ARTIFICIAL INTELLIGENCE (AI) IN BUSINESS AND ECONOMICS RESEARCH: TRENDS AND FUTURE

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BY

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DECLARATION

I hereby declare that:

(1) This undergraduate FYP is the end result of my own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this FYP has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Sole contribution has been made by me in completing the FYP.

(4) The word count of this research report is 9,228.

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DEDICATION

Dedicated to

Ms. Lee Sim Kuen

Ms. Lee Sim Kuen is my supervisor who has been providing valuable guidance and advices for me throughout the research project.

Respondent

To the respondents who invested their time and effort in assisting me with the completion of the questionnaires.

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LIST OF ABBREVIATION

E	Efficiency of AI
DQ	Data Quality
EOU	Ease of Use
BC	Blockchain
AIC	Artificial Intelligence's changes to business and economy

PREFACE

One of the most common topics in the world right now is artificial intelligence. It is the 21st century that will lead the development of the world's future science and technology field and bring changes to business and economy. Artificial Intelligence will be the trend of future development. Our lives will be changed by the development of artificial intelligence. Our lifestyle will also be improved by artificial intelligence, which can bring convenience and may also bring some disadvantages.

Artificial intelligence (AI) is becoming a popular competitive tool for businesses these days. Evidently, many businesses have moved past debating the advantages and disadvantages of Artificial Intelligence. Businesses are adopting Artificial Intelligence as a crucial tool, from chatbots for customer service to data analytics, deep learning, artificial intelligence, and predictive suggestions. Besides, there is still lack of studies about the future and trends of Artificial Intelligence in business and economics. Thus, this research aims to study on the Artificial Intelligence’s changes to business and economics by considering a few independent variables which include efficiency of Artificial Intelligence, data quality, ease of use and blockchains. This study was conducted among the Malaysian population through survey method.

This research project will provide more knowledge about Artificial Intelligence and let people know more about the changes Artificial Intelligence brings to business and economics.

ABSTRACT

This study aims to investigate the future and trends of Artificial Intelligence in business and economics. The aim of this study is to enhance the level of understanding about the artificial intelligence's changes to the business and economy. Besides, the methodology used for this study is primary data by distributing survey questionnaires via online and Google form. In addition, a total of 141 questionnaires are distributed to Malaysian citizens who aged between 18-54 years old. All data collected are being analysed through Statistical Package for Social Science (SPSS). SPSS is deployed to perform data analysis such as descriptive analysis, reliability analysis and inferential analysis. While under inferential analysis, it consists of Pearson Correlation Analysis, Multi Regression Model, Independent sample t-Test, and ANOVA test. The findings indicate that government factors, and psychological distress have a significant relationship towards the artificial intelligence's changes to business and economy. The four IVs in this research had shown significant result .

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The purpose of this research is to examine future and trends of Artificial Intelligence in business and economics. In this research, the dependent variable will be Artificial Intelligence's changes to business and economics and the independent variables will be the efficiency of Artificial Intelligence, data quality, ease of use and blockchains. This study was conducted to understand how artificial intelligence will change the future of business and economics, including its efficiency, usage, data quality and blockchain. This research allows us to better understand the knowledge of Artificial Intelligence in business and economics, and learn more about the problems and functions of Artificial Intelligence. This chapter includes several studies including research background, problem statement, research purpose, research questions, and research benefits.

1.1 Research Background

Artificial intelligence (AI) has been a constant noise in the past few years, and it appears that the advent of AI is the age's inevitable fate. To be sure, artificial intelligence (AI) technology is becoming more and more prevalent at every point of our interaction with society. Is an area of science and technology investigating how to make computers mimic and carry out tasks requiring human intelligence. It is dedicated to creating intelligent machines that are able to perceive, comprehend, learn, reason, decide, and communicate with people (Arun Rai, 2019). From little, everyday chatbots to massive industrial and government-level assisted offices, it is subtly altering people's lives all around the world (Yong Qin, 2023).

AI has seen a rise in investment in recent years. In 2021, businesses globally invested $276.1 billion in the industry, marking the peak of recent investment. It is still in an upward stage even though 2022 will see a decline (Armstrong, 2023). A thorough understanding of what has been researched and used in various business domains and disciplinary fields will be beneficial to AI practitioners and researchers in order to promote future developments in research on business applications of AI, which frequently call for a multidisciplinary perspective. With such a thorough understanding, scholars will be able to prioritize their areas of study, and practitioners will be able to direct wise investments in crucial business-related AI areas (Sandra Maria Correia Loureiro, 2021).

Artificial intelligence-related technology developments in recent years have forced entire businesses to reinvent themselves and rethink long-standing procedures. Even the manner we automate has evolved; it is clear that robotics and AI have streamlined procedures and increased operational productivity and efficiency (Hoyos, 2023). Artificial intelligence is still developing, leading to new business models, formats, and industries, and cultivating new drivers of economic growth (David Sjodin, 2021). The application of generative artificial intelligence by business parties has begun to transcend the boundaries of enterprise organizations, deeply integrate into existing organizational workflows and systems, reconstruct important business processes in areas such as network security, supply chain management, and customer service, forming an influential Powerful artificial intelligence technology. The business format is novel and the model is novel. The value of harnessing and exploiting large amounts of data is driven by the business potential of generating artificial intelligence (Hind Benbya, 2021). It is driving the rapid development of the digital economy and altering the way traditional industries operate (Riordan, 2023).

1.2 Problem Statement

The rapid advancement of artificial intelligence is accompanied by certain challenges and hidden concerns. The potential effects of artificial intelligence on society and our everyday lives are a subject that needs to be discussed by all as it becomes more and more prevalent in daily life. Artificial intelligence technology use comes with a number of difficulties and drawbacks in addition to social effects (Henrik Skaug Sætra, 2021). In order to identify the problem, it is important to understand people's negative perceptions of artificial intelligence and some related problems so that we can better provide some different perspectives to solve people's negative perceptions and problems of artificial intelligence.

First, artificial intelligence lack of employee acceptance. A major contributing factor to a lack of employee acceptance is the widespread fear of losing one's job (Stephan Schlögl, 2019). Even though artificial intelligence will create a great deal of new jobs, some workers will unavoidably lose their jobs as a result of the widespread adoption of this technology (Button, 2023). In jobs where regular job duties require little to no experience, unskilled labor will be replaced by artificial intelligence such as automated production, robotics, and certain repetitive tasks, etc (Jean-Philippe Deranty, 2022). It is important to give attention to this issue as well, because this is a huge threat to the careers of people at the bottom (Button, 2023). Other than that, due to a combination of factors, including incomplete knowledge and limited predictive capacity, people are unable to fully trust artificial intelligence. They are unable to forecast the actions of businesses using their own data, nor can they forecast how artificial intelligence systems will behave (Roman Lukyanenko, 2022).

Data security also one of the problems of artificial intelligence. Our lives are rapidly changing due to artificial intelligence. However, it is indisputable that although AI supports and enhances human life and productivity, it also poses security risks that are hard to ignore (Zeng, 2022). Network administration and security may be compromised by artificial intelligence as an "accomplice." Artificial intelligence has made it easier for cybercriminals to carry out highly concealed, targeted attacks on particular targets

at any time or location. Besides that, data theft risk is also one of the data security threats. Massive data sets are necessary for artificial intelligence's learning and training processes, and these sets may include a significant amount of sensitive user information. In the event that this data is misused or disclosed, privacy issues could arise (Ramanpreet Kaur, 2023). Artificial intelligence systems frequently possess a high degree of autonomy and complexity, but they also lack sufficient explainability. This could lead to people being unable to predict and control the behavior of artificial intelligence because they won't be able to understand how it makes decisions or behaves in certain ways. Second, there are issues and errors with data and algorithms that malfunction. This could lead to improper AI operation or unexpected outcomes (Paulliny Araújo Moreira, 2023).

Another problem with artificial intelligence is lack of skilled workforce. The lack of talent has emerged as a weakness in the advancement of artificial intelligence. Although the market for artificial intelligence is sufficiently large and the industry is growing quickly, genuine talent is in short supply. Due to the scarcity of talent and the difficulty in finding them, many businesses invest a great deal of effort in developing their own workforce in addition to hiring new personnel from outside (Amit Verma, 2021). In today’s workplace, companies and their employees must invest in continuous training and devote time to upskilling and reskilling in the field of artificial intelligence (Araz Zirara, 2023). In addition, despite the fact that everyone has heard a lot, most people are still confused about artificial intelligence. Most of the employees lack understanding of the fundamentals, expertise, and applications of AI in business and economics (Li, 2022).

1.3 Research Objectives

1.3.1 General Objectives

The main objective of this research is to gain a knowledge of the artificial intelligence's changes to business and economy. There were four variables which are efficiency of artificial intelligence, data quality, ease of use and blockchains.

1.3.2 Specific Objectives

Focusing on specific terms will allow us to better understand how artificial intelligence will bring changes to business and economics in the four IVs above.

I. To study the relationship between efficiency and artificial intelligence's changes to business and economics.

II. To study the relationship between data quality and artificial intelligence's changes to business and economics.

III. To study the relationship between ease of use and artificial intelligence's changes to business and economics.

IV. To study the relationship between blockchains and artificial intelligence's changes to business and economics.

1.4 Research Questions

Five main research questions, which are listed below in **Chapters 1.4.1 and 1.4.2**, were selected based on this subchapter and will be particularly looked at throughout my dissertation.

1.4.1 General Research Questions

I. What are the artificial intelligence’s changes to business and economy?

1.4.2 Specific Research Questions

I. Does artificial intelligence' s changes the efficiency in business and economics?

II. Is artificial intelligence transforming ease of use in business and economics?

III. Has artificial intelligence changed the quality of data in business and economics?

IV. Will blockchain significantly impact business and economics ?

1.5 Significance of Study

The primary goals of the research study on the trends and future of artificial intelligence in business and economics can be summed up as the main accomplishments, including contributions to the field. The following terms such as efficiency, data quality, ease of use and blockchains will be the statement that changes the consequences of artificial intelligence in business and economics.

By carrying out this study, we can expand our understanding of artificial intelligence,

such as skills, how it has changed the business and economics, what uses it can be used for, and more. Besides, insights that aid in the discovery and comprehension of fresh viewpoints. One way to learn about the public's views on artificial intelligence is through surveys. Regarding how artificial intelligence has changed the business and economics, they may or may not agree.

In addition, artificial intelligence is now the main force behind a new wave of scientific and technological revolution and the direction of future development due to the Internet's and information technology's rapid development. Thus, by learning more about artificial intelligence, can help businesses explore new business opportunities and areas. Moreover, publicizing research findings can contribute to increasing awareness that artificial intelligence is changing our lives and work, and learning artificial intelligence may have become an indispensable skill and trend.

