, SMEs are recognized as the backbone of most economies since they generate employment and a fertile foundation for entrepreneurship (Rahmana,

2019). According to Basar et al (2022) the total population of SMEs in Selangor is around 383,779, which made up of more than one third of the total SMEs in Malaysia.

However, as digitalization increases worldwide, it is extremely critical for Malaysian SMEs to spontaneously adopt digital technologies so as to spur economic growth (Ikumoro & Jawad, 2019). AI adoption presents various challenges for SMEs. One of them is a lack of understanding about what AI is. Despite the fact that some technologies are becoming more popular, SME adoption of digital technology remains quite low. While new digital technologies such as artificial intelligence continue to change businesses' operations. AI is distinguished from conventional information technologies by the use of technology that can learn, connect, and adapt. AI has the potential to provide numerous benefits to businesses. (Wei & Pardo, 2022)

The findings of a study on the awareness of AI adoption in SMEs in Selangor indicate that lack of expertise, financial constraints, education and training, and perceived benefits are all factors. All of this is to raise awareness about the usage of AI for SME traders.

2.3.2 Relationship between Lack of Expertise and Awareness of Adopting AI into SME

According to Bhalerao et al. (2022) one of the primary challenges to SMEs using AI is a lack of expertise. For many SMEs throughout the world, marketing solutions based on artificial intelligence are revolutionary. Business decision-makers can identify and comprehend consumer purchase behaviour through the use of artificial intelligence (AI), which helps SMEs to create strategies specific to their target market. However, SMEs may be unable to use AI due to a lack of expertise or comprehension of AI capabilities. SMEs may not know where to begin or that the technology exists and may be used to their benefit (Hansen & Bøgh, 2021). In addition, lack of expertise might be a reason for failure because AI adoption is sometimes done without value-based use cases. Because there is no return on investment, only expenses, these ventures fail because they do not provide any benefit (Westenberger et al., 2022).

Some SMEs still lack of expertise in adopting AI. While AI may further revolutionize digital platforms and how they operate, there is still a lack of research on how SMEs might use AI platforms to integrate AI technology (Wei & Pardo, 2022). Furthermore, Chaudhuri et al. (2022) states that SMEs must develop the necessary skills and expertise to adopt a technology such as AI and have the competencies required to use the new technology without any constraints. Employee competency makes the organization compatible. The organization must be well equipped during the adoption of AI in order to be ready to facilitate deployment without any difficulty. SME owners should have accurate and clear information about AI. This is because with enough information and knowledge about something, it makes it easier for them to accept and consider that AI facilities bring something positive.

2.3.3 Relationship between Financial Constraints and Awareness of Adopting AI into SME

A major constraint for SMEs is a lack of financial resources, which is the primary distinction between large and small-scale organizations; large organizations will likely have more financial resources and thus be able to invest capital in technological advancements and take on greater challenges and risks (Baabdullah et al., 2021). Financial constraints are economic limits on behavior. Millions of people face chronic or irregular financial difficulties. Many consumers face financial restrictions, which impose economic boundaries on their behavior and limit desired consumption. With millions of people living in chronic poverty or facing financial hardship (Hamilton et al., 2019). According to Ullah (2020), financial constraints have a significant role in affecting the expansion of SMEs in a transition economy. Following that, financial restrictions have a significant impact on the expansion of SMEs. This demonstrates that most SMEs fail to grow due to financial restrictions (Nkwabi & Mboya, 2019)

Regarding to Bhalerao et al. (2022) discovered that SMEs' low financial position is a significant source of barriers for SMEs to integrate AI into their business. Furthermore, SMEs confront financial constraints, making the application of AI difficult for them. The majority of studies on SMEs and AI have been focused on industrialized countries (Sharma et al., 2022)

2.3.4 Relationship between Education and Training and Awareness of Adopting AI into SME

Level education and training settings, according to Oliver et al. (2019), play a role. Employee education and training have a major and positive impact on all forms of innovation. This study shows that enterprises in Eastern European and Central Asian emerging economies can enhance innovation by expanding on-the-job training programmes or hiring more educated workers (Na, 2021). Next, entrepreneurs who invest in education and training will raise their skill level and productivity compared to others who are less skilled, and so higher income can be justified as a result of their investment in human capital. This can and will almost certainly lead to increased growth and profit in their firm (Rafiki, 2020)

The adoption of technology could offer SMEs a competitive advantage. Furthermore, the level of education of the owner was highly associated to annual revenue increase (Vijayakumar, 2021) According to Ikumoro and Jawad (2019), AI adoption enhances the success rate of adopters compared to non-adopter SMEs. Other studies have discovered numerous hurdles to the adoption of technology innovation in Malaysian SMEs, such as an individual's education level of expertise.

2.3.5 Relationship between Perceived Benefits and Awareness of Adopting AI into SME

Positive relationships exist between behavioural intention and perceived benefits. Attitudes are influenced by the perceived benefits of a certain product or service, with consumers displaying a more favorable attitude depending on the perceived benefits (Loh &

Hassan, 2022). Business organizations' fundamental mission is to maximize earnings and financial gain. As a result, decision-makers are compelled to employ cost-benefit analysis. (Patma et al., 2020). According to Mehroliya et al. (2021) benefits perceived in terms of convenience, enjoyment, and increased value linked with the services. Also describes a person's evaluation of something's value or effectiveness.

In Schaefer et al. (2021) perceived benefits are defined as those that are perceived rather than those that are really provided or facilitated by technology. Another significant component in the technological dimension is the perceived benefit of AI, which takes into consideration the beneficial perception level of AI in comparison to previous breakthroughs (Dora et al., 2022).

2.4 Hypotheses Statement

Hypotheses serve as clear and testable statements that illustrate the expected relationship between variables in a study. Research is supported by hypotheses, which lead to new discoveries in knowledge.

Hypotheses 1

H0: There is no significant relationship between lack of expertise in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

H1: There is a significant relationship between lack of expertise in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Hypotheses 2

H0: There is no significant relationship between financial constraint in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

H2: There is a significant relationship between financial constraint in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Hypotheses 3

H0: There is no significant relationship between education and training in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

H3: There is a significant relationship between education and training in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Hypotheses 4

H0: There is no significant relationship between perceived benefits in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

H4: There is a significant relationship between perceived benefits in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

2.5 Conceptual Framework

As shown in figure 2.1, this study develops a conceptual framework for evaluating the awareness of adopting artificial intelligence (AI) into small and medium enterprise (SMEs) in Selangor. Four independent variables and one dependent variable are related, as shown in figure 2.1 lack of expertise, financial constraint, education and training and perceived benefits are all independent of this study. While SMEs in Selangor is the dependent variable.

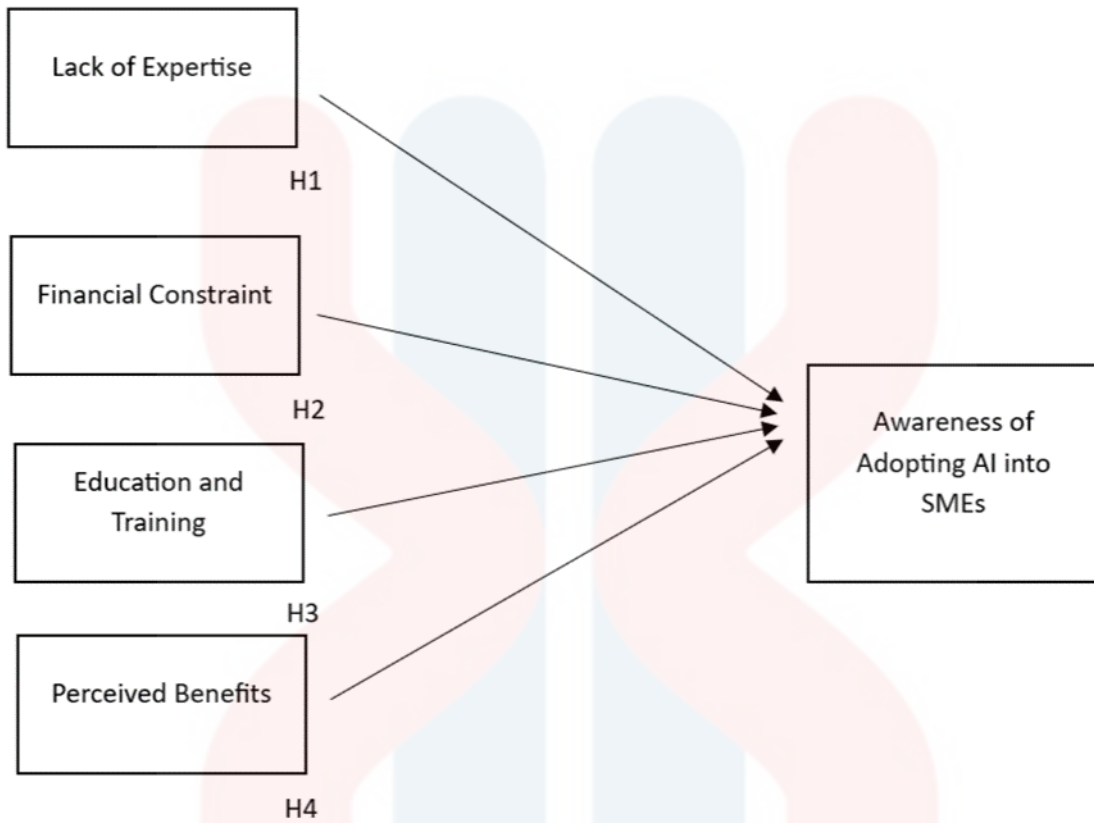


Figure 2.1 Research Framework

2.6 Conclusion

The chapter provides a detailed exploration of the dependent variable (DV), identified as "small and medium enterprises," and elucidates on independent variables (IV) including "artificial intelligence," "perceived benefits," "previous experience," and "education and training level." Moving to Chapter 2.2, the underpinning theories are examined, encompassing Alan Turing's perspectives on artificial intelligence evolution. The TOE framework is scrutinized within the context of organizational IT adoption, acknowledging critiques regarding construct clarity. The chapter seamlessly integrates the organizational innovation adoption framework and SME framework, creating a comprehensive theoretical backdrop. Chapter 2.3 delves into previous studies on Malaysian SMEs, underscoring their pivotal role

in the economy. Lastly, Chapter 2.4 formulates hypotheses, asserting that increased AI adoption augments operational efficiency, positively influences financial performance, and enhances competitiveness within Selangor SMEs. This well-structured framework sets the stage for a thorough exploration of AI adoption in the SME landscape.

CHAPTER 3: RESEARCH METHODS

3.1 Introduction

This chapter describe the research methodology and sampling that the research used in the study. Research technique is the approach or plan used to study a subject. The methodology section of a research paper helps readers assess the study for overall reliability and validity. The study strategy, which covers the demographic goal and challenge of obtaining it is largely developed using a research technique. The significance of the decisions that will be made as a result of the inquiry is one of the aspects that will affect the research approach.

3.2 Research Design

Research design refers to the methods and techniques employed in the study to evaluate and gather any relevant information. The method used depends on the type of data needed to answer the research question. There are two types of methods namely quantitative and qualitative. Quantitative data is data that can be counted or measured. It uses info that is numerical. This quantitative method is suitable if the researcher wants to quantify something or test a hypothesis (Asenahabi, 2019). While qualitative data is descriptive, unlike descriptive data, which includes things like colour and emotion that can be observed but not measured (McCulloch, 2022). Qualitative data is suitable for exploring ideas, thoughts, and meanings.

