FACULTY OF TECHNOLOGY MANAGEMENT AND TECHNOPRENEURSHIP

UNDERSTANDING THE FACTORS THAT INFLUENCE UTeM STUDENT'S TOWARD SATISFACTION OF ARTIFICIAL INTELLIGENCE (AI) IN E-LEARNING

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DECLARATION

I declare that this thesis entitled "UNDERSTANDING THE FACTORS INFLUENCE UTeM STUDENT'S TOWARD SATISFACTION OF ARTIFICIAL INTELLIGENCE (AI) IN E-LEARNING" is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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APPROVAL

I hereby declare that I have checked this report entitled "UNDERSTANDING THE FACTORS THAT INFLUENCE UTeM STUDENT'S TOWARD SATISFACTION OF ARTIFICIAL INTELLIGENCE (AI) IN E-LEARNING" and in my opinion, this thesis it complies the partial fulfillment for awarding the award of the degree of Bachelor of Technology Management (Technology Innovation) With Honors.

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DEDICATION

First and foremost, I want to express my gratitude to my family and supervisor for their encouragement and support in helping me finish my thesis report. Finally, I want to express my gratitude to Universiti Teknikal Malaysia Melaka for giving me the opportunity to conduct and finish the research.

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First and foremost, I would like to express my gratitude to God for giving me good health, strength, and the opportunity to gain my knowledge successfully to complete this Final Year Project (FYP) within a given time. I would like to thank my parents for their support and patience in waiting for me to finish my degree. I also express my sincere thanks to my friends for giving timely pieces of advice to this research project. They are sharing a lot of knowledge related to proceeding with this research project. It helped me to complete this research project more efficiently.

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Last but not least, I would like to express my appreciation to all respondents who contributed their time and efforts in filling out the questionnaires. They had provided valuable feedback that assisted me in finishing this research. With the assistance and support from the respondents, I have successfully fulfilled all the components of a questionnaire. Once again, I am grateful and honestly thankful to all.

ABSTRACT

The use of artificial intelligence (AI) in education is growing to improve teaching methods and cater to students' educational needs. Adaptive learning is a teaching strategy that makes use of algorithms and learning AI systems to improve interactions, personalize online learning environments, and meet the specific needs of students. Artificial intelligence (AI) technology can effortlessly support and enhance the learning process by imitating human intelligence through deep learning and natural language processing. The goal of this study is to know the factors that influence UTeM students toward satisfaction of AI in e-learning and identify the most significant factors that influence UTeM students. The study takes an exploratory approach and collects information from numbers of students from UTeM using quantitative methodologies. The study will approach the students that had experienced artificial intelligence and gather their opinions about what factor influences them to use artificial intelligence in e-learning using questionnaire method. A five-point Likert scale questionnaire will be used in acquiring the respondent's information. The research will draw attention to the most reasons that influence them to use artificial intelligence, including AI literacy, Confidence in AI, Behavioral intention to learn AI, AI for social good, Benefit of AI and Student's acceptance toward AI. The study also reveals the role of artificial intelligence in e-learning. A number of students from University Teknikal Malaysia Melaka (UTeM) will be utilized in a quantitative study to gather data. Lastly, the researcher will conclude that the benefit of artificial intelligence in e-learning is an important component in e-learning.

ABSTRAK

Penggunaan kecerdasan buatan (AI) dalam pendidikan semakin berkembang untuk meningkatkan kaedah pengajaran dan memenuhi keperluan pendidikan pelajar. Pembelajaran adaptif merupakan strategi pengajaran yang menggunakan algoritma dan sistem AI pembelajaran untuk meningkatkan interaksi, menyesuaikan persekitaran pembelajaran dalam talian, dan memenuhi keperluan khusus pelajar. Teknologi kecerdasan buatan (AI) dapat menyokong dan meningkatkan proses pembelajaran dengan meniru kecerdasan manusia melalui pembelajaran mendalam dan pemprosesan bahasa semula jadi. Tujuan kajian ini adalah untuk mengetahui faktor-faktor yang mempengaruhi kepuasan pelajar UTeM terhadap kecerdasan buatan dalam pembelajaran dalam talian dan mengenal pasti faktor yang paling signifikan mempengaruhi pelajar UTeM. Kajian ini mengambil pendekatan eksploratori dan mengumpul maklumat dari sejumlah pelajar UTeM menggunakan metodologi kuantitatif. Kajian akan menghubungi pelajar yang telah mengalami kecerdasan buatan dan mengumpul pendapat mereka tentang faktor apa yang mempengaruhi mereka menggunakan kecerdasan buatan dalam pembelajaran dalam talian menggunakan kaedah soal selidik. Soal selidik menggunakan skala Likert lima mata untuk mendapatkan maklum balas responden. Kajian ini akan menumpukan perhatian kepada faktor-faktor utama yang mempengaruhi mereka menggunakan kecerdasan buatan, termasuk literasi AI, keyakinan terhadap AI, niat tingkah laku untuk belajar AI, AI untuk kebaikan sosial, manfaat AI, dan penerimaan pelajar terhadap AI. Kajian ini juga mendedahkan peranan kecerdasan buatan dalam pembelajaran dalam talian. Sejumlah pelajar dari Universiti Teknikal Malaysia Melaka (UTeM) akan digunakan dalam kajian kuantitatif ini untuk mengumpul data. Akhirnya, penyelidik akan membuat kesimpulan bahawa manfaat kecerdasan buatan dalam pembelajaran dalam talian adalah komponen penting dalam pembelajaran dalam talian.