We can also recognize the business and economic opportunities and challenges that artificial intelligence brings. Difficulties can include miscommunications, workers problems, and data problems. The advantages of artificial intelligence include the ability to grasp cutting-edge techniques and technologies, enhance productivity and quality of life at work, resolve societal issues, and boost competitiveness.

1.6 Conclusion

This research project's overall structure consists of five chapters. The general overview of the research project, background, objective, problem statement, research question and the significance of carrying out research on " Artificial Intelligence in Business and Economics: Trends and Future" were all covered in Chapter 1.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

Based on secondary data from the literature review, this chapter will explain IV and DV in more detail. A theoretical framework will be developed and the hypotheses on variables will be tested. In this study, there was one DV and four IV. Upon reviewing all pertinent additional data from the articles, a graphical diagram was included in the conceptual framework, and hypotheses were to be developed.

2.1 Underlying Theories

Technology that mimics human intelligence is known as artificial intelligence. This enables computers to carry out tasks that are typically performed by humans, like image and language analysis, speech recognition, and decision-making (Assistance, 2023).

Here, artificial intelligence is broken down into three stages. The first stage is narrow artificial intelligence, can only be used in restricted areas and is used to describe artificial intelligence that is focused on and limited to solving problems in particular fields. The tools use in this stage such as Siri, Alexa, Google Assistant, and others (Wirth, 2018). Besides, the second stage is artificial general intelligence which means artificial intelligence that is capable of carrying out every task that a human can. At this stage, different abilities can also be used such as the ability to use strategy, reasoning, problem solving and decision-making in the face of uncertainty, learning ability, planning ability and so on (Goertzel, 2014). In addition, the last stage is artificial super intelligence. If computer programs can continuously learn to outsmart the world's most intelligent and gifted humans, the resulting artificial intelligence system can be known

as super artificial intelligence (HOPKINS, 2022).

"Specific fields" are still boundaries that artificial intelligence cannot cross at this time because we are in a stage of weak artificial intelligence, strong artificial intelligence has not yet reached its full potential, and super artificial intelligence is not even able to see its shadow (Shameen, 2023).

2.2 Review of the Literature

2.2.1 Dependent Variable

2.2.1.1 Artificial Intelligence’s changes to Business and Economy

Artificial intelligence helps businesses and individuals achieve economic growth and provides a host of conveniences. Modest changes are being made to conventional work models and professional roles. Artificial Intelligence may replace certain jobs, but it's also creating new jobs (Kweilin Ellingrud, 2023). Artificial intelligence's emergence and use have led to changes and adaptations in numerous professions. Robots and automation could replace some labor-intensive traditional jobs. As artificial intelligence technology advances, a few new industries have also emerged (MorganR.Franka, 2019). The skills needed by employees are also changing. It is possible that the new work environment will not accept traditional skills, in which case retraining and ongoing education are crucial (Sofia Morandini, 2023).Intelligent machines will support people, not take their place.

Artificial Intelligence is transforming the business landscape across all sectors. The

operating, marketing, sales, and even management models of a company will all be altered by artificial intelligence. For instance, when it comes to positioning customers, developing customized (Sugar, 2023). It can increase a company's humanness and provide customers with more value. Artificial intelligence is showing great examples during COVID-19. Businesses started implementing a "digital first" strategy as a result of COVID-19. Businesses of all sizes and industries are finding that automating repetitive tasks can help employees quickly meet demands and better serve customers in the face of pressing demands for digital transformation. Businesses will need to use automated, AI-based personalization more and more in order to succeed and remain competitive in the digital market (Alfalih, 2022).

Other than that, artificial intelligence is affecting business decisions. It turns out that everyone uses ideas and experience to inform their decisions. This represents the initial feature of conventional business decision-making. The decision-making and implementation process also requires a lot of manual labor (Anupama Prasanth, 2023). On the contrary, technology and data-driven businesses are able to continuously optimize their operations while also offering ongoing feedback and marketing outcome prediction via data models. These can all be used to predict and make business decisions to help business success and economic growth (Calzon, 2022).

In addition, business and economics can increase revenue and save costs with the aid of artificial intelligence. The use of artificial intelligence technology can lower labor costs for businesses by substituting human labor. Businesses can use artificial intelligence technology, for instance, to automate labor-intensive tasks like customer service, sales, and marketing (Jain, 2023).

2.2.2 Independent Variable

2.2.2.1 Efficiency of Artificial Intelligence

Artificial intelligence automation systems can greatly improve business efficiency in terms of services and processes. Artificial intelligence can allow businesses to easily apply it in different departments, including the front end. Artificial intelligence can help human resources departments simplify the process of screening employees and increase efficiency in hiring the right employees that can cooperate perfectly with the human resources department. If you completely use manual management of the resource department, you will need to do repetitive tasks every day, which is a waste of time and energy. Automating the human resource's part can save a lot of time and eliminate more time-consuming tasks such as it can assist businesses in more precisely assessing worker performance, identifying issues, and quickly putting up improvement plans through automated data collection and analysis. These allow businesses to build a better future and enhance the economy (Umasankar Murugesan, 2023).

In addition, integrating artificial intelligence into customer service centers can also improve business efficiency and customer satisfaction. Artificial intelligence can provide high-quality services at the front desk such as utilize natural language processing technology to carry out various tasks, such as automatically answering questions from customers and resolving their issues. Moreover, personalized recommendations based on the needs and preferences of the customer can be created by analyzing their behaviors and needs using data analysis technology (Olufemi Muibi Omisakin, 2020). These technologies can effectively solve customer problems and manage customer relationships to improve customer satisfaction. Besides, ordinary employees can only work for about 8 hours at most and cannot work and serve all day long. However, in contrast, artificial intelligence can work for businesses 24 hours a day, seven days a week, all year round (Dirican, 2015). For example, a front desk robot or a chat robot. This enables efficient analysis with reliable and intelligent results, speeding up the business sales process

(Abid Haleem, 2022).

In terms of analysis, manual analysis often requires a lot of time and energy to complete the problems that need to be solved and is prone to errors. But artificial intelligence can quickly and thoroughly analyze large amounts of data to find problems, and handle more complex problems more effectively and accurately (Surya, 2015). For example, in screening threatening issues and fraud management, assisting security analysts in detecting abnormal data and detecting multiple parallel threats at the same time. This can quickly detect some unknown threats to the business and turn them into known threats, effectively improving the analysis efficiency of the entire team, save cost and adopting more proactive strategies so that businesses can operate on a safer network (Hari Prasad Josyula, 2023).

In the time of covid-19, many small businesses are experiencing management issues and challenges. In this case, artificial intelligence helps small businesses solve problems they have never experienced before and continue to survive in business (University, 2022). For example, intelligent and automated positions can effectively solve the problem of insufficient manpower or the inability of employees to reach their positions. Efficient production can be achieved even under these conditions (Xiaoqian Lu, 2022).

2.2.2.2 Data Quality

Usually, artificial intelligence requires big data for its next action or analysis, so high-quality data is very important for artificial intelligence because it affects the results, including accuracy, reliability, and effectiveness (Ataman, 2023). There may be data leakage problems when artificial intelligence uses data, but with the continuous advancement of artificial intelligence, this problem has begun to reduce or become more secure and less likely to be leaked than before. As long as employees and artificial intelligence cooperate and use it correctly (Ramanpreet

Kaur*, 2023). For example, when malware detects business systems, malicious URLs, and email attacks can lead to business data leakage. Artificial intelligence can effectively and quickly screen out these malicious activities and suspicious behaviors (Thorpe, 2022). Preventing these situations can better ensure the accuracy and integrity of the data and that it has not been maliciously tampered with.

Based on the above, data breaches are partly caused by human error. Human error can lead to errors and inaccuracies in data. Artificial intelligence can greatly reduce the occurrence of this situation. When humans and AI-based machines are put to similar tasks, artificial intelligence has shown to be more productive than humans. Before the development of artificial intelligence, human intervention was necessary for data entry. This leads to a high number of errors and the inability to obtain a desired level of data quality (Božić, 2023). But artificial intelligence can effectively prevent this kind of human error from happening, and artificial intelligence is also being used in many different fields to help reduce unnecessary losses and errors. For instance, AI is also capable of growing over time by learning from your data. The AI's ability to identify mistakes and recommend fixes will improve as more data is entered (Team, 2023). The intricate mathematical structures that are implemented by the algorithms used to create AI-based models enable operations to be carried out more accurately and efficiently (Abid Haleem M. J., 2022). This will also help businesses improve their data quality and accuracy.

In addition, artificial intelligence can improve the accuracy of forecast data, and this predictive analytics is key to business because it can use the results of predictions to make decisions. Compared with traditional statistical methods, artificial intelligence forecast data can provide high-quality forecast data and be more accurate for various industries. Moreover, artificial intelligence can forecast sales performance in the future by using market trends, historical sales data, and other variables. This supports companies in their efficient production scheduling, inventory management, and marketing strategy modifications (Albert Annor Antwi,

2019).

2.2.2.3 Ease of Use

Artificial intelligence is rapidly transforming how we interact with businesses, particularly in terms of convenience and bettering customer experience. Chatbots and intelligent virtual assistants can improve a business's customer service efficiency and convenience. Artificial intelligence has the ability to automatically resolve certain straightforward and relatively simple customer problems at any time, which not only lightens the workload for customer support agents but also expedites the resolution of issues (Martin Adam, 2020). In addition, artificial intelligence can also analyze some of the customer's preferences, behaviors, and historical data during conversations with customers to help businesses provide personalized services and provide suggestions based on needs. This will help businesses simplify a lot of communication and analysis time and make it more convenient (Ifekanandu Chukwudi Christian, 2023).

The data gathered can be prioritized, sorted, and classified by artificial intelligence. Generally, manual sorting relies on a few standard guidelines and straightforward techniques. Intelligent sorting offers greater customization and flexibility. In order to provide more intelligent sorting and recommendations based on particular application scenarios and user needs, it can integrate algorithms with artificial intelligence technology (Abid Haleem M. J., Artificial intelligence (AI) applications for marketing: A literature-based study, 2022).

Besides, artificial intelligence makes sales easy and marketing targeted. Artificial intelligence is capable of analyzing vast volumes of sales data, spotting possible business prospects, forecasting consumer purchasing patterns, and developing focused sales strategies. Hence improving the experience and contentment of customers. Sales teams can improve sales performance by utilizing AI to manage

the sales process more effectively, boost sales conversion rates, shorten sales cycles, and more (Piyush Jain, 2020).

2.2.2.4 Blockchains

These days, artificial intelligence (AI) and blockchain are the two most disruptive technologies. They have the power to completely upend social and economic structures and spark a creative revolution across a wide range of industries. The combination of artificial intelligence and blockchain technology will open up new application areas (Karger, 2020).