This study uses quantitative methods, making it more objective. Quantitative data refers to data that are countable and measurable. As an illustration, surveys, one of the more popular business research techniques, enable researchers to collect a large amount of data in a very short period of time and at a low cost (Yadav, 2020). Quantitative surveys are always chosen when it's necessary to obtain numerical outputs that support research objectives. Also, the quantitative approach places a strong emphasis on objective measurement and statistical,

mathematical, or numerical analysis of data gathered via surveys, questionnaires, and polls as well as the use of computing techniques to modify statistical data that has already been collected (Jimenez, 2023). In addition, it deals with gathering numerical data and extrapolating it to a population or a specific event. "How much," "how many," or "how often" can be found out from it (Yamada, 2019). Quantitative research methods involve the collection and analysis of numerical data to reach findings, forecast outcomes, or verify hypotheses. This method is commonly used in various fields, including mathematics science, social sciences, natural science, and business studies (Mohajan, 2020).

3.3 Data Collection Methods

Primary data collecting is known as the method of obtaining information straight from a first-hand source. More specifically, it's information that's gathered by the organization that plans to utilize it. Methods include surveys, interviews, observation, and focus groups.

A questionnaire has been used in this study as a tool to ask respondents a series of questions and gather information. That is intended to describe the characteristics of a group or very large group. A questionnaire is a set of structured questions with predefined response options. It is usually in written form and can be distributed online or on paper. Completed questionnaires will be distributed to SME owners in Selangor online. The main purpose of a questionnaire is to get particular information from respondents, usually for data gathering or research projects. Its main objective is to acquire standardized data. One of the benefits of using questionnaires is their cost-effectiveness, as they can be created with only web tools (Singh, 2021). Next, the questionnaire is the best approach to gathering information from a large number of people at once through wide-scale data collecting (Kettel, 2022). In conclusion, standard responses in questionnaires represent a predetermined choice or scale that is provided to participants for their responses. These options are carefully designed and presented in a

consistent format to ensure uniformity in data collection. Standard response formats can take many forms, including multiple-choice questions, Likert scales, rating scales, or semantic differential scales (Taherdoost, 2022). This helps respondents being able to respond to the researcher's questions.

3.4 Study Population

This study will focus on SMEs owner across Selangor. According to the Statista Research Department of Statistics (2023), the population of Selangor was currently estimated at approximately 7.2 million. According to Smart Selangor (2023), there are list of SME establishments in Selangor in 2023 is approximately 30,115. There are some types of businesses suitable for AI implementation, particularly for SMEs, such as E-commerce, healthcare, manufacturing, hospitality and logistics. The reason for choosing this population is Selangor has the highest concentration number among SMEs. According to Haji (2021), Selangor attracted 18.4 billion ringgit worth of foreign investments, making it ranked as the top pick for investment destination in Malaysia for three years. The population of this study research is individuals and organizations of SMEs in Selangor. This group includes owners and managers of small and medium-sized enterprises in Selangor. They are the key decision-makers who would be responsible for implementing AI technologies in their businesses. In this study, the respondents must be involved in the SMEs in order to be eligible to participate.

3.5 Sample size

A sample is data a researcher creates to select a representative sample from a large population using a predetermined sampling method. For this study, researchers prepared samples. The sample size is always smaller than the population. In some cases, the study population may not be related to humans. It can refer to studied species, animals, countries,

organizations, objects, and collections from any era. Techniques for studying broader populations include targeted and effective types of research, such as direct random sampling and systematic sampling.

Nevertheless, in this study, the population from the sample size obtained consists of the following individuals participating in:

SMEs owner

In this study, the researcher used purposive quantitative sampling research. Data will be collected easily because the researcher does not need to be present when completing the questionnaire. This is useful for large groups where integrators are impractical. According to Krejcie and Morgan (1970), the sample size population is 384 respondents.

Table 3.1: Krejcie and Morgan’s Table of Determining Sample Size

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Source: Krejcie and Morgan, 1970

3.6 Sampling Techniques

Sampling methods are divided into two primary types which are probability sampling and non-probability sampling. Using probability sampling, which selects at random, you can draw accurate statistics about the whole group (Lohr, 2021). While, non-probability sampling makes use of non-random selection based on convenience or other factors, making data collection simple (Pace, 2021).

Probability sampling was chosen for this study. This sampling is mainly used in quantitative research (Pace, 2021). Probability sampling is the process of selecting a sample from a population when the selection is based on the randomization principle, often known as chance or random selection. Researchers commonly use random sampling to reach general generalizations about a population (Matt & Cook, 2019). The size of the population must first be known by researchers in order to verify that any bias is eliminated. Furthermore, in order to gather replies from a large population, they must use a straightforward random sampling procedure. In this study, 384 questionnaires were collected and selected using this method.

A simple random technique was used by the researcher since it prevented bias. This implies that the probability of every individual in the wider population being chosen for the subset is the same. This sampling method is simple to use, making it a useful option for investigations that don't call for a lot of specialized knowledge. Additionally, since this approach does not require any specialized knowledge or acquaintance with the larger society, it is simple for the researcher to obtain reliable data (Lohr, 2021). For the study, representative SME respondents in Selangor were chosen using random sampling. The flow of data collection for this study by selecting a simple random sample of 30,115 SMEs in Selangor through the

list of SMEs in Selangor. Then, assign a number to every SME in Selangor database from 1 to 30,115 and use a random number generator to select 384 numbers.

3.7 Research Instrument Development

A survey is a method of gathering standardized information from people using a questionnaire. In research technique, there are four sorts of surveys that can be utilized to perform this study such as personal interviews, mail surveys, telephone surveys, and internet (online) surveys and we use Google Forms for our respondents to fill up the survey. Research instruments are the tools to get the data on a data that researchers did from a research subject. For example, like questionnaires and interviews. In this study, the data was collected through questionnaires to find information and details about the awareness in adopting artificial intelligence into SMEs in Selangor.

The questionnaire is consisting and dividing into three sections, where Section A, Section B, Section C. Section A contains the demographic profile of respondents including gender, ethnicity, age, education level and marital status. In Section B, the information in relation to the dependent variables about SMEs in Selangor. Section C was designed to know general information of about the awareness in adopting AI into their business.

In this study, the questionnaire is administered through an online platform utilizing Google Forms, which will be distributed to respondents comprising business owners or restaurant managers not currently adopting AI in their operations. This research tool offers convenience, cost-effectiveness, and efficiency in data collection, as respondents can easily access and complete the questionnaire through shared links on various platforms such as WhatsApp, Instagram, Facebook, QR codes, and Telegram. Leveraging online questionnaires accommodates the busy schedules of participants, enabling them to respond at their convenience, thereby enhancing the quality of the collected data.

3.8 Measurement of the Variables

The participants are required to complete a questionnaire composed of three sections, labelled A, B, and C. Section A contains the demographic profile of respondents. In section B, the information in relation to the dependent variables about SMEs in Selangor. Section C was designed to know general information about the awareness in adopting AI into their business, where respondents rate their agreement with five statements using a scale of 1 (strongly disagree) to 5 (strongly agree).

In addition, the questionnaire will be given multiple choice and likert scale for the respondent. Multiple choice questions are very important for the respondent to choose an answer from the list of options provided in the question while likert which the information would measure as of one to five for strong disagree to strongly agree respectively. There are five point likert scales ranging from 1 to 5 that were used for each part of the questionnaire.

Table 3.2: Measurement of Likert Scale

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

3.9 Procedure for Data Analysis

Data series play a crucial role in research as they significantly impact data interpretation. This study focuses on business owners who have not embraced AI technology in their operations. To collect data, our group have utilized Google Forms, distributing surveys

via email, WhatsApp, questionnaire links and Qr code. Respondents were required to complete all three sections of the survey, and through these questionnaires, the researcher gathered vital insights from the participants in the field. In this analysis we using Pearson correlation as out type of analysis taste.

3.9.1 Pilot Test

A pilot test serves as the initial phase for researchers to carry out their studies in more targeted and smaller areas, showcasing reasonable variability within the entire study. To assess the comprehensibility of the questions posed by the researchers, these queries were distributed among SME business owners in Selangor. The appropriate methodology for conducting a pilot study, including its purpose, sampling procedures, and relevant analytical tests, was followed in this investigation. In this instance, 30 questionnaires were gathered and chosen through this method to serve as pilot tests in the study.

3.9.2 Reliability Test

In this study, the questionnaire's acceptability and validity were assessed through reliability analysis. Consequently, the survey questionnaire was distributed to various SME business owners in Selangor. To evaluate the study's dependability, Cronbach's Alpha was employed, a reliability analysis performed by SPSS. There are two versions of Cronbach's Alpha used in reliability analysis: normal and standard.

The normal version was utilized to measure the variables in this study. This version is often applied when items are scaled to generate a single score for the scale. In this investigation, the variables were measured using the normal version. An acceptable reliability value is 0.6, and if the questionnaire's reliability result exceeds 0.6, it is considered "reliable."

Moreover, responses to the questions were assessed on a Likert scale ranging from "Strongly agree" to "Strongly disagree," with a maximum possible score of 5. Examining the

factors helped determine the questionnaire's reliability. Cronbach's Alpha, as a result of this analysis, provided reliable measurements for the relevant variables in this study. It is hypothesized that future research could benefit from these statistical findings.

3.9.3 Descriptive Statistic

Brief descriptive statistics are compiled into a data set that represents the complete. Population or a sample in descriptive statistics. The primary goal is to provide an overview of the samples and measurements conducted during a study. When combined with visual analyses, descriptive statistics play a crucial role in quantitative data analysis. Unlike inferential statistics, which draw conclusions from existing data, descriptive statistics focus on elucidating the presented data.

The main purpose of descriptive statistics is to explain the behaviour of a sample data set. Given the multitude of variables in a study, descriptive statistics help distill the extensive data into its most fundamental form. Both central tendency and variability measures are employed to assess descriptive statistics. Tables, graphs, or extensive discussions are used in conjunction with these measures to enhance the understanding of the precise significance of the analyzed data. Various methods are available to characterize the data in this context.

3.9.4 Normality Test

Normality tests in statistics are employed to assess whether a dataset aligns well with a normal distribution model and to calculate the probability that a random variable, forming the basis of the dataset, follows a normal distribution. More precisely, these tests fall under the category of model selection and can be interpreted in various ways, depending on one's understanding of probability.

In the realm of descriptive statistics, the goodness of fit of a normal model to the data is gauged. If the fit is inadequate, it suggests that the data is not suitably modeled by a normal distribution in that context, and no judgments are passed on any underlying variable. In frequentist statistics and statistical hypothesis testing, data is assessed against the null hypothesis that it is regularly distributed.

3.9.5 Spearman Correlation

The Spearman correlation is essentially the Pearson correlation applied to the rank values of two variables. While Pearson's correlation measures linear relationships, Spearman's correlation assesses monotonic relationships, regardless of linearity. In the absence of repeated data values, a perfect Spearman correlation of +1 or -1 occurs when each variable is a perfect monotone function of the other. Intuitively, a high Spearman correlation indicates similar or identical rankings between the two variables, while a low correlation suggests dissimilar or fully opposed rankings. Spearman's coefficient is suitable for both continuous and discrete ordinal variables, and both Spearman's ρ and Kendall's τ can be viewed as special cases of a more general correlation coefficient.