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Chapter 1

INTRODUCTION

1.0 Introduction

Chapter 1 is about the introduction of research that provides an overall view of background study about the factors that influence UTeM students toward satisfaction of artificial intelligence (AI) in e-learning. Other elements like problem statement, research questions, research objectives, scope, limitation, and importance of study will also be included in this chapter.

1.1 Research Background

The integration of artificial intelligence (AI) in e-learning platforms has the potential to revolutionize education by offering personalized and adaptive learning experiences (Neerja Kashive, Powale, & Kshitij Kashive, 2020). However, to ensure the effective implementation of AI in e-learning, it is essential to understand students' perception and attitudes toward this technology. This research aims to investigate and analyze students' perspectives, beliefs, and experiences regarding AI-enabled e-learning. By addressing the gaps in previous studies, this research seeks to provide a comprehensive understanding of the factors that influence students toward AI and contribute to the successful adoption of AI in e-learning environments.

Several studies have explored the role of AI in education, focusing on various aspects such as intelligent tutoring systems, adaptive learning platforms, and virtual assistants. These studies have highlighted the benefits of AI in enhancing personalized learning, providing immediate feedback, and supporting students' engagement. For instance, research by Smith and Johnson (2018) demonstrated that AI-powered tutoring systems significantly improved student performance and engagement levels.

However, while these studies have shed light on the technical capabilities and pedagogical advantages of AI in e-learning, few have comprehensively investigated students' perceptions and attitudes toward this technology. Some studies have examined students' attitudes toward AI in

general, outside the context of education. For example, a survey conducted by Chen et al. (2019) explored the public's perception of AI technologies and found that respondents were generally positive but expressed concerns about privacy and job displacement.

There is a need for research focusing specifically on students' perceptions of AI-enabled e-learning systems and their impact on learning outcomes. By addressing this research gap, this study aims to provide valuable insights into students' attitudes, beliefs, and experiences related to AI in education. Understanding the factors that influence students' perceptions will contribute to the effective design and implementation of AI-enabled e-learning systems. Additionally, investigating the impact on learning outcomes will provide evidence on the efficacy of AI technologies in improving students' educational experiences.

1.2 Problem Statement

The rapid integration of artificial intelligence (AI) into e-learning systems has presented new opportunities for enhancing education. However, a significant gap exists in our understanding of students' perceptions of AI-enabled e-learning systems and their impact on learning outcomes (Chen et al., 2020; Zhang et al., 2021). Existing studies have primarily focused on technical capabilities and pedagogical benefits, neglecting the critical aspect of student perspective. Therefore, there is a pressing need to investigate students' perceptions to gain insights into their beliefs, attitudes, and experiences concerning AI in e-learning.

Furthermore, there hasn't been enough research done on the variables that affect how students view e-learning systems with AI capabilities. In order to build efficient AI technologies and to guarantee their adoption and integration into educational environments, it is essential to comprehend these variables, including prior experience with technology, perceived benefits, usability, and concerns.

One of the problems that students could face when using artificial intelligence is lack of personalized learning. This is because e-learning solutions with AI-powered capabilities frequently struggle to offer completely personalized learning experiences (Maghsudi, 2021). These systems might provide adaptable material and learning routes, but they might not effectively accommodate different learning preferences, needs, and styles. When presented with

a one-size-fits-all strategy, students' engagement and comprehension may suffer because of their diverse cognitive capacities and learning rates. Without the proper personalization, students could struggle to understand difficult ideas or properly retain information.

While AI-powered e-learning platforms provide convenience and flexibility, they may also result in a decreased feeling of interpersonal engagement. Students gain from direct contacts with teachers and peers in traditional classroom settings, which promote collaborative learning and the growth of critical thinking abilities. However, according to Davenport (2020), AI systems might not be able to deliver the same amount of individualized instruction, mentoring, and assistance that human teachers do. The lack of human interaction may make students feel alone, demotivated, and unable to ask questions or participate in productive discussions.