First, the digital contracts with pre-established rules and management principles that can be self-implemented are called smart contracts. They automate processes or events, like smart contract code optimization to lower blockchain operating costs and the use of classification and pattern recognition technologies for smart contract auditing and analysis. Additionally, by lowering the need for human supervision, artificial intelligence automation can help deal with complex blockchain workflows more quickly and efficiently (Chongxiao Qu, 2023).

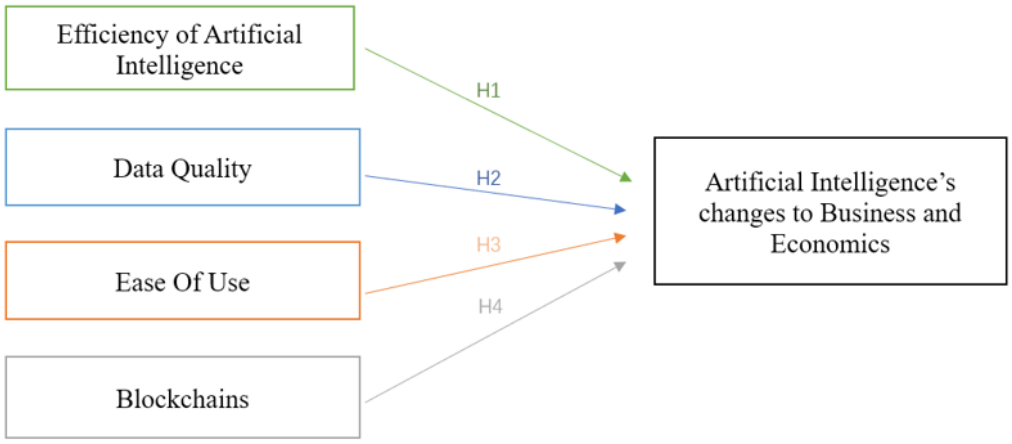
Blockchain systems are made more powerful by artificial intelligence through data-driven insights. AI implementation, for instance, can enhance sustainability, transparency, inventory management, and other aspects of blockchain-based supply chains (Vincent Charles, 2023). The cooperation of artificial intelligence and blockchain can better predict demand changes, supervise product quality, shorten time, etc. Tracking the movement of materials and goods along the supply chain can be done by using blockchain-based records. This can guarantee product safety, cut down on fraud, and boost productivity (Chenna, 2023).

Last, artificial intelligence researchers can make sure that their data is safe, unchangeable, and only available to the right parties by using blockchain

technology to store and share it. Furthermore, the transparency that blockchain provides makes it simple to track data access, which offers solutions for urgent problems like data privacy and compliance (Amit Kumar Tyagi, 2020).

2.3 Conceptual Framework

Figure 2.3: Proposed Conceptual Framework



As shown in Figure 2.3 referred to the conceptual framework of this research project which indicated four independent variables and one dependent variable.

2.4 Hypothesis Development

2.4.1 Efficiency of Artificial Intelligence

According to (Mohamed Hamada, 2021) research, their research results are positive for research on improving the efficiency of artificial intelligence, which

also proves that AI can effectively change the efficiency of business economies. Thus, the following hypothesis were proposed in these research projects.

H1: There is a significance relationship between efficiency and Artificial Intelligence's changes to business and economy.

2.4.2 Data Quality

In the research, can know about the AI decreasing manual labor and enhancing the quality of the data. You can see in this article how AI changes data quality (Bharadiya, 2022).

H2: There is a significance relationship between data quality and Artificial Intelligence's changes to business and economy.

2.4.3 Ease of Use

In these studies, we can learn that AI has changed the way they work, making their work faster and simpler than before (Nosova Svetlanaa, 2022).

H3: There is a significance relationship between ease of use and Artificial Intelligence's changes to business and economy.

2.4.4 Blockchains

In the research, can know about the combination of AI and blockchain can change the future of business and economics (Chenna, 2023).

H4: There is a significance relationship between blockchains and Artificial Intelligence's changes to business and economy.

2.5 Conclusion

The relationship between the artificial intelligence's changes to business and economics and efficiency, data quality, ease of use and blockchain has been discussed in this chapter. In addition, chapter 2 discusses all of the studies that were based on earlier researchers, and this chapter provides illustrations of theoretical models.

Chapter 3: METHODOLOGY

3.0 Introduction

This chapter's methodology will be reviewed and examined, along with the best approach to take when used for data collection. Research will be conducted based on this chapter for artificial intelligence's changes to business and economics.

3.1 Research Design

Collecting pertinent data and information from respondents is the approach used for survey collection. Regarding this research project, an online survey has been administered using a questionnaire. This questionnaire had been separated into three sections with 32 questions that is compulsory to answer. Section A is about the demographic profile that include 6 primary questions such as age, gender, highest academic qualification, race, employment status and income status. In addition, the others 26 questions separated into section B and C. Questions that include in section b is about the artificial intelligence's changes to business and economy which is dependent variable. Section C will be asked about the independent variables that include efficiency, data quality, ease of use and blockchain. These two sections will be answer in 5-Point Likert Scale and all question will be completed through the google form provided.

3.1.1 Descriptive Research

Typically, descriptive research gathers information, describes the events you wish

to see, and then summarizes and clarifies it (AECT, 2001). To determine the relationship between dependent variable (artificial intelligence's changes to business and economy) with the other four independent variables (efficiency of artificial intelligence, data quality, ease of use and blockchain) descriptive research is carry out. With descriptive data, research designs that are both qualitative and quantitative can be used. It makes it possible for the researchers to gather enough data for testing hypotheses. Descriptive research will use a variety of visual aids, including graphs, charts, and tables, to present various understanding-related topics.

3.1.2 Quantitative Research

In order to perform a quantitative analysis of data, quantitative research must count, measure, and analyze data using mathematical methods. Verifying the relationship between dependent variable and independent variables is what it seeks to accomplish. In order to achieve accuracy and representativeness in the results, quantitative research typically calls for a larger sample size and gathers consumer and user behaviors and attitudes (Sreekumar, 2023).

3.2 Data Collection Method

In order to analyze and interpret the information gathered, which in turn affects the methodologies and analytical techniques employed in research, data collection is essential. Data collections may have few methods that include survey online or face-to-face, interviews and others. A detailed survey should have prepared questions that are specific enough to get a variety of answers from participants (Kabir, 2016).

3.2.1 Primary Data

Additionally known as raw data. refers to data that is more current and pertinent when it is collected directly through personal interviews, questions, surveys, measurements, etc (Ajayi, 2023). This research is going to execute by providing respondents with online questionnaires. This questionnaire's format will be made in Google Forms and distributed online, enabling the spontaneous collection of all data.

3.3 Sampling Design

3.3.1 Target Population

According to (Barnsbee, 2018), a questionnaire is intended for a specific population. The reliability of the study's findings and conclusions can be impacted by the target population selection, which aids the researcher in better understanding that population's perceptions. The aim of this study was to investigate the artificial intelligence's changes to business and economy. There are no limitations on the age or gender of the target respondents for this research project, which will be conducted in Malaysia.

3.3.2 Sampling Location

Based on this questionnaire, citizens of Malaysia will participate. Among these, the place where environmental sample collection takes place is referred to as the sampling location. Surveys conducted in locations like office spots or among

college students can help us better understand how people perceive artificial intelligence and how some workers and students perceive the technology in their daily lives. Thus, Malaysia residents may be invited to take part in the survey.

3.3.3 Sampling Elements

Malaysian citizens were chosen as the sample subjects for this investigation. Furthermore, over 200 participants, ranging in age from 18 to 54, expressed the view that perceptions and experiences of artificial intelligence vary among different age groups. These participants can therefore take part in this questionnaire.

3.3.4 Sampling Technique

Sample data from a group of people is identified using sampling techniques in order to produce an accurate conclusion in the result. There were 34,000 or more Malaysians in the country overall, as shown by the statistical data below. In addition, sampling technique based on convenience or "accessibility" is called convenience sampling, sometimes referred to as arbitrary sampling. Convenience sampling techniques include, for instance, asking random people on the street questions and distributing surveys through promotional materials (Methodology, 2012). This is also the simplest way to collect questionnaires, and it is more convenient to collect questionnaires in Malaysia.

34,308,525

Malaysia Population 1950-2023

Malaysia - Historical Population Data

Year	Population	Growth Rate
2023	**34,308,525**	1.09%
2022	33,938,221	1.09%
2021	33,573,874	1.13%

Source: Macrotrends

3.3.5 Sampling Size

The sample size referred to as the chosen population in a given study. In theory, a smaller sample size should lead to a larger margin of error and more erratic results. For instance, many research sample sizes are about two hundred and above (Jeovany Martínez-Mesa, 2014). Thus, the Google Form will be used to distribute the questionnaire to as many target participants as possible in order to collect accurate data.

3.4 Research Instrument

A variety of questions are included in the research instrument that will be used to collect data from the respondents who have been chosen. Responses to this study will be surveyed using a self-administered questionnaire, which they must complete on their own (University C. , n.d.). For more accurate and appropriate data collection, self-administered questionnaires with both closed- and open-ended questions should be used. Moreover, about 100 – 200 surveys were distributed between November 2023 and December 2023 over a 1-month period using Google Forms.

3.4.1 Questionnaire Design

A brief description of the research will be found on the questionnaire's cover page. There are 32 questions in all that participants must answer in which include 6 basic questions of the demographic profile which are established at the opening of the survey. Afterward, there will be 2 sections that include Section B and C with 26 questions to ask about the dependent variable (artificial intelligence’s changes to business and economy) and its independent variables (efficiency, data quality, ease

of use and blockchain) .These two sections will be answer in 5-Point Likert Scale and all question will be completed through the google form provided.

3.5 Construct Measurement

3.5.1 Scale of Measurement

The independent variables in this research include efficiency, data quality, ease of use and blockchain. The survey questionnaire consisted of 26 questions, excluding one about the respondents' demographics. All of the aforementioned independent variables are evaluated by means of these 26 questions.

In the meantime, the survey is disseminated via a link to a Google form and will also be conducted online and through social media platforms like Ms-Team, WhatsApp, Instagram, and email. For the measurement scale use in this research will be nominal and ordinal.

Nominal Scale is the variables with different values only indicate different kinds of things. We refer to these variables as categorical variables. The "gender" of the survey respondents is the categorical variable in the most often asked question about the demographic features of the questionnaire. Operations like addition, subtraction, multiplication, and division have no practical significance for fixed class variables (Frost, 2023).This scale will be use in the section A, the demographic profile.

Based on (Frost, 2023), a variable's value can be used to represent both the categorization and ordering of items based on specific attributes. **Ordinal variables** are what we refer to these as. Ordinal variables are used in the demographic characteristic’s questionnaire; this includes the Five-point-Likert-scale questions

that use to research relationship between the artificial intelligence's changes to business and economy and four independent variables. Ordinal variable values can be compared, or they can be arranged in a strongly-agree or strongly-disagree, but the difference between the two values usually not important in terms of practice.