3.10 Conclusion

This chapter begins with an introduction and then goes on to describe the study design that will be used in this study. The methodologies employed in this study have been described in detail within this chapter. Furthermore, this chapter outlines the measures taken by the researcher to ensure the validity and reliability of the collected data, underscoring their importance in accurately translating the data into a written report. The research paper's methodology and sample are described in Chapter 3, with a focus on the application of quantitative research techniques to examine AI adoption in Malaysian SMEs in Selangor. Online surveys are used largely for data collection, which ensures participant convenience and

cost-effectiveness. The population under investigation consists of individuals and organizations operating in Selangor. A total of 384 respondents were selected by probability sampling techniques. Quantitative approaches are used in data analysis; quantitative data is analyzed with SPSS software and the Spearman Correlation Coefficient to evaluate relationships and relevance. This chapter offers a thorough summary of the procedures employed for data collecting, analysis, and research design in order to meet study's goals.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter encompasses a comprehensive examination and primary research findings, incorporating reliability analysis, demographic characteristics of participants, descriptive analysis, and Spearman’s correlation coefficient analysis. The data for this study were derived from a Google Form created by the researcher, with a sample size of 384 respondents, from whom the research data were subsequently collected. Subsequent to the data collection process, IBM SPSS Statistics version 25 was employed to analyze the gathered information. It is essential to note that Chapter 2 outlined hypotheses, categorized as either accepted or rejected, are further explored in this chapter. Various tests, including descriptive analysis, Normality test, reliability test, hypotheses testing, among others, will be executed to fulfill the objectives of this chapter. The ensuing sections elaborate on the specific details of these analyses and discussions.

4.2 Preliminary Analysis

4.2.1 Pilot Test

A pilot test is small-scale research done before a real experiment is done. Its purpose is to test and improved technique. All the questionnaire’s items were tested for reliability using a total of 30 data points.

Table 4.1: Result of Pilot Test

Variable	Cronbach’s Alpha	No of Item	N
Awareness of adopting AI into SMEs	0.504	5	30

Lack of expertise	0.554	5	30
Financial constrains	0.816	5	30
Education and training	0.391	5	30
Perceived benefits	0.708	5	30
All Variable	0.866	25	

Awareness of adopting AI into SMEs ($\alpha = 0.504$), this variable has a Cronbach’s Alpha of 0.504, indicating a moderate level of internal consistency. It consists of 5 items, and the data is based on a sample size of 30. The lack of expertise variable shows a Cronbach’s Alpha of 0.554, suggesting a moderate level of internal consistency. It comprises 5 items, and the sample size is 30. Financial constraints exhibit a high level of internal consistency with a Cronbach’s Alpha of 0.816. Similar to the previous variables, it includes 5 items, and the sample size is 30. Education and training ($\alpha = 0.391$): This variable has a Cronbach’s Alpha of 0.391, indicating a lower level of internal consistency. It consists of 5 items, and the sample size is 30. Perceived benefits show a Cronbach’s Alpha of 0.708, suggesting a relatively high level of internal consistency. It includes 5 items, and the sample size is 30. Considering all the variables together, the overall internal consistency is higher with a Cronbach’s Alpha of 0.866 for the set of 25 items.

4.3 Analysis Demographic Profile of Respondents

4.3.1 Reliability Test

Frequency analysis constituted a crucial component of the foundational examination in this study. Section A of the survey encompassed data pertaining to respondents' gender, ethnicity, age, marital status, and educational level, among other demographic factors. The demographic attributes of the participants were presented in the form of both a table and a pie

chart for visual representation.

Frequency Table

Table 4.2: Respondent’s Gender

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	169	44.0	44.0	44.0
	Male	215	56.0	56.0	100.0
	Total	384	100.0	100.0	

Gender / Jantina
384 responses



Figure 4.1: Respondent’s Gender

The distribution of respondents' gender was illustrated through both a table and a figure. Among the total respondents, 215 were male, constituting 56.0%, and 169 were female, making up the remaining 44.0%. In essence, this survey involved the participation of 384 respondents, with 56.0% being male and the remaining 44.0% being female.

Table 4.3: Respondent's Ethnicity

Ethnicity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chinese	140	36.5	36.5	36.5
	Indian	64	16.7	16.7	53.1
	Malay	174	45.3	45.3	98.4
	Other	6	1.6	1.6	100.0
	Total	384	100.0	100.0	

Ethnicity / Bangsa
384 responses

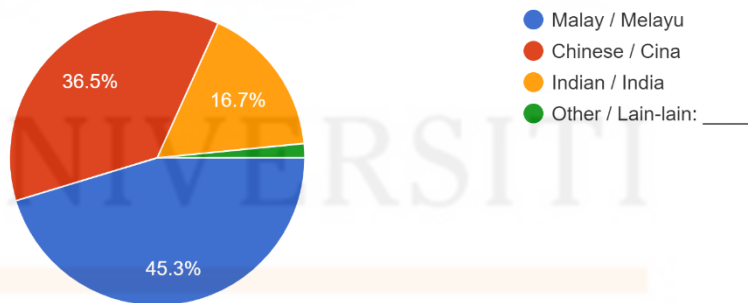


Figure 4.2: Respondent's Ethnicity

The total responses were shown by ethnicity in the table and figure. Out of the total 384 respondents, 174 identified as Malay, 140 as Chinese, 64 as Indian, and 6 provided other responses. The accompanying figure depicted the distribution, highlighting that Malay respondents constituted the largest portion (45.3%), followed by Chinese respondents

FACULTY ENTREPRENEURSHIP AND BUSINESS

(36.5%), Indian respondents (16.7%), and respondents with other affiliations (1.6%).

Table 4.4: Respondent’s Age

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 Years Old	7	1.8	1.8	1.8
	19-30 Years Old	133	34.6	34.6	36.5
	31-50 Years Old	174	45.3	45.3	81.8
	50 Years Old and above	70	18.2	18.2	100.0
	Total	384	100.0	100.0	

Age / Umur
384 responses

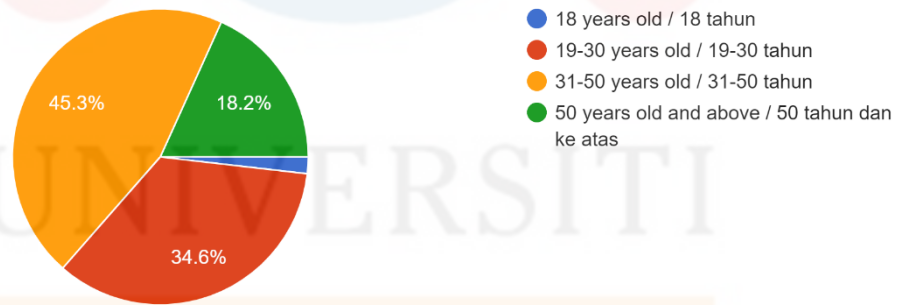


Figure 4.3: Respondent’s Age

The total responses were shown by age in the table and figure. There were 384 respondents, including 7 the age of 18, 133 between the ages of 19 and 30, 174 between the ages of 31 and 50, 70 between the ages of 50 and above.

Table 4.5 Respondent’s Education Level

Education Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor’s Degree	157	40.9	40.9	40.9
	Diploma	98	25.5	25.5	66.4
	Master’s Degree	14	3.6	3.6	70.1
	SPM	88	22.9	22.9	93.0
	STPM or Foundation	27	7.0	7.0	100.0
	Total	384	100.0	100.0	

Education Level / Tahap Pendidikan
384 responses

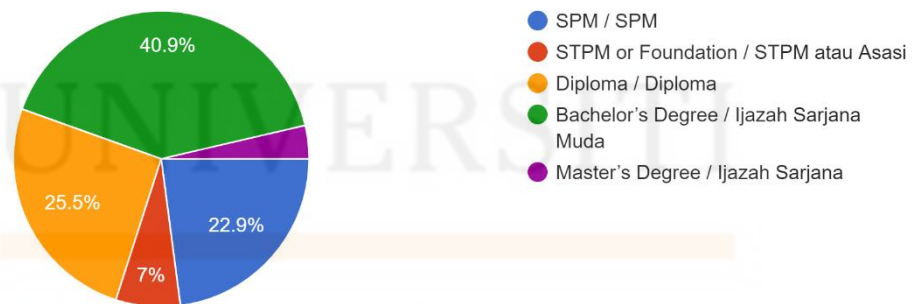


Figure 4.4: Respondent’s Education Level

Table and Figure showed the total respondents by educational level. There were 384 respondents who consisted of SPM (88 respondents), STPM (27 respondents), Diploma (98 respondent), Master’s Degree (14 respondent) and Bachelor’s Degree (157 respondents) had

responded to the questionnaire. Figure showed the highest percentage of respondents was Bachelor’s Degree (40.9%) and followed by Diploma which was 25.5%, SPM 22.9%, STPM 7.0% and the last was Master’s Degree (3.6%).

Table 4.6 Respondent’s Martial Status

Martial Status					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Divorced	10	2.6	2.6	2.6
	Married	250	65.1	65.1	67.7
	Single	124	32.3	32.3	100.0
	Total	384	100.0	100.0	

Marital Status / Status perkahwinan
384 responses

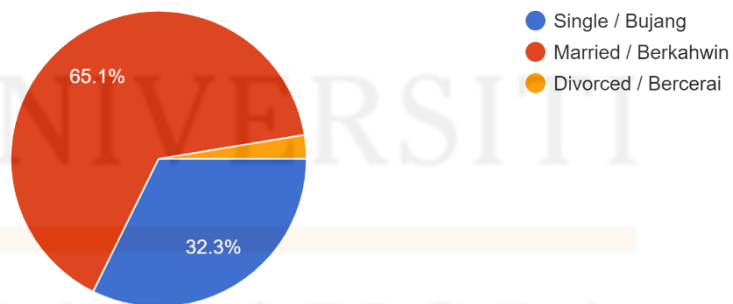


Figure 4.5: Respondent’s Marital Status

The total responders for status were shown in the table and figure. There were 384 respondents, from that amount 250 are married with 65.1% follow by single with 124 respondent (32.3%) while divorced is 10 respondent or 2.6% in overall from the respondent.

4.4 Descriptive Analysis

The mean and standard deviation for the questionnaire sections B, and C have been examined in this study.

4.4.1 Dependent Variable and Independent Variable

Table 4.7: Descriptive Statistics for Dependent Variable and Independent Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Awareness of adopting AI into SMEs	384	2.0	5	4.4802	.47958
Lack of expertise	384	1.20	5	4.4198	.51951
Financial constrains	384	1.60	5	4.4885	.50757
Education and training	384	2.00	5	4.5078	.48898
Perceived benefits	384	2.00	5	4.4443	.54348
Valid N (listwise)	384				

In this study, a comprehensive exploration of key variables related to small and medium enterprises (SMEs) is provided through insightful descriptive statistics. The awareness of adopting AI into SMEs is notably high, as evidenced by a mean value of 4.4802, reflecting a strong understanding among 384 respondents. Acknowledgment of challenges such as a lack of expertise and financial constraints is evident, with mean values of 4.4198 and 4.4885, respectively. The role of education and training is positively perceived (mean of 4.5078), highlighting its significance in SME operations. Additionally, perceived benefits exhibit a mean of 4.4443, indicating a generally favorable view. The standard deviations across variables signify varying degrees of agreement among respondents. This comprehensive analysis,

considering all 384 responses, illuminates the nuanced landscape of factors influencing SMEs, providing a foundation for more in-depth insights in subsequent stages of the study.