Besides that, AI-powered e-learning platforms are prone to bugs and technological problems, which can have a big impact on how well students learn (Singh, Jagendra et al, 2022). These technical difficulties could be caused by software defects, system failures, network issues, or other issues. Students may experience disruptions in their learning when these problems occur, which can cause frustration and result in the loss of important study time. Students' progress and participation may be hampered in some instances if they are unable to access course materials, turn in assignments, or participate in interactive learning activities.

1.3 Research Objectives

a) To determine the factors that influence UTeM students toward satisfaction of artificial intelligence (AI) in e-learning.
b) To investigate the most significant factors that influence UTeM students toward satisfaction of artificial intelligence in e-learning.

1.4 Research Questions

a) What are the factors influencing UTeM students toward satisfaction of AI in e-learning?
b) What is the most significant factor that influences UTeM students toward satisfaction of AI in e-learning?

1.5 Scope of The Study

This study especially uses quantitative research methodology to examine how students view AI-enabled e-learning systems and how they affect learning results. Students at the undergraduate or high school level within a chosen educational institution or a certain group of institutions will be the subject of the study.

Students' opinions on AI in e-learning will be investigated using surveys or questionnaires as the main data gathering method. The purpose of the survey is to evaluate students' satisfaction, attitudes, and experiences with AI in online learning. Additionally, it will contain questions to gauge how well students view the usefulness, usability, contentment, and influence of AI on learning outcomes.

Utilizing statistical methods like descriptive statistics, correlation analysis, and perhaps regression analysis, the quantitative data gathered will be examined. The investigation will look for patterns, trends, and relationships between how students view AI in e-learning and how those affect learning results.

The study will only analyze quantitative data; it will not gather or analyze qualitative data through the use of focus groups or interviews. The investigation of students' views using quantitative methods and the comprehension of the relationships between these perceptions and learning outcomes will be the only topics of interest.

It is important to realize that using a quantitative methodology may make it difficult to fully capture some aspects of students' opinions and experiences using AI in e-learning. The results of the study will also be particular to the chosen educational institution and could not be generalizable to a larger population without additional validation.

This study intends to offer valuable insight on the specific context of AI in e-learning within the chosen educational institution by concentrating on quantitative methodologies. The results can aid in understanding how students view AI in the classroom and how it affects learning outcomes, laying a quantitative foundation for further study and guiding the development of AI-enabled e-learning systems.

1.6 Limitation of Study

There are several limitations when doing this research. Firstly, this research is limited to students at the undergraduate or high school level within a specific educational institution or a certain group of institutions. This narrow focus may not provide a comprehensive understanding of the broader population's perceptions of e-learning. The second limitation is that the data collected for the research is solely based on the perceptions of the students who have used the e-learning module. This reliance on self-perceptions may introduce bias and lead to an incomplete or potentially skewed understanding of the effectiveness of e-learning. Third limitation is the research focuses solely on the perceptions of students who have used the e-learning module. It does not consider other forms of technology-mediated learning or variations in instructional approaches, limiting the generalizability of the findings to a broader e-learning context.

1.7 Significant of Study

As educational technologies are matched with students' needs, preferences, and expectations, it is important to understand how students feel about AI in e-learning. This improves the effectiveness of e-learning (Smith, 2020; Johnson et al., 2019). It enables the customization of teaching methodologies to take into account various attitudes and beliefs regarding AI, resulting in effective integration and engagement. Understanding the issues that students face makes it possible to create protections and procedures that address ethical implications and detrimental effects (Garcia & Sicilia, 2021; Wang et al., 2022). According to Roberts and McQuiggan (2020; Lee et al., 2017), it guides the integration of AI technology and fosters a conducive learning environment. Furthermore, it helps students become adaptable and ready for a world driven by AI by bridging the divide between technology and education for the best learning outcomes.

1.8 Summary

This research focuses on exploring how students perceive the integration of Artificial Intelligence (AI) in e-learning using a quantitative research approach. A survey is conducted among students from different educational levels to gather data on their awareness, attitudes,

preferences, and concerns regarding AI-enabled e-learning. The survey examines aspects such as the perceived benefits, challenges, and specific AI functionalities preferred by students. The collected data is analyzed using statistical techniques to identify patterns and trends in students' perceptions. The research outcomes provide valuable insights into students' acceptance levels, preferences, and concerns related to AI integration in e-learning. These findings can inform educational policymakers, curriculum designers, and e-learning platform developers in effectively incorporating AI technologies to enhance the learning experience for students.