3.6 Data Processing

The collection and conversion of data into information that is useful is known as data processing. Data processing must be done correctly to avoid having an adverse effect on the final product, or data output, and is typically carried out by a data scientist or team of data scientists (Duggal, 2023). In addition, the purpose of data processing is to make the data more reliable and to ensure that the results are more accurate.Listed below are all included in the use of data processing.

3.6.1 Data Editing

The process of applying checks to identify potentially erroneous data records or to find missing, inconsistent, or invalid entries is known as (Canada, 2021)redaction. Some editing is done at various stages or phases of data collection and processing, regardless of the type of data you work with. We need to confirm all data before entering it into IBM SPSS to prevent data errors.

3.6.2 Data Coding

Transforming data into an analysis-ready format is called data coding. It is the process of giving data items, like survey answers or demographic data, numerical or category codes. Subsequently, coded data can be examined through statistical

software and other instruments (Sigma, 2023).

3.6.3 Data Transcribing

Translating data between different forms is what transcription is. This most frequently refers to transcribing audio recordings of interviews or conversations into text format in the social sciences. But IBM-SPSS-Statistics helps researchers do more effective identification from larger data sets by employing advanced statistical analysis (Service, n.d.). More accurate market trend identification is made possible by sophisticated research methodologies.

3.6.4 Data Cleaning

The process of locating and fixing missing, erroneous, or inconsistent data from original data is referred to as "data cleaning." In order to guarantee that model construction or other data analysis can be predicated on high-quality data, data cleaning attempts to enhance data quality (Kowieski, 2022).

3.7 Data Analysis

3.7.1 Descriptive Analysis

Data research known as "descriptive analysis" helps to describe, illustrate, or summarize data points in an effective way so that patterns that meet all of the data's requirements can emerge. It also provides insight into the variability of the

gathered data. It is often presented quantitatively through the use of graphical or statistical methods. As a result, it makes it possible for researchers to appropriately analyze intricate datasets, leading to the production of more understandable insights (Villegas, n.d.).

3.7.2 Scale Measurement

3.7.2.1 Reliability Test

Research uses analytical data to assess the internal consistency of the variables, and this is known as Cronbach's Alpha (α). The degree of data reliability will be assessed through the creation of a top-notch test. The range of 0.00 to 1.00 comprises the potential values of the alpha coefficient. The tested elements are dependable and perfectly correlated if the value is 1. In contrast, if the value is displayed as 0.00, it indicates that the components do not correlate with one another. Furthermore, measurement error can be employed to lower attribution error and raise test reliability.

Based on table below, when the alpha is larger than 0.9 means it is excellent and is reliable. Other than that, the value that lower than 0.5 means there have no correlation in this test

Table 3.1: Cronbach's Alpha Rule of Thumb

Cronbach's Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Source: As cited by (Habidin, 2015)

3.7.3 Inferential- Analysis

Drawing conclusions about populations from samples is possible with inferential statistics. Testing of hypotheses will be done to determine significance and look at how variables relate to one another. Furthermore, a parameters estimate was a statistical sample that was measured in order to provide a range of values for an unknown parameter in the population (Kuhar, 2010).

3.7.3.1 Pearson Correlation Coefficient Analysis

Most commonly, a linear correlation can be measured using the Pearson correlation coefficient (r). The relationship's strength and direction between two variables are indicated by a number that ranges from -1 to 1. Nevertheless, there is no linear relationship—that is, no effect between the variables—when r = 0. Basically, as the points get farther apart from the line of best fit, the strength of the correlation between the variables gets stronger.

The best statistical method for identifying the relationship between the variables in this study, given that the data are either continuous or at least interval, is the Pearson correlation coefficient. Furthermore, to determine if the relationship between IVs is significant, this study employs a significance level of 0.05.

3.7.3.2 Multiple Linear Regression

To determine the relationship between artificial intelligence’s changes to business

and economy and the other four independent variables (efficiency, data quality, ease of use and blockchain), will examine in this studied.

The MLR model is constructed as follows:

$$Y=0+1E+2DQ+3EOU+4BC+i$$

Where:

Y = Artificial intelligence's changes to business and economy

E = Efficiency
DQ = Data Quality
EOU = Ease Of Use
BC = Blockchain
εi = Error-items

3.8 Conclusion

Chapter 3 provides a summary of the research design that offers a significant guarantee of the study's quality. In addition, questionnaires have been used to collect data; these have clarified the target respondent (employees and students) and places (Malaysia), as well as the sampling technique, sample size, and other pertinent details in this study. To confirm the reliability of every variable, a pilot test employing the Cronbach Alpha test is also conducted. Furthermore, the SPSS model will be employed to conduct a thorough data analysis on the actual data collected from the survey questionnaires. In the chapter that follows, the outcomes will be covered in more detail.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

The data analysis that was obtained from the target respondent over the course of one months is further explained in Chapter 4. Following the collection of all the data, the researcher will use IBM-SPSS to summarize the results that the respondents submitted. In this chapter, all statistics will be explained here one by one.

4.1 Descriptive Analysis

4.1.1 Respondents Demographic Profile

The demographic profile of all 141 respondents is shown below. The data analyzed gender, age, race, highest academic qualification, employment status and income status and etc. The explanation will be further explained based on the data that collected from the participants.

4.1.1.1 Gender

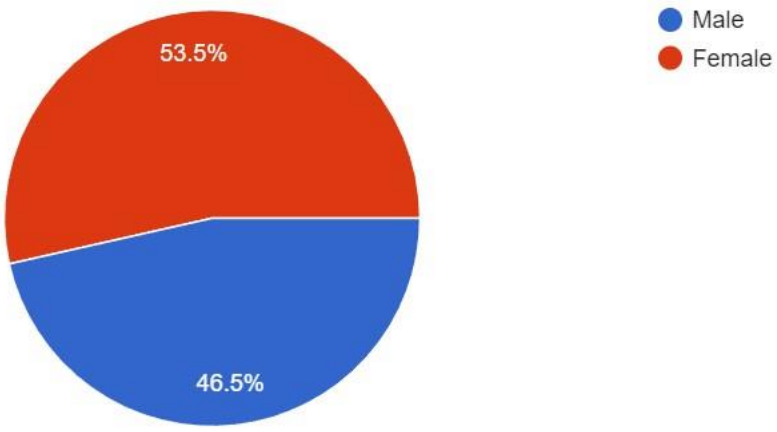


Figure 4.1: Gender

As shown in Figure 4.1, 46.5 percent of the respondents were Male with 66 respondent and Female with 75 respondents (53.5%).

4.1.1.2 Age Group

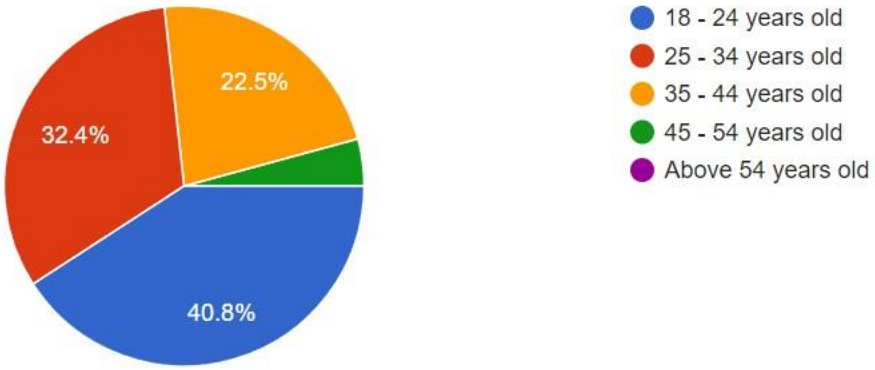


Figure 4.2 :Age Group

It can be seen from figure 4.2 the most respondents are the people with age between

18-24 years old, which made up 40.8 %, then age between 25-34 years old with 32.4%, followed by 22.5% with age between 35-44 years old. The remaining respondents are the age between 45-54 years old (4.3%) and the age above 54 years old is zero.

4.1.1.3 Ethnicity

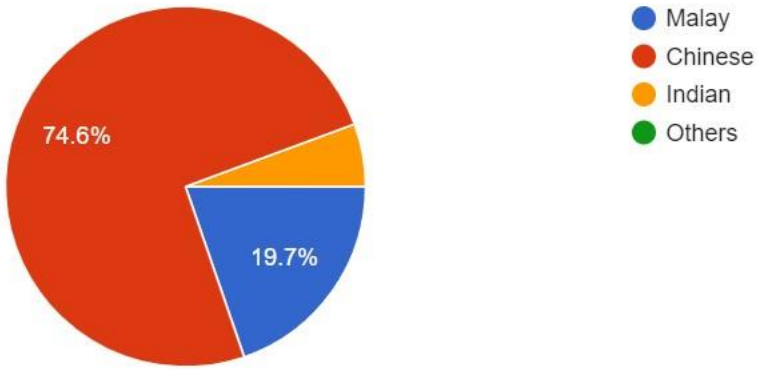


Figure 4.3: Ethnicity

In 105 out of 141 respondents (74.6%) were Chinese, 28 of them were Malay (19.7%) and 8 of them were Indian (5.7%)

4.1.1.4 Highest Academic Qualification

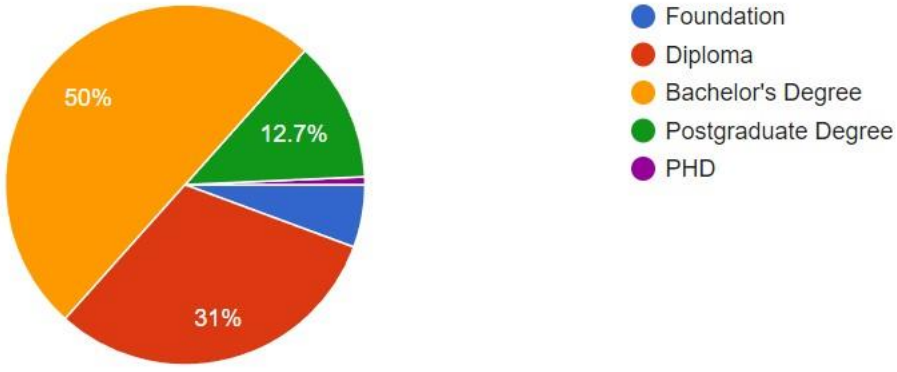


Figure 4.4: Highest Academic Qualification

According to 4.4 above, the majority of 71 respondents (50%) were bachelor's degree. The second largest were diploma with 31% and 12.7% were postgraduate degree . Whereas 8 out if 141 respondents (5.6%) were the foundation students.