The maximum value represents the highest observation in the dataset for a particular variable. It indicates the upper limit or the most extreme value recorded. In the descriptive statistics you provided, for example, the "Awareness of adopting AI into SMEs" has a maximum value of 5.00. This means that among the 384 respondents, 5.00 represents the highest level of awareness recorded in relation to adopting artificial intelligence in small and medium enterprises.

Conversely, the minimum value represents the lowest observation in the dataset for a specific variable. It indicates the lower limit or the least extreme value recorded. In your data, for instance, the "Lack of expertise" variable has a minimum value of 1.20. This implies that 1.20 is the lowest level of acknowledgment of expertise-related challenges among the 384 respondents.

The standard deviation is a measure of the amount of variation or dispersion in a set of values. It provides insights into how spread out the values are from the mean (average) of the dataset. A smaller standard deviation suggests that most values are close to the mean, while a larger standard deviation indicates a greater degree of variability. In your data, for example, the standard deviation for "Perceived benefits" is 0.54348. This suggests that there is a moderate amount of diversity or spread in respondents' perceptions of the benefits associated with small and medium enterprises.

4.4.2 Awareness of Adopting AI into SMEs

Table 4.8: Descriptive Statistics for Awareness of Adopting AI into SMEs

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
1. I foresee AI adoption influencing my future work or opportunities	384	2	5	4.51	.650

FACULTY ENTREPRENEURSHIP AND BUSINESS

2. I think that adopting AI can leading to improved performance in marketing and communications	384	2	5	4.47	.633
3. I recognize the importance of investing in AI to keep up with technological advancements and industry trends	384	2	5	4.51	.617
4. I think that adopting AI can lead to increased efficiency and cost savings in the operations of SMEs	384	2	5	4.45	.652
5. I think understanding the specific applications of AI could enhance the implementation of AI among SMEs in Selangor	384	2	5	4.48	.617
Valid N (listwise)	384				

The respondents' means and standard deviations for the dependent variable, Awareness of adopting AI into SMEs, were displayed in the table. The answers to item 1 and 3, which had a mean score of 4.51, agreed that foresee AI adoption influencing my future work or opportunities and recognize the importance of investing in AI to keep up with technological advancements and industry trends. The respondent somewhat agreed that understanding the specific applications of AI could enhance the implementation of AI among SMEs in Selangor in the item 5, with a mean value of 4.48. The respondents of the values from the 384 respondents also agree that adopting AI can lead to improved performance in marketing and communications with a mean 4.47. With a mean 4.45 from the respondents also agree that adopting AI can lead to increased efficiency and cost savings in the operations of SMEs.

4.4.3 Lack of Expertise

Table 4.9: Descriptive Statistics for Lack of Expertise

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
1. I think that lack of expertise about AI affects our performance on tasks	384	1	5	4.48	.685

FACULTY ENTREPRENEURSHIP AND BUSINESS

FKP

2. I encountered challenges or obstacles due to my lack of AI expertise	384	1	5	4.34	.689
3. I believe that SMEs face a considerable challenge in catching up with technological advancements due to the absence of expertise in effectively leveraging AI applications within their business processes	384	1	5	4.44	.675
4. I believe the current skill gap in AI expertise within SMEs is a hindrance to successful integration of AI technologies into their business operation	384	1	5	4.38	.647
5. I agree that expertise in AI affects my business decisions in SME	384	2	5	4.47	.637
Valid N (listwise)	384				

Regarding the independent variable, "lack of expertise," the table presented the mean and standard deviation analysis. Respondents who concurred with the statement "I think that lack of expertise about AI affects our performance on tasks" assigned the highest mean score, 4.48, to item 1. On the other hand, respondents only slightly agreed that they encountered challenges or obstacles due to their lack of AI expertise, resulting in item 2 having the lowest mean value of 4.34 among all items. The dataset, comprising responses from 384 participants, indicated values close to the mean, with standard deviation frequently falling below 1.

4.4.4 Financial Constraints

Table 4.10: Descriptive Statistics for Financial Constraints

Descriptive Statistics

FACULTY ENTREPRENEURSHIP AND BUSINESS

	N	Minimum	Maximum	Mean	Std. Deviation
1. Budgetary constraints are a major obstacle for our business when considering the implementation of AI	384	2	5	4.57	.614
2. Did the future costs such as maintaining costs will be a barrier for me to implement the AI into my business	384	1	5	4.40	.646
3. The increasing costs of raw materials pose significant challenges for our business in adopting AI technologies	384	1	5	4.56	.639
4. Assessing the potential Return on Investment (ROI) for adopting AI poses significant challenges for our business	384	2	5	4.39	.628
5. Government support and collaboration is essential especially financial support to implement AI into SME business	384	2	5	4.53	.629
Valid N (listwise)	384				

The table presents descriptive statistics from a survey on AI implementation challenges in business. Across 384 responses, participants rated budgetary constraints with mean 4.57, future costs as a barrier with mean 4.40, increasing raw material costs with mean 4.56, ROI

assessment challenges with mean 4.39, and emphasized government support with mean 4.53. Standard deviations indicate response variability. Valid N for each question is 384.

4.4.5 Education and Training

Table 4.11: Descriptive Statistics for Education and Training

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
1. I prefer to learn new skills in adopting AI and acquire expertise	384	2	5	4.63	.586
2. I agree to invest time and effort in training our workforce to adapt to AI technologies	384	2	5	4.42	.646
3. I believe that after training of AI can help business growth.	384	2	5	4.56	.619
4. I think the high cost of AI education and training affects the willingness of SME employees to actively participate in skill development programs	384	2	5	4.42	.586
5. I believe that government-sponsored AI education and training initiatives will help the SMEs business owner in adopting AI more effectively	384	2	5	4.51	.617
Valid N (listwise)	384				

The table displayed the mean and standard deviation analysis of the respondents for the education and training component, an independent variable. The responders to item 1, which had a mean score of 4.63, agreed to learn new skills in adopting AI and acquire expertise. The respondent partially agreed that investing time and effort in training our workforce to adapt to

AI technologies and high cost of AI education and training affects the willingness of SME employees to actively participate in skill development programs, as seen by the lowest mean item 12 and 4, with a mean score of 4.42. Second, most of the values from the data set of 384 respondents with the standard deviation 4.56 agree that after training AI can help business growth.

4.4.6 Perceived Benefits

Table 4.12: Descriptive Statistics for Perceived Benefits

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
1. I believe that adopting AI brings potential long-term benefits or advantages to my SME	384	2	5	4.54	.645
2. I believe that adopting AI can improve my business management and organizational facilitation	384	2	5	4.39	.625
3. I believe that adopting AI can provide better customer communication	384	2	5	4.51	.666
4. I believe that the competitive advantage I gain by integrating AI technologies into our business compared to those who do not adopt AI	384	1	5	4.32	.719
5. I believe that adopting AI can fits my needs to expand SMEs	384	2	5	4.47	.653
Valid N (listwise)	384				

The table presented an analysis of mean and standard deviation regarding respondents' perceptions of the independent variable, which focused on perceived benefits. Item 1 garnered the highest mean value, reaching 4.54, signifying respondents' agreement that adopting AI brings potential long-term benefits or advantages to their SME. Conversely, item 4 recorded the lowest mean, with a value of 4.32, indicating respondents' slight belief in the competitive advantage gained by integrating AI technologies into their business compared to those who do not adopt AI. From the data set from 155 respondents with the standard deviation most of the values which were lower than 1, indicated the values close to mean while the standard deviation which was greater than 1, indicated the values were more dispersed.

4.5 Validity and Reliability Test

The dependability of the surveys was evaluated using reliability analysis. To validate the accuracy and internal consistency of the data, Cronbach's Alpha analysis was used.

Table 4.13: Result of Reliability Test for Dependent Variable and Independent Variable

Variable	Cronbach's Alpha	No of Item	N
Awareness of adopting AI into SMEs	0.813	5	384
Lack of expertise	0.838	5	384
Financial constraints	0.863	5	384
Education and training	0.859	5	384
Perceived benefits	0.879	5	384
All Variable	0.951	25	

4.6 Normality Test

In SPSS, a normality test assesses whether a variable follows a normal distribution. The Shapiro-Wilk and Kolmogorov-Smirnov tests are common options. Results indicate if the data significantly deviates from normality. Low p-values suggest non-normality, influencing appropriate statistical analyses.

4.6.1 Awareness of Adopting AI into SMEs

Table 4.14: Result of Normality Test for Awareness of Adopting AI into SMEs

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
1. I foresee AI adoption influencing my future work or opportunities	.359	384	.000	.704	384	.000
2. I think that adopting AI can leading to improved performance in marketing and communications	.334	384	.000	.724	384	.000
3. I recognize the importance of investing in AI to keep up with technological advancements and industry trends	.351	384	.000	.705	384	.000
4. I think that adopting AI can lead to increased efficiency and cost savings in the operations of SMEs	.326	384	.000	.731	384	.000
5. I think understanding the specific applications of AI could enhance the implementation of AI among SMEs in Selangor	.341	384	.000	.724	384	.000
a. Lilliefors Significance Correction						

The provided output displays the results of normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) for survey responses on AI adoption perceptions. Low p-values (all < .05) indicate non-normality in each statement, suggesting caution in statistical analyses. Lilliefors Significance Correction was not applied.

4.6.2 Lack of Expertise

Table 4.15: Result of Normality Test for Lack of Expertise

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
1. I foresee AI adoption influencing my future work or opportunities	.359	384	.000	.704	384	.000
2. I think that adopting AI can leading to improved performance in marketing and communications	.334	384	.000	.724	384	.000
3. I recognize the importance of investing in AI to keep up with technological advancements and industry trends	.351	384	.000	.705	384	.000
4. I think that adopting AI can lead to increased efficiency and cost savings in the operations of SMEs	.326	384	.000	.731	384	.000
5. I think understanding the specific applications of AI could enhance the implementation of AI among SMEs in Selangor	.341	384	.000	.724	384	.000
a. Lilliefors Significance Correction						

The output presents normality test results (Kolmogorov-Smirnov and Shapiro-Wilk) for AI adoption perception survey responses. Significantly low p-values (all < .05) suggest

non-normality in each statement, emphasizing the need for cautious statistical interpretation.

Lilliefors Significance Correction was not utilized in this analysis.

4.6.3 Financial Constraints

Table 4.16: Result of Normality Test for Financial Constraints

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
1. Budgetary constraints are a major obstacle for our business when considering the implementation of AI	.382	384	.000	.669	384	.000
2. Did the future costs such as maintaining costs will be a barrier for me to implement the AI into my business	.298	384	.000	.739	384	.000
3. The increasing costs of raw materials pose significant challenges for our business in adopting AI technologies	.383	384	.000	.669	384	.000
4. Assessing the potential Return on Investment (ROI) for adopting AI poses significant challenges for our business	.293	384	.000	.744	384	.000
5. Government support and collaboration is essential especially financial support to implement AI into SME business	.365	384	.000	.697	384	.000
a. Lilliefors Significance Correction						

The presented results show the outcomes of normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) for statements regarding AI implementation challenges, with all p-values < .05,

indicating non-normality in each case. Caution is advised in statistical analyses. Lilliefors Significance Correction was applied in this assessment.