4.1.1.5 Employment Status

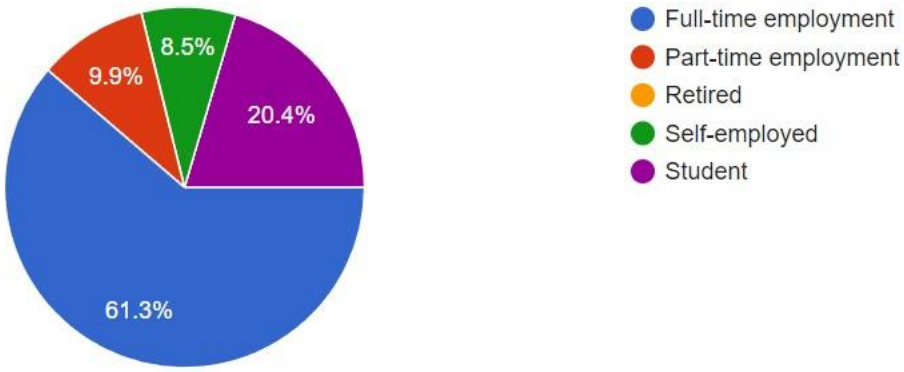


Figure 4.5: Employment Status

Based on the figure 4.5, majority of respondents have full-time employment status ,which were 61.3%. Then, 20.4% of respondents were still student and 9.9% participants were in a part-time employment status. The remaining 8.5% respondents were in self-employment status.

4.1.1.6 Income Status

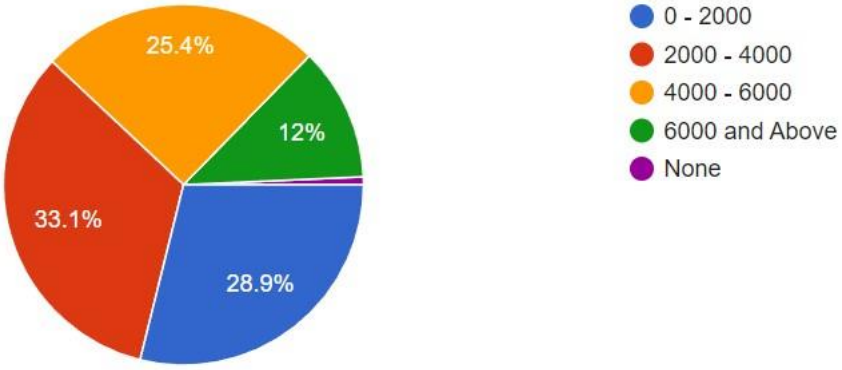


Figure 4.6: Income Status

In figure 4.6, 33.1% respondents earns income between range RM2000-RM4000. Following, 28.9% of respondents have earned RM0-RM2000, while 25.4% of respondent's income level fall within the range RM4000-RM6000 and 12% of participants income level were RM6000 and above.

4.2 Measurement Scale

4.2.1 Reliability Analysis

A scale's consistency in reflecting the concept it is measuring is referred to as reliability analysis. It can be helpful in some circumstances and at certain times. Reliability tests are designed to measure using pre-made questionnaires which are the artificial intelligence's changes to business and economy (Dependent Variable) and efficiency, data quality, ease of use and blockchain (Independent Variables) that can show correct result. The value of the Cronbach's Alpha that greater than 70 percent is deemed acceptable, while data exceeding 75 percent is deemed excellent (George Ursachi, 2015).

Table 4.1: Reliability Analysis for the variables: "Artificial Intelligence in Business and Economics: Trends and Future

Variables	Cronbach's Alpha Coefficient	No. of Items
Independents Variables (IV)		
Efficiency of AI (E)	0.948	6
Data Quality (DQ)	0.932	5
Ease Of Use (EOU)	0.938	5
Blockchain (BC)	0.892	3
Dependents Variable (DV)		
Artificial Intelligence's changes to business and economy	0.955	7

Based on the table 4.1, have demonstrated each variable's internal reliability. The Efficiency, which is one of the independent variables in this research, is the most reliable when compared to other variables, with an Alpha value of 0.948. Furthermore, Ease of use is listed with an alpha value of 0.938 as the second reliability. Then the data quality that have included alpha value of 0.932 and the blockchains get the lowest alpha value between the four independent variables which is 0.892. Other than that, the dependent variable of artificial intelligence's changes to business and economy has demonstrated the highest level of internal consistency reliability, with an alpha value of 0.955 respectively.

The above data shown that all the independent variables and dependent variable

consisted of the alpha value greater **than 0.75 which is 75 percent**, thus, that would be **excellent** data obtained in the questionnaire.

4.3 Inferential Analysis

4.3.1 Pearson's Correlation Analysis

Table 4.2: Correlation Coefficient of IV & DV: "Artificial Intelligence in Business and Economics Research: Trends and Future

Correlations

		AIC	E	DQ	EOU	BC
AIC	Pearson Correlation	1	.985**	.966**	.972**	.987**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	141	141	141	141	141
E	Pearson Correlation	.985**	1	.956**	.964**	.973**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	141	141	141	141	141
DQ	Pearson Correlation	.966**	.956**	1	.957**	.953**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	141	141	141	141	141
EOU	Pearson Correlation	.972**	.964**	.957**	1	.961**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	141	141	141	141	141
BC	Pearson Correlation	.987**	.973**	.953**	.961**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	141	141	141	141	141

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

E: Efficiency of Artificial Intelligence
DQ: Data Quality
EOU: Ease of Use
BC: Blockchain
AIC: Artificial Intelligence's to business to economy

According to the **Table 4.2**, the **blockchain (BC)** possess the greatest correlation coefficient value in relation to the dependent variable (AIC) with **0.987**. Besides, ease of use (EOU) is positively correlated with dependent variable (AIC) with a coefficient of value of 0.972. Other than that, the data quality (DQ) revealed the 4-IV with the lowest correlation coefficient with 0.966 to the dependent variable (AIC). Lastly, Efficiency (E) showed a positively correlated value of 0.985 to the dependent variable.

4.3.2 Multi Regression Model

Table 4.3: Multiple Linear Regression (MLR): Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.994[a]	.988	.988	.10616

a. Predictors: (Constant), E,DQ,EOU,BC

b. Dependent Variable: AIC

Table 4.3 showed the R-value of 0.994 reflecting the artificial intelligence's changes to business and economy (AIC) were impact by the four independent variables such as efficiency, data quality, ease of use and blockchain. The adjusted R square display that **98.8%** of the changes impact AIC may be answered by the four independent variables. This data shown that the research between dependent variable and independent variables is to be **considered reliable**.

Table 4.4: ANOVA Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	128.517	4	32.129	2851.022	.000[b]
	Residual	1.533	136	.011		
	Total	130.050	140			

a. Dependent Variable: AIC

b. Predictors: (Constant), E,DQ,EOU,BC

As shown in table 4.4, the **F-value result is 2851.022**, p= 0.000, with less than 0.001 as the significance level. The four IVs in this study have also contributed to the high F-value by explaining the **high variability** in the continuous impact on AIC.

Table 4.5: Coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.029	.039		.724	.470
	Efficiency	.340	.046	.342	7.403	.000
	Data Quality	.110	.037	.109	2.983	.003
	Ease of Use	.121	.041	.120	2.938	.004
	Blockchains	.423	.043	.435	9.811	.000

a. Dependent Variable: AIC

According to table 4.5, a linear equation had been used as below:

AIC to business and economy = 0.029 + 0.340 (E) + 0.110 (DQ) + 0.121 (EOU) + 0.423 (BC)

Based on table above, I have studied the relationship between the four independent

variables (efficiency, data quality, ease of use and blockchain) and dependent variable (artificial intelligence's changes to business and economy). According to data, four of the independent variables had a positive significant change to business and research in the future. The realization of the four variables had been attained in the **p-value are less than 0.005**. The value of the four independent variables is efficiency (0.000), data quality (0.003), ease of use (0.004) and blockchain (0.000). In addition, to explain how much each variable influences the other, one uses the function's standardized coefficient beta. Blockchain showed that it is the highest beta value of 0.435, thus it has the most significant change in business and economy. However, the data quality gets the lowest beta value in the data which is 0.109.

4.3.3 Hypothesis Testing

The hypothesis result has been shown in the table 4.6 below, there were four of the hypotheses being supported by the independent variables towards the artificial intelligence's changes to business and economy.

Hypothesis	Outcome	Determination
H1: There is a significance relationship between efficiency and Artificial Intelligence's changes to business and economy	Significant Value: 0.000, $p < 0.05$	Supported
H2: There is a significance relationship between data quality and Artificial Intelligence's changes to business and economy	Significant Value: 0.003, $p < 0.05$	Supported
H3: There is a significance relationship between ease of use and Artificial Intelligence's changes to business and	Significant Value: 0.004, $p < 0.05$	Supported

economy		
H4: There is a significance relationship between blockchains and Artificial Intelligence's changes to business and economy	Significant Value: 0.000, $p < 0.05$	Supported

4.4 Conclusion

As this chapter summarizes, 141 respondents in total participated in the data collection process, which was conducted using IBM SPSS. The demographic profile of the respondent in Section A will be examined using descriptive analysis based on the survey questionnaire. The 5-interval scale in Sections B and C will be used to measure each variable after the central tendencies. Several findings from diverse data analyses have been covered and made clear in this chapter. The findings will be covered in more detail in the chapter that follows.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

Chapter 5 will provide a summary and analysis of the IV and DV results. Other than that, The main conclusions and the hypothesis's outcome, along with the implications for further research, discussion, limitations, and recommendations, will all be summarized in this chapter.

5.1 Discussion of Major Findings

Table 5.1: Summarized Hypothesis Testing towards the Variables

Hypothesis	Decisions
H1: There is a significance relationship between **efficiency** and Artificial Intelligence's changes to business and economy	Supported
H2: There is a significance relationship between **data quality** and Artificial Intelligence's changes to business and economy	Supported
H3: There is a significance relationship between **ease of use** and Artificial Intelligence's changes to business and economy	Supported
H4: There is a significance relationship between **blockchains** and Artificial Intelligence's changes to business and economy	Supported

Based on this results, this research has studied whether efficiency, data quality, ease of use and blockchains have changes to business and economy. Thus, the results of the hypothesis test are shown in Table 5.1 below.

5.1.1 Hypothesis Findings

5.1.1.1 Efficiency of Artificial Intelligence

There is significant relationship between the efficiency and artificial intelligence's. changes to business and economy. Based on the findings of (Mr. Nikolaos Alexandros Perifanis, 2023), (Donghua Chen, 2022), they find that artificial intelligence significantly changes the efficiency of business and economics. Both research also have positive result in the hypothesis. Verified that artificial intelligence can help businesses manage their companies more efficiently. Therefore, the efficiency has provide a strong evidence against the dependent variable in this research.