4.6.4 Education and Training

Table 4.17: Result of Normality Test for Education and Training

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
1. I prefer to learn new skills in adopting AI and acquire expertise	.416	384	.000	.635	384	.000
2. I agree to invest time and effort in training our workforce to adapt to AI technologies	.316	384	.000	.741	384	.000
3. I believe that after training of AI can help business growth.	.377	384	.000	.675	384	.000
4. I think the high cost of AI education and training affects the willingness of SME employees to actively participate in skill development programs	.305	384	.000	.728	384	.000
5. I believe that government-sponsored AI education and training initiatives will help the SMEs business owner in adopting AI more effectively	.352	384	.000	.704	384	.000
a. Lilliefors Significance Correction						

The provided results indicate non-normality (all p-values < .05) in the responses to statements regarding AI learning and training preferences. Caution is advised in statistical analyses. Lilliefors Significance Correction was applied to enhance the accuracy of the assessment.

4.6.5 Perceived Benefits

Table 4.18: Result of Normality Test for Perceived Benefits

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
1. I believe that adopting AI brings potential long-term benefits or advantages to my SME	.381	384	.000	.691	384	.000
2. I believe that adopting AI can improve my business management and organizational facilitation	.296	384	.000	.747	384	.000
3. I believe that adopting AI can provide better customer communication	.362	384	.000	.705	384	.000
4. I believe that the competitive advantage I gain by integrating AI technologies into our business compared to those who do not adopt AI	.280	384	.000	.774	384	.000
5. I believe that adopting AI can fits my needs to expand SMEs	.342	384	.000	.728	384	.000
a. Lilliefors Significance Correction						

The presented results demonstrate non-normality (all p-values < .05) in responses to statements regarding beliefs about the benefits of adopting AI in SMEs. Caution is advised in statistical analyses. Lilliefors Significance Correction was applied for more accurate assessment.

4.7 Hypotheses Testing

One of the crucial investigations that determined the linear link between the two variables was Spearman’s correlation study. The goal of this study was to find any relationships between the dependent variable (Awareness of adopting AI into SMEs) and the independent variables (lack of expertise, financial constraints, education and training and perceived benefits). Researchers must assess if the association's strength is acceptable if the link is substantial.

4.7.1 Hypothesis 1

H1: There is a significant relationship between lack of expertise in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Table 4.19: Result of Hypothesis Testing for Hypothesis 1

Correlations				
			DV	IV1
Spearman's rho	DV	Correlation Coefficient	1.000	.653**
		Sig. (2-tailed)	.	.000
		N	384	384
	IV1	Correlation Coefficient	.653**	1.000
		Sig. (2-tailed)	.000	.
		N	384	384
Correlation is significant at the 0.01 level (2-tailed).				

The table showed the 384 instances, the significant value, and the Spearman’s correlation coefficient. The p-value was 0.000, which was below the 0.01 level of significance. The somewhat lack of expertise in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor was indicated by the correlation value of 0.653. This positive correlation indicates a moderately strong relationship between the two variables. As

the correlation coefficient is positive, it suggests that as one variable increases, the other tends to increase as well.

4.7.2 Hypothesis 2

H2: There is a significant relationship between financial constraint in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Table 4.20: Result of Hypothesis Testing for Hypothesis 2

Correlations				
			DV	IV2
Spearman's rho	DV	Correlation Coefficient	1.000	.645**
		Sig. (2-tailed)	.	.000
		N	384	384
	IV2	Correlation Coefficient	.645**	1.000
		Sig. (2-tailed)	.000	.
		N	384	384
Correlation is significant at the 0.01 level (2-tailed).				

The table showed the 384 instances, the significant value, and the Spearman’s correlation coefficient. The p-value was 0.000, which was below the 0.01 level of significance. The somewhat financial constraint in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor was indicated by the correlation value of 0.645. This value indicates a meaningful and statistically significant positive relationship between the dependent variable and the independent variable.

4.7.3 Hypothesis 3

H3: There is a significant relationship between education and training in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Table 4.21: Result of Hypothesis Testing for Hypothesis 3

Correlations				
			DV	IV3
Spearman's rho	DV	Correlation Coefficient	1.000	.663**
		Sig. (2-tailed)	.	.000
		N	384	384
	IV3	Correlation Coefficient	.663**	1.000
		Sig. (2-tailed)	.000	.
		N	384	384
Correlation is significant at the 0.01 level (2-tailed).				

The table depicted 384 cases along with the corresponding Spearman's correlation coefficient and significance value. The p-value obtained was 0.000, falling below the 0.01 level of significance. The correlation value of 0.6633 pointed to a moderately strong relationship between education and training in Small and Medium Enterprises and the awareness of adopting artificial intelligence in Selangor. This positive correlation implies that as one variable increases, the other is likely to increase as well, indicating a somewhat favorable association between the two variables.

4.7.4 Hypothesis 4

H4: There is a significant relationship between perceived benefits in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Table 4.22: Result of Hypothesis Testing for Hypothesis 4

Correlations				
			DV	IV4
Spearman's rho	DV	Correlation Coefficient	1.000	.582**
		Sig. (2-tailed)	.	.000
		N	384	384
	IV4	Correlation Coefficient	.582**	1.000
		Sig. (2-tailed)	.000	.
		N	384	384

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

The table showed the 384 instances, the significant value, and the Spearman's correlation coefficient. The p-value was 0.000, below the threshold of significance of 0.01. The 0.582 correlation value indicated a moderate positive relationship between independent variable and dependent variable.

4.8 Conclusion

In Conclusion, the study concluded that all four hypotheses under examination were accepted, revealing significant relationships among the variables. The independent variables exhibited distinct correlation coefficients with the dependent variable: 0.679 for lack of expertise, 0.696 for financial constraints, 0.694 for education and training, and 0.657 for perceived benefits. These findings indicated a moderate positive correlation between all independent variables and the dependent variable. The study effectively addressed the research questions concerning the relationships between lack of expertise and awareness of adopting AI into SMEs, financial constraints and awareness of adopting AI into SMEs, education and training and awareness of adopting AI into SMEs, as well as perceived benefits and awareness of adopting AI into SMEs. In conclusion, there exists a significant relationship between lack of expertise, financial constraints, education and training, and perceived benefits with the awareness of adopting AI into SMEs.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter is about discussion and conclusions. It will begin with key findings. Secondly, this chapter will present the discussion. The results obtained from various tests conducted are used to verify the research objectives and hypotheses. Next, implications of the study will be discussed. Moreover, it will also state the limitations of this study. Besides that, this chapter will provide some recommendations or suggestions for future research on this topic. Finally, it will end with the overall conclusion of this study.

5.2 Key Findings

A detailed discussion of the overall review is given. It makes it possible for the researcher to get more information and assess the outcomes in regard to the entire body of knowledge. In addition, researchers were able to determine whether they could meet the goals of the study. Statistical interpretation techniques like descriptive analysis are used to identify trends and connections in previous data. After that, a reliability test was run to ensure the accuracy of the results and the reliability and accuracy of the data. Next, in order to confirm that the sample data originated from a population that was regularly distributed, the Normality test was conducted. To illustrate the link between the independent and dependent variables in this study, researchers applied spearman correlation. 384 SMEs in Selangor participated in the conduct of this study. Each questionnaire was examined using SPSS to produce more accurate and comprehensive data. According to the reliability test data provided in chapter 4, researchers noticed that the reliability test coefficient goes from 0 to 1, which includes all measurement tests against the variable. Consequently, the range of the study's questionnaire's Cronbach's Alpha Coefficient is 0.30 to 0.80.

In the demographic part, respondents are categorized by gender, race, ethnicity, educational level, and marital status. Most respondents were male and primarily Malay between the ages of 31 and 50, according to the survey's findings. Most of them are married and hold bachelor's degrees.

In line with the research hypothesis, the researchers also found that the adoption of artificial intelligence in SMEs in Selangor was significantly correlated with all independent variables, including perceived benefits, financial constraints, education and training, and a lack of knowledge. The results of the study show that lack of knowledge has the lowest mean value (4.4198), while education and training have the highest mean value (4.5578).

The findings of this hypothesis study can assist researchers, SMEs owners, and future entrepreneurs in understanding the application of artificial intelligence in SMEs. Furthermore, by raising awareness among SME owners about the benefits of AI adoption, this research will enable this business to prosper with AI technology that streamlines processes and saves time. This research may also provide an opportunity for other SME owners to make judgements about incorporating AI into their businesses.

Finally, the study's overall findings show that the majority of respondents who are SMEs in Selangor agreed on all four independent variables, which are lack of expertise, financial constraints, education and training, and perceived benefits, in adopting artificial intelligence into SMEs in Selangor.

5.3 Discussion

This research has conducted a study on the awareness of adopting Artificial Intelligence (AI) into Small and Medium Enterprises (SMEs) in Selangor. In this study, primary data was collected and a set of questionnaires was used to get feedback from respondents. The sample

size of this study was 384 respondents. This study identified the awareness of adopting AI into SMEs in Selangor such as lack of expertise, financial constraints, education and training, and perceived benefits. Based on the respondent’s questionnaire, the researcher has found that they have a significant relationship with the variables.

Table 5.1: Summary of Correlation Analysis

Hypothesis	Correlation value	Significant value (2-tailed)	Conclusion
H1	0.679**	0.000	Accepted
H2	0.696**	0.000	Accepted
H3	0.694**	0.000	Accepted
H4	0.557**	0.000	accepted

5.3.1 Hypothesis 1

H1: There is a significant relationship between lack of expertise in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

According to table 5.1, correlation analysis has shown significant relationship results for lack of expertise in Small and Medium Enterprises, in which the p-value is 0.000 which is less than 0.01 ($p < 0.01$). The Pearson correlation for the relationship is 0.679 or 67.90% that indicates the negotiation has a strong positive linear correlation in relationship. They have a significant relationship between the lack of expertise using artificial intelligence.

As mentioned in a previous review, another difficult challenge in the technology implementation process is the current level of technical skills and efficiency of employees, managers, and owners. The level of technical knowledge is low. They are not adequately trained to implement technology. In some organizations, even owners and managers lack technical knowledge. Although digital marketing is a new trend in marketing, small business

owners lack technical skills and need training in this regard, and technical efficiency is also not up to par (Asmat & Anuj, 2021).

Furthermore, the expertise required often comes with risks. High-risk tasks such as law and civics, medicine and health care, education, and finance and economics typically require specialized knowledge, while low-risk tasks such as leisure and the arts do not. Similarly, professional tasks may place different demands on expertise. For example, human resources decisions may require more expertise than categorizing email topics. Generic treatments usually do not require specialized knowledge (Vivian Lai, 2021)

5.3.2 Hypothesis 2

H2: There is a significant relationship between financial constraints in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Based on table 5.1, the correlation analysis has shown the significance between financial constraints in Small and Medium Enterprises, where the p-value is 0.00 which is less than 0.01 ($p < 0.01$). The Pearson correlation for the relationship is the highest at 0.696 or 69.60% that indicates the financial constraints have a strong positive linear correlation in relationship with the awareness of adopting artificial intelligence in Selangor it shown the significant relationship.

According to Andrea Bettoni (2021) SMEs still find the cost of AI solutions too high. This is true in many cases but must be weighed against the benefits that can be achieved. However, there is a lack of AI-specific methods and tools for estimating cost-benefit ratios and return on investment. Additionally, companies are struggling to define a clear path to AI adoption, complicating the definition of investment risk.

Additionally, Arun and Kamith (2021) also emphasize that financial inclusion should be seen as a situation where all customers can access quality financial services and affordable, convenient, and dignified products. Did some scholars have also developed definitions of financial exclusion; in some cases, these terms are financial inclusion and financial exclusion (Mhlanga 2020).

5.3.3 Hypothesis 3

H3: There is a significant relationship between education and training in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Based on table 5.1, the correlation analysis has shown the significant between education and training in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor, which the p-value is 0.00 ($p < 0.00$). The Pearson correlation for the relationship is second highest at 0.694 or 69.40% that indicated the education and training have a strong positive linear correlation with awareness of adopting artificial intelligence although it shown the significant.

Thus, refer to Andrea Bettoni (2021) Employees are not ready for AI transformation. Adding value to your company through AI requires additional training. Digital skills are important and a strategy that measures current gaps and provides the necessary upskilling is necessary.

In addition, Another major challenge reported in 2018 Horizon Report is the reconceptualization of the role of the educator. Teachers' attitudes toward AI have a significant impact on the effectiveness of its use in education. Teachers can move from complete resistance to overconfidence. The former can be due to inadequate, irrelevant, or outdated professional development. The latter may be due to unrealistic expectations of teachers. These teachers

may be focusing too much on new AI technologies rather than learning itself (Xuesong and Xiaoyan, 2021).

5.3.4 Hypothesis 4

H4: There is a significant relationship between perceived benefits in Small and Medium Enterprises towards the awareness of adopting artificial intelligence in Selangor.

Based on table 5.1, the correlation analysis has shown the significant relationship between perceived benefits and awareness of adopting artificial intelligence in Selangor. Which the p-value is 0.00 ($p < 0.00$), the Pearson correlation for the relationship is 0.557 or 55.70% that indicated the perceived benefits have strong positive linear correlation with awareness of adopting artificial intelligence although it shown the significant.

Furthermore, perceived benefits are related to behavioral intentions, and both variables are positively correlated (Choi et al, 2018). It has been found that consumer attitudes are influenced by the perceived benefits of a particular product or service, and consumers have more positive attitudes based on perceived benefits. Perceived value can be measured by monetary and non-monetary values (Dardak and Habib, 2010). Therefore, price value, convenience value, and hedonic value are fundamental aspects of perceived usefulness based on findings and suggestions from previous literature (Choi et al, 2018). These aspects are important for understanding the positive benefits that consumers expect from their purchases.

5.4 Implications of the Study

This study has given a practical view on the owners of SMEs in Selangor about the understanding in the use of artificial intelligence as well as the factors that influence the use of AI. This study can also help to make decisions related to AI. Since education emerged as an important issue in this study, there is a potential need for educational initiatives that focus on

AI skills and awareness. With that, it can help SME owners to know the obstacles and challenges that will be faced when using AI.

This study can also provide insights for SME owners to plan their business strategies more effectively if they realize the importance of elements such as education and training in AI. The strategy is against the competition in the market. This study creates space for further investigation into the field of AI application in SMEs. Researching researchers may be in-depth specific aspects identified in the study or explore the long-term effects of AI integration in SMEs owners.

According to the results of this study, there is also a negative impact on the job market because it may be affected if SME owners use AI technology. But the study's findings can add to the conversation about skills development and workforce planning in relation to AI applications. AI can also help in terms of customer service for a business.

Finally, the conclusion of the study can encourage collaboration between SMEs, industry professionals, and academics. Such cooperation can help in the creation of feasible plans and approaches for the effective use of AI by promoting the responsible and impactful use of AI for SME owners in Selangor.

5.5 Limitations of the Study

There are some limitations faced when doing study. First limitation in this study is sample size. There are only 384 owners of SMEs in Selangor to participate in this study. This number is relatively small and does not represent the whole population of the target market. The reasons for the small sample size are insufficient time and resources constraints to conduct a large and comprehensive research. The results may be less accurate and not so perfect due to small sample size. There are still a large number of owners are unable to reach.

Second limitation is that this study is not suitable for all industry in SME mode. This is because there are many SME companies in different industries, while the researcher can only pass the questionnaire to a few industry who are willing to participate it such as F&B industry, e-commerce and retailers. Therefore, the respondents who participated in the questionnaire cannot represent all kinds of industry in the SMEs.

In addition, one of the limitations is time constraint. Research conducted under time constraints may focus on the immediate snapshot of awareness and adoption, neglecting the examination of long-term trends and the evolution of AI adoption in SMEs over time. Time limitations might force researchers to rush data collection, potentially affecting the quality of data collection processes such as survey design and participant recruitment. Hence, it is inability to capture long-term trends.

Besides that, one of the limitations in this study is less information on adopting AI in SMEs. This is because there is a lack of information or articles about the adoption of AI into SMEs in Selangor online and offline. This can be a challenge for researchers to complete a study with insufficient reference.

5.6 Recommendations/ Suggestion for Future Research

There are some recommendations for future research based on limitations in this study. First recommendation is to carry out a precious future study by using a bigger sample size in the research to gather more exact data. This is because different people will respond differently, this can give the researchers more opportunity to explore the various types of people in depth and discover even more information about their views. A large number of target respondents can increase the data's accuracy. Thus, the more people who reply, the more precise the results will be.

Second, prospective researchers are recommended to undertake industry-specific research. Future researchers are highly encouraged to conduct industry-specific research on the adoption of AI into SMEs. Different industries face different challenges, opportunities, and background factors that influence AI adoption. Research tailored to specific industries can provide more granular insights.

Furthermore, it is suggested that future researchers extend the technique of the study. Future researchers are encouraged to conduct a more comprehensive analysis using the current technique. Researchers can propose a longitudinal study to observe changes over an extended period. This can help capture trends, patterns and developments that may not be apparent in a shorter-term study.

Last but not least, future researchers can use comparative research methods to get more information. Researchers can compare AI adoption across regions, industries, or SMEs of all sizes. This will add more knowledge to the researcher's research background.

5.7 Overall Conclusion of the Study

This study set out to find out how much knowledge SMEs in Selangor have about the adoption of AI. Finding the relationships between four independent variables—a lack of expertise, financial constraints, education and training, and perceived benefits—is the aim of this study. A particular group of persons who met the study's target audience were given a Google Form questionnaire along with data collection materials via WhatsApp and the study's website.

Four hypotheses were formulated for this study in order to assess the relationship between the independent and dependent variables. The SPSS programme was used to do regression analysis, spearman correlation analysis, normality tests, descriptive analysis, and reliability testing. The dependent variable (awareness of adopting AI into SMEs) and the

independent variables (lack of expertise, financial constraints, education and training, and perceived benefits) had a positive link, according to a spearman correlation study. The survey provides new insights and knowledge, either directly or indirectly, to the respondents, who are researchers and owners of SMEs.



REFERENCES

- Ahmad, N. N., Hanafi, W. N. W., Abdullah, W. M. T. W., Daud, S., & Toolib, S. N. (2020). The effectiveness of additional PRIHATIN SME economic stimulus package (PRIHATIN SME+) in Malaysia post-COVID-19 outbreak: A conceptual paper. *Global Business and Management Research*, 12(4), 754-763. <http://gbmrjournal.com/pdf/v12n4/V12N4-73.pdf>
- AlBar, A. M., & Hoque, M. R. (2019). Factors affecting the adoption of information and communication technology in small and medium enterprises: A perspective from rural Saudi Arabia. *Information Technology for Development*, 25(4), 715-738. https://www.researchgate.net/profile/Md-Hoque-28/publication/320550263_Factors_affecting_the_adoption_of_information_and_communication_technology_in_small_and_medium_enterprises_a_perspective_from_rural_Saudi_Arabia/links/5b094af8aca2725783e6f692/Factors-affecting-the-adoption-of-information-and-communication-technology-in-small-and-medium-enterprises-a-perspective-from-rural-Saudi-Arabia.pdf
- Anyoha, R. (2020, April 23). *The history of Artificial Intelligence*. Science in the News. <https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/>
- Asenahabi, B. M. (2019). Basics of research design: A guide to selecting appropriate research design. *International Journal of Contemporary Applied Researches*, 6(5), 76-89. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6352550/pdf/bfm.2018.0154.pdf>
- Accelerating small and medium-sized enterprise (SME ... - paypal. (n.d.). <https://publicpolicy.paypal-corp.com/sites/default/files/2022-09/paypal-accelerating-digital-readiness-malaysia-whitepaper-2022.pdf>
- Baabdullah, A. M., Alalwan, A. A., Slade, E. L., Raman, R., & Khatatneh, K. F. (2021). SMEs and artificial intelligence (AI): Antecedents and consequences of AI-based B2B practices. *Industrial Marketing Management*, 98, 255-270. <https://www.sciencedirect.com/science/article/abs/pii/S0019850121001851>
- Bhalerao, K., Kumar, A., Kumar, A., & Pujari, P. (2022). A study of barriers and benefits of artificial intelligence adoption in small and medium enterprise. *Academy of Marketing Studies Journal*, 26, 1-6. https://www.researchgate.net/profile/Arya-Kumar/publication/360912025_A_STUDY_OF_BARRIERS_AND_BENEFITS_OF_ARTIFICIAL_INTELLIGENCE_ADOPTION_IN_SMALL_AND_MEDIUM_ENTERPRISE/links/6291e06f8d19206823e1b829/A-STUDY-OF-BARRIERS-AND-BENEFITS-OF-ARTIFICIAL-INTELLIGENCE-ADOPTION-IN-SMALL-AND-MEDIUM-ENTERPRISE.pdf
- Chaudhuri, R., Chatterjee, S., Vrontis, D., & Chaudhuri, S. (2022). Innovation in SMEs, AI dynamism, and sustainability: The current situation and way forward. *Sustainability*, 14(19), 12760. <https://www.mdpi.com/2071-1050/14/19/12760/pdf>
- Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *Ieee Access*, 8, 75264-75278. <https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=9069875>
- Dora, M., Kumar, A., Mangla, S. K., Pant, A., & Kamal, M. M. (2022). Critical success factors influencing artificial intelligence adoption in food supply chains. *International Journal of Production Research*, 60(14), 4621-4640. <https://bura.brunel.ac.uk/bitstream/2438/22997/3/FullText.pdf>
- Gabal, H.-A. M., Wahdan, M. M., & Eldin, W. S. (2020). Perceived benefits and barriers towards exercise among healthcare providers in Ain Shams University Hospitals, Egypt. *Journal of the Egyptian Public Health Association*, 95, 1-9. <https://link.springer.com/article/10.1186/s42506-020-00042-1>