5.1.1.2 Data Quality

There is a significant relationship between the data quality and the artificial intelligence's changes to business and economy. In the studied of (Sujit Wings, 2023) and (Laura Martín, 2023) had supported the findings that related to data quality and artificial intelligence's changes to business and economy. Most research showed that artificial intelligence can provide good and improve the data quality, but based on some perception in the research also will have the negative impact on the data quality when using artificial intelligence. So, significant change may not just only lead to the positive but also negative. This also show that

artificial can significantly impact the data quality of business and economy.

5.1.1.3 Ease of Use

There is significant relationship between ease of use and artificial intelligence's changes to business and economy. The research in this both studies (Horák, 2023), (Abdul Moaz Alkhayyat, 2022) shows that within the ease of use were significantly impacted the business and economy, due to the business use chatbots to help business to reduce work and easy to access. Other than this, the automation mode of artificial intelligence may help business in different way to make their work more convenient and easier.

5.1.1.4 Blockchain

There is significant relationship between the blockchain and artificial intelligence's changes to business and economy. According to the research (Taherdoost, 2022),have stated that blockchain is known as one of the variables that change the business and economy performance and productivity. In this research, can know that the combination of blockchain and artificial intelligence can help business become more transparent and safer. After this combination, the productivity and efficiency have improved .

5.2 Implications of Study

5.2.1 Research Implications

Based on the outcome of this study, I have looked into the four independent variables such as efficiency of artificial intelligence, data quality, ease of use and blockchain by using the conceptual framework. Furthermore, the implications of this study enable the researchers to comprehend how the artificial intelligence changes the business and economy productivity, business model , working style and so on. According to this research study, has yielded the conclusion that efficiency, data quality, ease of use and blockchain had significantly changes to business and economy. In addition, based on this research, can improve the public knowledge about artificial intelligence and making them aware that business is being changed by artificial intelligence may provide them with a new market. This may help businesses to have the idea to use artificial intelligence to reduce their workload and simplify their production.

5.2.2 Managerial Implications

According to this research paper is it helps citizens of Malaysia learn more about pertinent subjects which is the “Artificial Intelligence in Business and Economics : Trends and Future”. Based on the survey results included in this research paper, people typically place a high value on the trend and future of the business, what will change the business. Similarly, people often look for business opportunities on how to reduce costs and how to improve the efficiency of a business such as using the chatbots or other automation function. As what we mentioned in the research, artificial intelligence can efficiently help a business to improve their business model in low cost. To summarize the significance of this research, it is to allow people to notice that the arrival of artificial intelligence is gradually changing our lives and even work.

5.3 Limitations of the Study

There were restrictions on the research that the investigator tried to identify during the process, and it was noted that these should be considered in subsequent studies. The researcher's initial issue was that the data analysis took too little time to complete. The distribution of the survey questionnaire and the data collection process from respondents take a total of one months. Because of the submission deadline, the researcher discovers that the process of distributing the questionnaire to the intended audience has taken longer. As a result, after removing those unnecessary data, the sample size was reduced. In addition, maybe 250 survey reports were issued, but only more than 100 were recovered in the end. It is also possible that the questionnaires you sent out were filled out in a haphazard way, and you need to sift through them carefully to find suitable and useful data. Maybe in Only a few dozen of the remaining more than 100 copies are useful. The useless data may be that some people did not read the questions carefully and answered the questions. They may just choose the same option or choose neutral, which will affect the accurate results of the data. Moreover, there is no time to select and screen survey targets, and it is impossible to focus on surveying workers in a certain field. For example, my survey is about artificial intelligence, and I may need to find professionals or workers in the field of artificial intelligence to add more Data accuracy.

Furthermore, our targeted investigators focused solely on Malaysian citizens. The survey may only can disseminate and gather data among UTAR students as well as my family and friends or maybe can distribute online to find other respondents at different state, but this also may cause the data not accurate if the respondents simply answer the questions or not the target respondents. The method used to gather the data was the second drawback of these investigations. When the relevant data were being collected, no qualitative research was done for this study. Even though quantitative research can look at how the four IVs and DV relate to one another, it typically produces only statistical findings.

In addition, there aren't many options available to respondents when it comes to

explaining their opinions, which could lead to inaccurate results. The respondents may select only the options that the researcher has predetermined. However, they may choose to answer some questions differently.

5.4 Recommendation for Future Research

There have been suggestions made for future researchers to deal with those issues because of the limitation that was previously noted. First, in order to obtain high-quality research, the researchers should give themselves more time. This is because a longer time frame gives them more opportunity to gather data and obtain a larger sample size. It's also important to look for people in their field of expertise. Surveying them can increase the credibility and accuracy of the data because they know something about their field. The researcher will obtain more accurate and pertinent data the more respondents participate in a survey.

It is then advised that future researchers collect data using both quantitative and qualitative methods. If you conduct face-to-face interviews, you can ask them more carefully about their opinions and learn more relevant information. The information and data obtained will be more accurate, because you can ensure that they do not answer questions casually. In addition, you can try to find people who are not Malaysian citizens to do the survey. It is not limited to Malaysia, but you can collect inquiries from different countries to get more different opinions.

5.5 Conclusion

In this research, the purpose is to assess the " Artificial Intelligence in business and economics: Trends and Future" . The four variables were supported in this research which were efficiency, data quality, ease of use and blockchain. In conclusion, since

future findings may differ, this study intends to provide a recommendation before future researchers conduct their own research so that they can address the problem when doing their research.

Reference

Abid Haleem, M. J. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S2666603022000136

Abid Haleem, M. J. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S2666603022000136?ref=pdf_download&fr=RR-2&rr=835323113b0c5f60

Abid Haleem, M. J. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S2666603022000136

AECT. (2001). 41.1 What Is Descriptive Research? Retrieved from AECT: https://members.aect.org/edtech/ed1/41/41-01.html#:~:text=Descriptive%20research%20involves%20gathering%20data,in%20understanding%20the%20data%20distribution.

Ajayi, V. O. (2023, May). A Review on Primary Sources of Data and Secondary Sources of Data. Retrieved from Research Gate: https://www.researchgate.net/publication/370608670_A_Review_on_Primary_Sources_of_Data_and_Secondary_Sources_of_Data

Albert Annor Antwi, A. A.-D. (2019, November 19). Application of Artificial Intelligence in Forecasting: A Systematic Review. Retrieved from SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3483313

Alfalih, A. A. (2022, March 5). Customer engagement design during the COVID 19 pandemic, mutual trust and intelligent automation: a conceptual perspective. Retrieved from National Library of Medicine: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8897731/

Amit Kumar Tyagi, A. S. (2020). Integrating Blockchain Technology and Artificial Intelligence: Synergies, Perspectives, Challenges and Research Directions . Retrieved from Softcomputing: chrome-

extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.softcomputing.net/tyagi2020jias.pdf

Amit Verma, K. L. (2021, February 1). An investigation of skill requirements in artificial intelligence and machine learning job advertisements. Retrieved from Sage Journals: https://journals.sagepub.com/doi/full/10.1177/0950422221990990

Anupama Prasanth, D. J. (2023). Role of Artificial Intelligence and Business Decision Making . Retrieved from The Science and Information (SAI) Organization: https://thesai.org/Publications/ViewPaper?Volume=14&Issue=6&Code=IJACSA&SerialNo=103

Araz ZiraraImran Alib, Nazrul IslamSyed. (2023, June). Worker and workplace Artificial Intelligence (AI) coexistence: Emerging themes and research agenda . Retrieved from: Science Direct: https://www.sciencedirect.com/science/article/pii/S0166497223000585

Armstrong, M. (2023 November, 2023). How Much Are Companies Investing in AI? Retrieved from Statista: https://www.statista.com/chart/31314/global-corporate-investment-in-artificial-intelligence/

Arun Rai, P. C. (2019, March). Next-Generation Digital Platforms: Toward Human-AI Hybrids. Retrieved from Research Gate: https://www.researchgate.net/publication/330909988_Next-Generation_Digital_Platforms_Toward_Human-AI_Hybrids

Assistance, P. (2023, July 25). Recent PhD Topics in Artificial Intelligence 2023. Retrieved from PhD Assistance: https://www.phdassistance.com/blog/recent-phd-topics-in-artificial-intelligence/#:~:text=A%20PhD%20topic%20in%20Artificial,selection%20of%20project%20topic%20introduction.

Ataman, A. (2023, October 30). Data Quality in AI: Challenges, Importance & Best Practices. Retrieved from AI Multiple: https://research.aimultiple.com/data-quality-ai/

Barnsbee, L. (2018). Target Population. Retrieved from Science Direct: https://www.sciencedirect.com/topics/engineering/target-

population#:~:text=The%20target%20population%20is%20the,subgroups%20should%20be%20described%20clearly.

Bharadiya, J. P. (2022). DRIVING BUSINESS GROWTH WITH ARTIFICIAL INTELLIGENCE AND BUSINESS INTELLIGENCE. Retrieved from IJCST: http://www.ijcst.com.pk/index.php/IJCST/article/view/232/187

Božić, V. (2023, April). APPLICATION OF ARTIFICIAL INTELLIGENCE IN REDUCING RISKS CAUSED BY THE HUMAN FACTOR. Retrieved from Research Gate: https://www.researchgate.net/publication/370131018_APPLICATION_OF_ARTIFICIAL_INTELLIGENCE_IN_REDUCING_RISKS_CAUSED_BY_THE_HUMAN_FACTOR

Button, E. (2023, January 9). The Impact of Artificial Intelligence on the Future of Workforces in the European Union and the United States of America. Retrieved from The White House: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.whitehouse.gov/wp-content/uploads/2022/12/TTC-EC-CEA-AI-Report-12052022-1.pdf

Calzon, B. (2022, November 17). Why Data Driven Decision Making is Your Path To Business Success. Retrieved from datapine: https://www.datapine.com/blog/data-driven-decision-making-in-businesses/

Canada, S. (2021, September 2). 3.4.3 Editing. Retrieved from https://www150.statcan.gc.ca/n1/edu/power-pouvoir/ch3/editing-edition/5214781-eng.htm

Chenna, S. (2023, January 18). AI and Blockchain: Towards Trustworthy and Secure Intelligent Systems. Retrieved from SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4324495

Chongxiao Qu, L. J. (2023). Exploration on the Fusion of Artificial Intelligence and Blockchain. Retrieved from Atlantis Press: https://www.atlantis-press.com/proceedings/bdeim-22/125985573

David Sjodin, V. P. (2021, September). How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops . Retrieved from Science Direct:

https://www.sciencedirect.com/science/article/pii/S0148296321003386

Dirican, C. (2015, July 3). The Impacts of Robotics, Artificial Intelligence On Business and Economics. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S1877042815036137?ref=pdf_download&fr=RR-2&rr=834f7ad7aec640d7

Duggal, N. (2023, July 24). What Is Data Processing: Cycle, Types, Methods, Steps and Examples. Retrieved from simplilearn: https://www.simplilearn.com/what-is-data-processing-article

Frost, J. (2023). Statistics By Jim. Retrieved from Nominal, Ordinal, Interval, and Ratio Scales: https://statisticsbyjim.com/basics/nominal-ordinal-interval-ratio-scales/#comments

Goertzel, B. (2014, January). Artificial General Intelligence: Concept ,State of the Art, and Future Prospects. Retrieved from Sciendo: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://sciendo.com/abstract/journals/jagi/5/1/article-p1.xml

Habidin, N. F. (2015, January). Sustainable Performance Measures for Malaysian Automotive Industry. Retrieved from Research Gate: https://www.researchgate.net/publication/281852946_Sustainable_Performance_Measures_for_Malaysian_Automotive_Industry

Hari Prasad Josyula, D. V. (2023, June 6). Is Artificial Intelligence an Efficient Technology for Financial Fraud Risk Management? . Retrieved from ARC Journals: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.arcjournals.org/pdfs/ijmsr/v11-i6/2.pdf

Henrik Skaug Sætra, E. F. (2021, June). Research in AI has Implications for Society: How do we Respond? Retrieved from Research Gate: https://www.researchgate.net/publication/352040180_Research_in_AI_has_Implications_for_Society_How_do_we_Respond

Hind Benbya, T. H. (2021, January 8). Artificial Intelligence in Organizations: Current State and Future Opportunities . Retrieved from SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3741983

HOPKINS, K. R. (2022, June 10). SINGULARITY RACE: ARTIFICIAL SUPER INTELLIGENCE AS MILITARY REVOLUTION . Retrieved from Defense Technical Information Center: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://apps.dtic.mil/sti/trecms/pdf/AD1210070.pdf

Hoyos, A. (2023, October 30). AI and the Future of Business and Economic Growth. Retrieved from ie university: https://www.ie.edu/insights/articles/ai-and-the-future-of-business-and-economic-growth/

Ifekanandu Chukwudi Christian, C. E. (2023, June). INFLUENCE OF ARTIFICIAL INTELLIGENCE (AI) ON CUSTOMER EXPERIENCE AND LOYALTY: MEDIATING ROLE OF PERSONALIZATION. Retrieved from Research Gate: https://www.researchgate.net/publication/371179296_INFLUENCE_OF_ARTIFICIAL_INTELLIGENCE_AI_ON_CUSTOMER_EXPERIENCE_AND_LOYALTY_MEDIATING_ROLE_OF_PERSONALIZATION

Jain, R. (2023, January). The Impact of Artificial Intelligence on Business: Opportunities and Challenges. Retrieved from Research Gate: https://www.researchgate.net/publication/370076950_The_Impact_of_Artificial_Intelligence_on_Business_Opportunities_and_Challenges

Jean-Philippe Deranty, T. C. (2022, June 28). Artificial intelligence and work: a critical review of recent research from the social sciences. Retrieved from Springer Link: https://link.springer.com/article/10.1007/s00146-022-01496-x

Jeovany Martínez-Mesa, D. A.-C. (2014, August). Sample size: how many participants do I need in my research?*. Retrieved from NIH: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4148275/

Kabir, S. M. (2016, July). METHODS OF DATA COLLECTION. Retrieved from Research Gate: https://www.researchgate.net/publication/325846997_METHODS_OF_DATA_COLLECTION

Karger, E. (2020, November). Combining Blockchain and Artificial Intelligence – Literature Review and State of the Art . Retrieved from Research Gate: chrome-

extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.researchgate.net/profile/Erik-Karger/publication/350734729_Combining_Blockchain_and_Artificial_Intelligence_-_Literature_Review_and_State_of_the_Art/links/606f017592851c8a7bb11372/Combining-B

Kweilin Ellingrud, G. S. (2023, July 26). Which jobs will be in demand? Which ones are shrinking? And which ones could be hardest to fill? Retrieved from McKinsey Global Institute: https://www.mckinsey.com/mgi/our-research/generative-ai-and-the-future-of-work-in-america

Li, L. (2022, July). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. Retrieved from Research Gate: https://www.researchgate.net/publication/361980796_Reskilling_and_Upskilling_the_Future-ready_Workforce_for_Industry_40_and_Beyond

Martin Adam, M. W. (2020, March 17). AI-based chatbots in customer service and their effects on user compliance. Retrieved from Springer Link: https://link.springer.com/article/10.1007/s12525-020-00414-7

Methodology, B. R. (2012). Convenience sampling. Retrieved from BRM: https://research-methodology.net/sampling-in-primary-data-collection/convenience-sampling/

Mohamed Hamada, D. T. (2021, March). Artificial Intelligence to Improve the Business Efficiency and Effectiveness for Enterprises in Kazakhstan. Retrieved from Research Gate: https://www.researchgate.net/publication/350300756_Artificial_Intelligence_to_Improve_the_Business_Efficiency_and_Effectiveness_for_Enterprises_in_Kazakhstan

MorganR.Franka, D. M. (2019, February 28). Toward understanding the impact of artificial intelligence on labor. Retrieved from MIT Digital: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://ide.mit.edu/sites/default/files/publications/1900949116.full%20AI.pdf

Nasrullah, M. (2023, October 26). Utilization of Artificial Intelligence (AI) in

Information Systems to Improve Business Efficiency. Retrieved from Jonhariono: https://www.ejournal.joninstitute.org/index.php/ProBisnis/article/view/310/264

Nosova Svetlanaa, N. A. (2022). Artificial intelligence as a driver of business process transformation. Retrieved from Science Direct: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://pdf.sciencedirectassets.com/280203/1-s2.0-S1877050922X00161/1-s2.0-S1877050922017586/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjEN%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJHMEUCIQDjk5

Olufemi Muibi Omisakin, C. B. (2020). Designing a Customer Feedback Service Channel Through AI to Improve Customer Satisfaction in the Supermarket Industry. Retrieved from World Scientific: https://www.worldscientific.com/doi/abs/10.1142/S021964922050015X

Paulliny Araújo Moreira, R. M. (2023, September 12). Artificial Intelligence and Industry 4.0? Validation of Challenges Considering the Context of an Emerging Economy Country Using Cronbach's Alpha and the Lawshe Method. Retrieved from MDPI: https://www.mdpi.com/2673-4117/4/3/133

Piyush Jain, K. A. (2020, July). Transforming Marketing with Artificial Intelligence. Retrieved from Reserach Gate: https://www.researchgate.net/publication/343262528_Transforming_Marketing_with_Artificial_Intelligence

Ramanpreet Kaur*, D. s. (2023). Artificial intelligence for cybersecurity: Literature review and future research directions . Retrieved from Science Direct: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://pdf.sciencedirectassets.com/272144/1-s2.0-S1566253523X00050/1-s2.0-S1566253523001136/main.pdf?X-Amz-Security-Token=IQoJb3JpZ2luX2VjENr%2F%2F%2F%2F%2F%2F%2F%2F%2F%2FwEaCXVzLWVhc3QtMSJHMEUCIAplgr1h

Ramanpreet Kaur, D. G. (2023, September). Artificial intelligence for cybersecurity:

Literature review and future research directions. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S1566253523001136

Riordan, S. (2023, November 27). How technology is disrupting traditional business models. Retrieved from Distinction: https://distinction.studio/journal/how-technology-is-disrupting-traditional-business-models

Roman Lukyanenko, W. M. (2022, Novermber 28). Trust in artificial intelligence: From a Foundational Trust Framework to emerging research opportunities. Retrieved from Springer Link: https://link.springer.com/article/10.1007/s12525-022-00605-4

Sandra Maria Correia Loureiro, J. G. (2021, May). Artificial intelligence in business: State of the art and future research agenda. Retrieved from ScienceDirect: https://doi.org/10.1016/j.jbusres.2020.11.001

Shameen, A. (2023, December 7). Tech: How a turbulent week changed the future of AI. Retrieved from The Edge Malaysia: https://theedgemalaysia.com/node/691468

Sofia Morandini, F. F. (2023, February). The Impact of Artificial Intelligence on Workers' Skills: Upskilling and Reskilling in Organisations. Retrieved from Research Gate: https://www.researchgate.net/publication/368721087_The_impact_of_artificial_intelligence_on_workers'_skills_Upskilling_and_reskilling_in_organisations

Sreekumar, D. (2023, March 23). What is quantitative research? Definition, methods, types, and examples. Retrieved from Researcher Life: https://researcher.life/blog/article/what-is-quantitative-research-types-and-examples/

Stephan Schlögl, C. P. (2019). Artificial Intelligence Tool Penetration in Business: Adoption, Challenges and Fears. Retrieved from Sci Hub: https://sci-hub.se/https://link.springer.com/chapter/10.1007/978-3-030-21451-7_22

Sugar, E. (2023, July 6). AI and Big Data: How Artificial Intelligence Is Transforming the Business Landscape. Retrieved from Dataversity: https://www.dataversity.net/ai-and-big-data-how-artificial-intelligence-is-transforming-the-business-landscape/

Surya, L. (2015, May). An exploratory study of AI and Big Data, and it's future in the United States. Retrieved from Research Gate: https://www.researchgate.net/publication/349310111_An_exploratory_study_of_AI_and_Big_Data_and_it's_future_in_the_United_States

Team, E. (2023, March 18). How AI Helps Prevent Human Error In Data Analytics. Retrieved from Inside Big Data: https://insidebigdata.com/2023/03/18/how-ai-helps-prevent-human-error-in-data-analytics/#:~:text=AI%20can%20also%20learn%20from,gets%20tired%20or%20makes%20mistakes.