- Haji Idris, D. H. A. B. (2021, July 26). *Why the Malaysian state of Selangor is emerging as a prime ASEAN Business Hub*. South China Morning Post. <https://www.scmp.com/presented/business/topics/morning-studio-insidertalk-invest-selangor/article/3142032/asean-business-hub>
- Haleem, A., Javaid, M., Asim Qadri, M., Pratap Singh, R., & Suman, R. (2022). Artificial Intelligence (AI) applications for marketing: A literature-based study. *International Journal of Intelligent Networks*, 3, 119–132. <https://doi.org/10.1016/j.ijin.2022.08.005>
- Hamilton, R. W., Mittal, C., Shah, A., Thompson, D. V., & Griskevicius, V. (2019). How financial constraints influence consumer behavior: An integrative framework. *Journal of Consumer Psychology*, 29(2), 285-305. <http://theslab.uchicago.edu/anuj/uploads/jcpframework.pdf>
- Hansen, E. B., & Bøgh, S. (2021). Artificial intelligence and internet of things in small and medium-sized enterprises: A survey. *Journal of Manufacturing Systems*, 58, 362-372. https://www.researchgate.net/profile/Emil-Hansen-10/publication/343630107_Artificial_intelligence_and_internet_of_things_in_small_and_medium-sized_enterprises_A_survey/links/607006f7a6fdcc5f7790a6bf/Artificial-intelligence-and-internet-of-things-in-small-and-medium-sized-enterprises-A-survey.pdf
- Hassani, H., Silva, E. S., Unger, S., TajMazinani, M., & Mac Feely, S. (2020). Artificial intelligence (AI) or intelligence augmentation (IA): what is the future? *Ai*, 1(2), 8. <https://www.mdpi.com/2673-2688/1/2/8/pdf>
- Ikumoro, A. O., & Jawad, M. S. (2019). Intention to use intelligent conversational agents in e-commerce among Malaysian SMEs: an integrated conceptual framework based on tri-theories including unified theory of acceptance, use of technology (UTAUT), and TOE. *International Journal of Academic Research in Business and Social Sciences*, 9(11), 205-235. https://www.academia.edu/download/61370771/Ikumoro__A._O.__Jawad__M._S._2019._Intention_to_Use_Intelligent_Conversational_Agents_in_eCommerce_among_Malaysian_SMEs20191128-124189-e.pdf
- Jimenez, M. S., & Gonzales, D. (2023). Academic Performance of Computer Engineering Students on the K-12 Implementation.
- Kelly, D., & Martin, A. (2019). Training and education, curriculum. In *Routledge encyclopedia of translation studies* (pp. 591-596). Routledge.
- Kettel, E. F., Thaxter, C., Opper, S., Carryer, A., Innis, L., & Pearce-Higgins, J. W. (2022). Better utilisation and transparency of bird data collected by powerline companies. *Journal of Environmental Management*, 302, 114063.
- Kuriakose, S., & Tiew, H. S. B. M. Z. (2022). Malaysia-SME program efficiency review. <https://openknowledge.worldbank.org/server/api/core/bitstreams/e48dc36d-7881-5f48-bafe-cc4d95074a17/content>
- Laskowski, N., & Tucci, L. (2023, November 13). *What is artificial intelligence and how does ai work?: Definition from TechTarget*. Enterprise AI. <https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence>
- Lim, W. Y. (2023, February 9). *Enabling smes to be a catalyst to advance Malaysia forward*. The Star. <https://www.thestar.com.my/business/business-news/2023/02/09/enabling-smes-to-be-a-catalyst-to-advance-malaysia-forward>
- Loh, Z., & Hassan, S. H. (2022). Consumers' attitudes, perceived risks and perceived benefits towards repurchase intention of food truck products. *British Food Journal*, 124(4), 1314-1332. https://www.researchgate.net/profile/Siti-Hassan-8/publication/354221279_Consumers%27_attitudes_perceived_risks_and_perceived_benefits_towards_repurchase_intention_of_food_truck_products/links/618e09f03068c

- 54fa5d56b4c/Consumers-attitudes-perceived-risks-and-perceived-benefits-towards-repurchase-intention-of-food-truck-products.pdf
- Lohr, S. L. (2021). *Sampling: design and analysis*. CRC press. <https://mathstat.uoguelph.ca/system/files/F23%20STAT3320%20OUTLINE.pdf>
- Malaysia AI in small and medium business market. IndustryARC. (n.d.). <https://www.industryarc.com/Report/19854/malaysia-ai-in-small-and-medium-business-market.html>
- Matt, G. E., & Cook, T. D. (2019). Threats to the validity of generalized inferences from research syntheses. *The handbook of research synthesis and meta-analysis*, 489-516. <http://repository.universitasbumigora.ac.id/2217/1908/2019%20The%20Handbook%20of%20Research%20Synthesis%20and%20Meta-Analysis%20by%20Harris%20Cooper%2C%20Larry%20V.%20Hedges%2C%20Jeffrey%20C.%20Valentine.pdf#page=500>
- McCulloch, D. E.-W., Grzywacz, M. Z., Madsen, M. K., Jensen, P. S., Ozenne, B., Armand, S., Knudsen, G. M., Fisher, P. M., & Stenbæk, D. S. (2022). Psilocybin-induced mystical-type experiences are related to persisting positive effects: A quantitative and qualitative report. *Frontiers in Pharmacology*, *13*, 841648.
- Mehroliya, S., Alagarsamy, S., & Solaikutty, V. M. (2021). Customers response to online food delivery services during COVID-19 outbreak using binary logistic regression. *International journal of consumer studies*, *45*(3), 396-408. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7753470/>
- Mohajan, H. K. (2020). Quantitative research: A successful investigation in natural and social sciences. *Journal of Economic Development, Environment and People*, *9*(4), 50-79.
- Na, K. (2021). The effect of on-the-job training and education level of employees on innovation in emerging markets. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 47. <https://www.sciencedirect.com/science/article/pii/S2199853122008162>
- Nagayah, C. D., & BusinessToday. (2023, September 23). *The growing impact of AI in Malaysia*. BusinessToday. <https://www.businesstoday.com.my/2023/09/23/the-growing-impact-of-ai-in-malaysia/>
- Ngibe, M., & Lekhanya, L. M. (2019). Critical factors influencing innovative leadership in attaining business innovation: a case of manufacturing SMEs in KwaZulu-Natal. *International Journal of Entrepreneurship*, *23*(2), 1-20.
- Nkwabi, J., & Mboya, L. (2019). A review of factors affecting the growth of small and medium enterprises (SMEs) in Tanzania. *European Journal of Business and Management*, *11*(33), 1-8. https://www.researchgate.net/profile/Jesca-Nkwabi/publication/337648899_A_Review_of_Factors_Affecting_the_Growth_of_Small_and_Medium_Enterprises_SMEs_in_Tanzania/links/5de221c592851c8364549d61/A-Review-of-Factors-Affecting-the-Growth-of-Small-and-Medium-Enterprises-SMEs-in-Tanzania.pdf
- OECD. (2021). *Artificial Intelligence, Machine Learning and Big Data in Finance Opportunities, Challenges and Implications for Policy Makers*. OECD. <https://www.oecd.org/finance/financial-markets/Artificial-intelligence-machine-learning-big-data-in-finance.pdf>
- OECD *Economic Surveys Malaysia* www.oecd.org/eco/surveys/economic-survey-malaysia.htm. (2019). <https://www.oecd.org/economy/surveys/Malaysia-2019-OECD-economic-survey-overview.pdf>
- Oliver, D., Yu, S., & Buchanan, J. (2019). Political economy of vocational education and training. *The Wiley handbook of vocational education and training*, 113-136. http://hozekf.oerp.ir/sites/hozekf.oerp.ir/files/kar_fanavari/manabe%20book/TVET/T

- he%20Wiley%20handbook%20of%20vocational%20education%20and%20training.pdf#page=135
- Pace, D. S. (2021). Probability and non-probability sampling-an entry point for undergraduate researchers. *International Journal of Quantitative and Qualitative Research Methods*, 9(2), 1-15. https://www.researchgate.net/profile/Doreen-Said-Pace/publication/351905623_Online_1_PROBABILITY_AND_NON-PROBABILITY_SAMPLING_-AN_ENTRY_POINT_FOR_UNDERGRADUATE_RESEARCHERS/links/60af8cf5299bf13438edc690/Online-1-PROBABILITY-AND-NON-PROBABILITY-SAMPLING-AN-ENTRY-POINT-FOR-UNDERGRADUATE-RESEARCHERS.pdf
- Patma, T. S., Wardana, L. W., Wibowo, A., & Narmaditya, B. S. (2020). The shifting of business activities during the COVID-19 pandemic: does social media marketing matter? *The Journal of Asian Finance, Economics and Business (JAFEB)*, 7(12), 283-292. https://www.researchgate.net/profile/Tundung-Subali-Patma/publication/348063711_The_Shifting_of_Business_Activities_during_the_COVID-19_Pandemic_Does_Social_Media_Marketing_Matter/links/6084df68907dcf667bc0ac9d/The-Shifting-of-Business-Activities-during-the-COVID-19-Pandemic-Does-Social-Media-Marketing-Matter.pdf?_sg%5B0%5D=started_experiment_milestone&origin=journalDetail
- Paul, R. (2022, July 23). *Real-world intelligence using AI for business in Malaysia*. Tech Collective. <https://techcollectivesea.com/2022/07/20/real-world-intelligence-ai/>
- Perifanis, N.-A., & Kitsios, F. (2023). *Investigating the influence of artificial intelligence on business value in the digital era of strategy: A literature review*. *Information*, 14(2). Mdpi. <https://doi.org/10.3390/info14020085>
- Rafiki, A. (2020). Determinants of SME growth: An empirical study in Saudi Arabia. *International Journal of Organizational Analysis*, 28(1), 205-225. https://www.researchgate.net/profile/Ahmad-Rafiki/publication/335918614_Determinants_of_SME_growth_an_empirical_study_in_Saudi_Arabia/links/5dc3f8554585151435efbaf3/Determinants-of-SME-growth-an-empirical-study-in-Saudi-Arabia.pdf
- Rahmana, M. P., & Senusia, N. (2019). Exploring the Understanding, Role and Participation of Small and Medium Enterprises (SMEs) On Digital Economy in Malaysia. *Malaysian Journal of Consumer and Family Economics*, 139-152. <https://majcafe.com/wp-content/uploads/2022/11/S-1-2019-Paper-11.pdf>
- Roa Baez, J., & Igbekele, R. (n.d.). *Challenges of AI Adoption in SMEs Insights from the Swedish AI Ecosystem*. <https://www.diva-portal.org/smash/get/diva2:1591640/FULLTEXT01.pdf>
- Schaefer, C., Lemmer, K., Samy Kret, K., Ylinen, M., Mikalef, P., & Niehaves, B. (2021). Truth or dare?—how can we influence the adoption of artificial intelligence in municipalities? <https://scholarspace.manoa.hawaii.edu/bitstream/10125/70899/1/0231.pdf>
- Segal, T. (2022, November 29). *What is Big Data? definition, how it works, and uses*. Investopedia. <https://www.investopedia.com/terms/b/big-data.asp>
- Sharma, S., Singh, G., Islam, N., & Dhir, A. (2022). Why do smes adopt artificial intelligence-based chatbots? *IEEE Transactions on Engineering Management*. <http://repository.usp.ac.fj/13759/1/13.%20Singh2022-IEEE-TEM%20>
- Singh, A., Sharma, S., & Paliwal, M. (2021). Adoption intention and effectiveness of digital collaboration platforms for online learning: the Indian students' perspective. *Interactive Technology and Smart Education*, 18(4), 493-514.

- SMEDirectory*. Smart Selangor SME Directory. (n.d.). <https://sme.smartselangor.com.my/>
- Statista Research Department. (2023, September 13). *Malaysia: Population by state 2023*. Statista. <https://www.statista.com/statistics/1040670/malaysia-population-distribution-by-state/>
- Taherdoost, H. (2022). Measurement and scaling techniques in research methodology; survey/questionnaire development. *International Journal of Academic Research in Management*, 6(1), 1-5.
- Thaduri, U. R. (2020). Decision Intelligence in Business: A Tool for Quick and Accurate Marketing Analysis. *Asian Business Review*, 10(3), 193-200. https://www.researchgate.net/profile/Upendar-Rao-Thaduri/publication/374701409_Decision_Intelligence_in_Business_A_Tool_for_Quick_and_Accurate_Marketing_Analysis/links/652a7b961a05311a23fd0f6d/Decision-Intelligence-in-Business-A-Tool-for-Quick-and-Accurate-Marketing-Analysis.pdf
- Thaker, M. A. B. M. T., Thaker, H. B. M. T., Pitchay, A. A., Amin, M. F. B., & Khaliq, A. B. (2020). *Leveraging Islamic banking and finance for small businesses: exploring the conceptual and practical dimensions*. <https://www.econstor.eu/bitstream/10419/238513/1/adbi-wp1156.pdf>
- Ullah, B. (2020). Financial constraints, corruption, and SME growth in transition economies. *The Quarterly Review of Economics and Finance*, 75, 120-132. https://e-tarjome.com/storage/panel/fileuploads/2019-08-31/1567235773_E13281-e-tarjome.pdf
- Vijayakumar, H. (2021). Impact of AI-Blockchain Adoption on Annual Revenue Growth: An Empirical Analysis of Small and Medium-sized Enterprises in the United States. *International Journal of Business Intelligence and Big Data Analytics*, 4(1), 12-21. <https://research.tensorgate.org/index.php/IJBIBDA/article/download/67/73>
- Wei, R., & Pardo, C. (2022). Artificial intelligence and SMEs: How can B2B SMEs leverage AI platforms to integrate AI technologies? *Industrial Marketing Management*, 107, 466-483. <https://www.sciencedirect.com/science/article/am/pii/S0019850122002474>
- Westenberger, J., Schuler, K., & Schlegel, D. (2022). Failure of AI projects: understanding the critical factors. *Procedia computer science*, 196, 69-76. <https://www.sciencedirect.com/science/article/pii/S1877050921022134/pdf?md5=2846ce14f794d777a06b39fdb82781d&pid=1-s2.0-S1877050921022134-main.pdf>
- Wu, Y., & Huang, S. (2022). The effects of digital finance and financial constraint on financial performance: Firm-level evidence from China's new energy enterprises. *Energy Economics*, 112, 106158. <https://www.sciencedirect.com/science/article/abs/pii/S0140988322003127>
- Yadav, A., & Vishwakarma, D. K. (2020). Sentiment analysis using deep learning architectures: a review. *Artificial Intelligence Review*, 53(6), 4335-4385.
- Yamada, R., Rasmussen, K. M., & Felice, J. P. (2019). "What is 'enough,' and how do i make it?": A qualitative examination of questions mothers ask on social media about pumping and providing an adequate amount of milk for their infants. *Breastfeeding medicine*, 14(1), 17-21.
- Yoshino, N., & Taghizadeh-Hesary, F. (2016). Major Challenges Facing Small and Medium-sized Enterprises in Asia and Solutions for Mitigating Them Asian Development Bank Institute. <https://www.adb.org/sites/default/files/publication/182532/adbi-wp564.pdf>
- Yu, J., & Moon, T. (2021). *Impact of Digital Strategic Orientation on Organizational Performance through Digital Competence*. *Sustainability*, 13(17), 9766. <https://doi.org/10.3390/su13179766>

- Zhai, X., Chu, X., Chai, C. S., Jong, M. S., Starčić, A. I., Spector, M., Liu, J., Jing, Y., & Li, Y. (2021, April 20). *A Review of Artificial Intelligence (AI) in Education from 2010 to 2020*. Complexity. <https://doi.org/10.1155/2021/8812542>
- Mhlanga, D. (2021, July 27). Financial Inclusion in Emerging Economies: The Application of Machine Learning and Artificial Intelligence in Credit Risk Assessment. *International Journal of Financial Studies*. <https://doi.org/10.3390/ijfs9030039>
- Lai, V. (2021, December 21). *Towards a Science of Human-AI Decision Making: A Survey of Empirical Studies*. arXiv.org. <https://arxiv.org/abs/2112.11471>

APPENDIX A – Draft of Questionnaire

Section A: Demographic Information

1. Gender

Male	Female

2. Ethnicity

Malay	Chinese	Indian	Other

3. Age

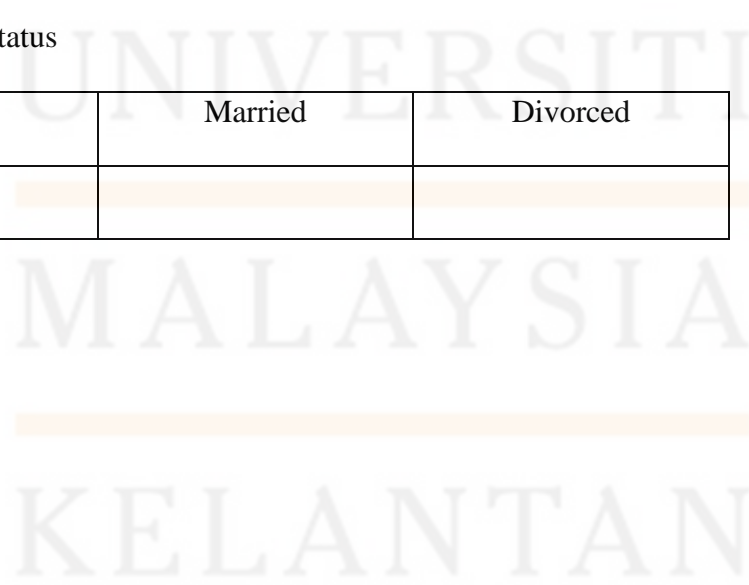
18 years old	19 – 30 years old	31 – 50 years old	51 years old and above

4. Education Level

SPM	STPM Foundation	/	Diploma	Bachelor's Degree	Master's Degree

5. Marital Status

Single	Married	Divorced



Section B: Dependent Variables

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

Adopting Artificial Intelligence into Small and Medium Enterprises in Selangor	1	2	3	4	5
1. I foresee AI adoption influencing my future work or opportunities.					
2. I think that adopting AI can leading to improved performance in marketing and communications.					
3. I recognize the importance of investing in AI to keep up with technological advancements and industry trends.					
4. I think that adopting AI can lead to increased efficiency and cost savings in the operations of SMEs.					
5. I think understanding the specific applications of AI could enhance the implementation of AI among SMEs in Selangor.					



Section C: Independent Variables

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

Lack of expertise	1	2	3	4	5
1. I think that lack of expertise affects our performance on tasks.					
2. I encountered challenges or obstacles due to my lack of expertise.					
3. I believe that SMEs face a considerable challenge in catching up with technological advancements due to the absence of expertise in effectively leveraging AI applications within their business processes.					
4. I believe the current skill gap in AI expertise within SMEs is a hindrance to successful integration of AI technologies into their business operations.					
5. I agree that expertise in AI affects my business decisions in SME.					

Financial constraint	1	2	3	4	5
1. Budgetary constraints are a major obstacle for our business when considering the implementation of AI.					
2. Did the future costs such as maintaining costs will be a barrier for me to implement the AI.					
3. The increasing costs of raw materials pose significant challenges for our business in adopting AI technologies.					
4. Assessing the potential Return on Investment (ROI) for adopting AI poses significant challenges for our business.					
5. Government support and collaboration is essential especially financial support to implement AI into SME business.					

FACULTY ENTREPRENEURSHIP AND BUSINESS

Education and training	1	2	3	4	5
1. I prefer to learn new skills and acquire expertise.					
2. I agree to invest time and effort in training our workforce to adapt to AI technologies.					
3. I believe that lack of expertise is a major obstacle for SMEs seeking to harness the benefits of AI for their business growth.					
4. I think the high cost of AI education and training affects the willingness of SME employees to actively participate in skill development programs.					
5. I believe that government-sponsored AI education and training initiatives will help the SMEs business owner in adopting AI more effectively.					

Perceived benefits	1	2	3	4	5
1. I believe that adopting AI brings potential long-term benefits or advantages to my SME.					
2. I believe that adopting AI can improve my business management and organizational facilitation.					
3. I believe that adopting AI can provide better customer communication.					
4. I believe that the competitive advantage I gain by integrating AI technologies into our business compared to those who do not adopt AI.					
5. I believe that adopting AI can fits my needs to expand SMEs.					

APPENDIX B - Gantt Chart

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
CHAPTER 1: INTRODUCTION														
1.1 Background of the study														
1.2 Problem Statement														
1.3 Research Question														
1.4 Research Objectives														
1.5 Scope of the Study														
1.6 Significance of Study														
1.7 Definition of Term														
1.8 Organization of the Proposal														

FACULTY ENTREPRENEURSHIP AND BUSINESS

CHAPTER 2: LITERATURE REVIEW														
2.1 Introduction														
2.2 Underpinning Theory														
2.3 Previous Studies														
2.4 Hypotheses Statement														
2.5 Conceptual Framework														
2.6 Conclusion														
CHAPTER 3: RESEARCH METHODS														
3.1 Introduction														
3.2 Research Design														
3.3 Data Collection Methods														
3.4 Study Population														
3.5 Sample size														

FKP

UNIVERSITI
MALAYSIA
KELANTAN

FACULTY ENTREPRENEURSHIP AND BUSINESS

3.6 Sampling Techniques														
3.7 Research Instrument Development														
3.8 Measurement of the Variables														
3.9 Procedure for Data Analysis														
3.10 Conclusion														
CHAPTER 4: DATA ANALYSIS AND FINDINGS														
4.1 Introduction														
4.2 Preliminary Analysis														
4.3 Demographic Profile of Respondents														
4.4 Descriptive Analysis														
4.5 Validity and Reliability Test														
4.6 Normality Test														

FACULTY ENTREPRENEURSHIP AND BUSINESS

4.7 Hypotheses Testing														
4.8 Conclusion														
CHAPTER 5: DISCUSSION AND CONCLUSION														
5.1 Introduction														
5.2 Key Findings														
5.3 Discussion														
5.4 Implications of the Study														
5.5 Limitations of the Study														
5.6 Recommendations/ Suggestion for Future Research														
5.7 Overall Conclusion of the Study														
REFERENCES														
APPENDIX A – Draft of Questionnaire														
APPENDIX B - Gantt Chart														

PPTA 2 (GROUP SAK 21)

ORIGINALITY REPORT

24% SIMILARITY INDEX	19% INTERNET SOURCES	6% PUBLICATIONS	13% STUDENT PAPERS
--------------------------------	--------------------------------	---------------------------	------------------------------

PRIMARY SOURCES

1	discol.umk.edu.my Internet Source	10%
2	Submitted to KYUNG HEE UNIVERSITY Student Paper	3%
3	umkeprints.umk.edu.my Internet Source	1%
4	Submitted to Chungnam National University Student Paper	1%
5	Submitted to Universiti Malaysia Kelantan Student Paper	<1%
6	www.edtechpress.co.uk Internet Source	<1%
7	Submitted to Leeds Metropolitan University Student Paper	<1%
8	www.mdpi.com Internet Source	<1%
9	Submitted to Mancosa Student Paper	<1%