Thorpe, J. (2022, March 10). Exclusive: Five ways AI can detect and prevent security threats. Retrieved from ISJ: https://internationalsecurityjournal.com/ai-prevent-security-threats/

Umasankar Murugesan, P. S. (2023, June). A study of Artificial Intelligence impacts on Human Resource Digitalization in Industry 4.0. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S2772662223000899

University, A. R. (2022, March 4). AI helped protect businesses from COVID-19 risks. Retrieved from Science Daily: https://www.sciencedaily.com/releases/2022/03/220304100958.htm

University, C. (n.d.). Research Instrument Examples. Retrieved from Teachers College: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.tc.columbia.edu/media/administration/institutional-review-board-/guide-amp-resources---documents/Published_Study-Material-Examples.pdf

Vincent Charles, A. E. (2023, January 25). A critical analysis of the integration of blockchain and artificial intelligence for supply chain. Retrieved from Springer Link: https://link.springer.com/article/10.1007/s10479-023-05169-w

Wirth, N. (2018, September 17). Hello marketing, what can artificial intelligence help you with? Retrieved from Sci Hub: https://sci-hub.se/https://journals.sagepub.com/doi/abs/10.1177/1470785318776841

Xiaoqian Lu, K. W. (2022, April 29). AI-Enabled Opportunities and Transformation Challenges for SMEs in the Post-pandemic Era: A Review and Research

Agenda. Retrieved from Frontiers: https://www.frontiersin.org/articles/10.3389/fpubh.2022.885067/full

Yong Qin, Z. X. (2023, March 11). Artificial Intelligence and Economic Development: An Evolutionary Investigation and Systematic Review. Retrieved from Springer Link: https://link.springer.com/article/10.1007/s13132-023-01183-2

Zeng, Y. (2022, November 2). AI Empowers Security Threats and Strategies for Cyber Attacks. Retrieved from Science Direct: https://www.sciencedirect.com/science/article/pii/S1877050922014661

Appendixes

Appendix A :Questionnaire

UKMZ3016 RESEARCH PROJECT

FINAL YEAR PROJECT (FYP)

BACHELOR OF INTERNATIONAL BUSINESS (HONOURS)

Research project title:	Artificial Intelligence in business and economics research： Trends and Future
FYP No:	202306-48
Student's name:	Yap Jee Yan
Student's ID:	1701659
Supervisor's name:	Ms. Lee Sim Kuen

Section A (Demographic)

Please tick in "✓" your answer at the box below

Gender

☐ Male

☐ Female

Age

☐ 18-24

☐ 25-34

☐ 35-44

☐ 45-54

☐ Above 54

Race

☐ Malay

☐ Chinese

☐ Indian

☐ Others

Highest Academic Qualification

☐ Foundation

☐ Diploma

- ☐ Bachelor's degree
- ☐ Postgraduate degree
- ☐ PHD

Employment Status

- ☐ Full-time employment
- ☐ Part-time employment
- ☐ Retired
- ☐ Self-employed
- ☐ Student

Income status

- ☐ 0-2000
- ☐ 2000-4000
- ☐ 4000-6000
- ☐ 6000 and above
- ☐ None

Section B

Dependent Variables

Please use the five-point Likert Scale [1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)] to respond to the given statements below.

Strongly Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)
1	2	3	4	5

Artificial Intelligence's changes to Business and Economics	SD	D	N	A	SA
1.) Artificial Intelligence (AI) will change the future of business and economics	1	2	3	4	5
2.) Artificial Intelligence (AI) is critical to future success in business and economics	1	2	3	4	5
3.) Artificial intelligence (AI) will replace human jobs in the future	1	2	3	4	5
4.) Artificial Intelligence (AI) has positively impacted decision-making process in businesses	1	2	3	4	5
5.）Artificial Intelligence (AI) will help predict market trends and optimize investment strategies	1	2	3	4	5
6.) Artificial Intelligence (AI) positively impacts cost reductions in various business sectors	1	2	3	4	5
7.) Artificial Intelligence (AI) driven automation will play a significant role in reshaping job roles and responsibilities	1	2	3	4	5

Section C

Independent Variables

Please use the five-point Likert Scale [1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA)] to respond to the given statements below.

Strongly Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)
1	2	3	4	5

Efficiency of Artificial Intelligence	SD	D	N	A	SA
1.) I think Artificial Intelligence (AI) can effectively solve problems related to fraud detection and risk management	1	2	3	4	5
2.) I think that Artificial Intelligence (AI) improves the efficiency of information storage and retrieval	1	2	3	4	5
3.) I think that Artificial Intelligence (AI) technology can quickly adapt to changing economic conditions and market changes.	1	2	3	4	5
4.) I think that Artificial Intelligence (AI) in economic policy making can lead to more informed and effective decisions	1	2	3	4	5
5.) I think that Artificial Intelligence (AI) can help businesses personalize marketing strategies based on individual preferences	1	2	3	4	5

6.) I think the results of Artificial Intelligence (AI) will enhances business efficiency and productivity	1	2	3	4	5

Data Quality	SD	D	N	A	SA
1.) I think that Artificial Intelligence (AI) data will not be easily lost	1	2	3	4	5
2.) I think that Artificial Intelligence's (AI) ability to handle and process large datasets leads to improve data quality	1	2	3	4	5
3.) I think that Artificial Intelligence (AI) help in identifying data errors effectively	1	2	3	4	5
4.) Artificial intelligence (AI) technology improves the accuracy of business and economic data analysis	1	2	3	4	5
5.) Artificial Intelligence (AI) systems help maintain data integrity throughout the lifecycle of business processes	1	2	3	4	5

Ease of Use	SD	D	N	A	SA
1.) Artificial Intelligence (AI) will increase the enterprise workers' technological knowledge	1	2	3	4	5
2.) Artificial Intelligence (AI) can enhance the quality of enterprise workers' professional performance	1	2	3	4	5

3.) Artificial Intelligence (AI) technologies are user-friendly and easy to implement in business and economic contexts	1	2	3	4	5
4.) Artificial Intelligence (AI) can improve corporate business model management	1	2	3	4	5
5.) Artificial Intelligence (AI) tools are accessible to individuals with varying levels of technical expertise	1	2	3	4	5

Blockchains	SD	D	N	A	SA
1.) Artificial Intelligence (AI) Improves Business Operational Efficiency and Positively Impacts Economic Growth	1	2	3	4	5
2.) The integration of Artificial Intelligence (AI) and blockchain technology creates a more transparent and secure supply chain	1	2	3	4	5
3.) AI-driven predictive analytics in finance can lead to more accurate market forecasts and investment decisions	1	2	3	4	5

Appendix B: Correlation Coefficient (Full Version)

Correlations

		AIC	E	DQ	EOU	BC
AIC	Pearson Correlation	1	.985**	.966**	.972**	.987**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	141	141	141	141	141
E	Pearson Correlation	.985**	1	.956**	.964**	.973**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	141	141	141	141	141
DQ	Pearson Correlation	.966**	.956**	1	.957**	.953**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	141	141	141	141	141
EOU	Pearson Correlation	.972**	.964**	.957**	1	.961**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	141	141	141	141	141
BC	Pearson Correlation	.987**	.973**	.953**	.961**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	141	141	141	141	141

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

Appendix C: Central Tendencies Measurement Constructs: Efficiency

Item Statistics

	Mean	Std. Deviation	N
I think Artificial Intelligence (AI) can effectively solve problems related to fraud detection and risk management	4.02	1.186	141
I think that Artificial Intelligence (AI) improves the efficiency of information storage and retrieval	3.89	1.080	141
I think that Artificial Intelligence (AI) technology can quickly adapt to changing economic conditions and market changes.	3.99	.986	141
I think that Artificial Intelligence (AI) in economic policy making can lead to more informed and effective decisions	4.13	1.009	141
I think that Artificial Intelligence (AI) can help businesses personalize marketing strategies based on individual preferences	4.06	1.164	141
I think the results of Artificial Intelligence (AI) will enhances business efficiency and productivity	3.91	1.082	141

Appendix D: Central Tendencies Measurement Constructs: Dependent Variables

Item Statistics

	Mean	Std. Deviation	N
Artificial Intelligence (AI) will change the future of business and economics	4.09	1.183	141
Artificial Intelligence (AI) is critical to future success in business and economics	3.91	1.105	141
Artificial intelligence (AI) will replace human jobs in the future	3.96	1.020	141
Artificial Intelligence (AI) has positively impacted decision-making process in businesses	4.13	1.013	141
Artificial Intelligence (AI) will help predict market trends and optimize investment strategies	4.08	1.178	141
Artificial Intelligence (AI) positively impacts cost reductions in various business sectors	3.91	1.075	141
Artificial Intelligence (AI) driven automation will play a significant role in reshaping job roles and responsibilities	3.99	1.007	141

Appendix E: Ethical Approval Letter

UNIVERSITI TUNKU ABDUL RAHMAN DU012(A)
Wholly owned by UTAR Education Foundation Co. No. 578227-M

Re: U/SERC/272/2023

17 October 2023

Dr Fitriya Binti Abdul Rahim
Head, Department of International Business
Faculty of Accountancy and Management
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
43000 Kajang, Selangor

Dear Dr Fitriya,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your students' research project from Bachelor of International Business (Honours) programme enrolled in course UKMZ3016. We are pleased to inform you that the application has been approved under Expedited Review.

The details of the research projects are as follows:

No.	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	A Comparative Study: Exploring Food Security in Malaysia and Singapore	Liow Jia Ying	Dr Angelina Anne Fernandez	17 October 2023 – 16 October 2024
2.	Factor Affecting Customers Satisfaction in e-commerce	Casandra Pua Kei Ying	Ms Annie Yong Ing Ing	
3.	Savouring Malacca: Exploring the Factors Influence Travellers' Intention Toward Malacca Local Delicacies	Chai Wei Lun	Ms Tai Lit Cheng	
4.	Measuring the Impact of Artificial Intelligence (AI) Applications in Online Customer Service	Rachel Ong Pei Lyn	Dr Farah Waheeda Binti Jalaludin	
5.	The Awareness Towards AI Adoption in Personal Financial Planning Among the Higher Institutions' Undergraduates in Klang Valley, Malaysia	Lim Kean Chuan	Mr Raymond Ling Leh Bin	
6.	Online Purchase Intention Among Generation Z	Soong Vai Ven	Dr Sia Bee Chuan	
7.	The Impact of Digital Marketing on Consumer Buying Behavior	Loo Jia Jun	Dr Ooi Bee Chen	
8.	Factors Influencing Logistic Outsourcing Practices by E-platform Sellers in Malaysia	Fong Chao Shen	Ms Ung Leng Yean	
9.	The Impact of Strategic Management Towards Corporate Performance – A Case for Malaysian Companies	Ng Kah Lok	Dr Foo Meow Yee	
10.	The Factors that Influences Micro Women Entrepreneurs to Adopt Digital Platform Based Business	Tan Han Bing	Pn Ezatul Emilia Binti Muhammad Arif	
11.	Factors Affecting Entrepreneurship Intentions Among Students	Kunadharshaan Kunabalan	Dr Komathi a/p Munusamy	

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Accountancy and Management
Director, Institute of Postgraduate Studies and Research

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Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my

Appendix F: UTAR PDP Statement

5. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.

7. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

8. You may access and update your personal data by writing to us at_____.

Acknowledgment of Notice

[ ] I have been notified and that I hereby understood, consented and agreed per UTAR above notice.

[ ] I disagree, my personal data will not be processed.

.....
Name:
Date:

PERSONAL DATA PROTECTION NOTICE

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:

   a) Name
   b) Identity card
   c) Place of Birth
   d) Address
   e) Education History
   f) Employment History
   g) Medical History
   h) Blood type
   i) Race
   j) Religion
   k) Photo
   l) Personal Information and Associated Research Data

2. The purposes for which your personal data may be used are inclusive but not limited to:

   a) For assessment of any application to UTAR
   b) For processing any benefits and services
   c) For communication purposes
   d) For advertorial and news
   e) For general administration and record purposes
   f) For enhancing the value of education
   g) For educational and related purposes consequential to UTAR
   h) For replying any responds to complaints and enquiries
   i) For the purpose of our corporate governance
   j) For the purposes of conducting research/ collaboration

3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.