Chapter 2

Literature Review

2.0 Introduction

The literature review is the summary and explanation of the information and knowledge on a topic from different sources. The purpose is to provide an insight of the significant literature published on a topic about the research. In this chapter, the details of student's perception toward artificial intelligence enabled e-learning will be clarified. In order to achieve the objectives of this study, the definition, role of artificial intelligence and the benefit of artificial intelligence as well as explanation of how the artificial intelligence used in e-learning that were obtained from various sources such as, journal, article, newspapers, magazines and books will be described to improve the reliability of the research. Furthermore, to strengthen the reader's understanding, researchers will also construct conceptual framework for understanding the factors that influence UTeM students toward satisfaction of artificial intelligence (AI) in e-learning. Researchers will relate the concept and information given in order to achieve research objectives.

2.1 Artificial Intelligence

There are several definitions of artificial intelligence based on different perspectives and research. According to Margaret Rouse (2023), artificial intelligence (AI) is a branch of computer science that focuses on building and managing technology that can learn to autonomously make decisions and carry out actions on behalf of a human being. AI is a broad category of technologies. Instead, it serves as a general word for any form of hardware or software component that enables robotics, computer vision, natural language processing, natural language creation, and machine learning. While artificial intelligence referred to the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision (Ed Burns, 2023). While Gordon Scott (2023) defines that artificial intelligence (AI) refers to the simulation of human intelligence by software-coded heuristics. Nowadays this code is

prevalent in everything from cloud-based, enterprise applications to consumer apps and even embedded firmware. Therefore, even though there are no general accepted definition for artificial intelligence, based on the study above the research can assume Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think and learn like humans. It involves the development of computer systems and algorithms that can perform tasks that would typically require human intelligence, such as speech recognition, problem-solving, decision-making, and pattern recognition.

2.2 Role of Artificial Intelligence in E-learning

AI in e-learning is being utilized to make learning experiences for students smarter and more individualized, enabling them to access knowledge more quickly and effectively. It may also make it simpler for teachers to assess student progress and spot areas where they want additional assistance (London School of Business & Finance, 2022).

By making learning more effective, interesting, and instructive than ever before, AI is drastically changing the e-learning industry.

i. Advanced Personalized Learning

AI leverages advanced algorithms to analyze vast amounts of student data, such as performance history, learning preferences, and demographic information. This analysis enables the creation of personalized learning experiences tailored to each student's unique needs, abilities, and interests. AI algorithms recommend specific learning materials, adapt instructional content and difficulty levels, and provide individualized feedback to maximize learning outcomes.

ii. Intelligent Tutoring Systems

AI-powered tutoring systems offer students personalized guidance and assistance. These systems are used to evaluate students' knowledge, monitor their development, and pinpoint areas where they might be having trouble using machine learning techniques. AI tutors simulate the experience of working with a human teacher by providing specific

explanations, additional practice opportunities, and adaptive feedback based on this knowledge. The engagement and comprehension of the students are promoted by this personalized approach.

iii. Automated Grading Feedback

A variety of evaluations, such as objective questions, essays, and coding tasks, are graded automatically by AI. AI algorithms can evaluate student responses and provide prompt and accurate feedback thanks to advances in natural language processing and machine learning. Automated grading systems allow educators to focus on other educational activities while saving a significant amount of time. They also ensure objective and consistent assessment procedures.

iv. Natural Language Processing and Conversational Agents

Learning experiences that are interactive and conversational are made possible by AI technologies like chatbots and natural language processing. Chatbots can interact with students in real-time, answering their queries, giving clarifications, and providing advice on a range of subjects. AI-powered chatbots can grasp context and deliver pertinent information by analyzing student input, encouraging active learning and aiding students outside of the traditional classroom environment.

v. Data Analytics and Predictive Modelling

Large-scale data sets produced by students' interactions with e-learning systems can be collected and analyzed thanks to AI. AI systems may find patterns, trends, and correlations in the data by using data analytics and predictive modelling techniques. These observations support educators in developing a deeper comprehension of the behaviour, performance, and engagement of students. In order to improve learning outcomes, predictive modelling can also identify students who are at risk of falling behind or who could benefit from extra support.

vi. Content Creation and Curation

AI helps with the processes of curation and content generation in e-learning. AI algorithms are capable of creating automated summaries, extracting important information from a variety of sources, and structuring content in useful ways. Based on the requirements and interests of each learner, AI-powered recommendation systems can propose pertinent learning resources, adaptive tests, and supplemental materials. This method of content curation makes sure that students have access to a variety of excellent materials that are in line with their particular learning objectives.

vii. Virtual Reality and Augmented Reality

Immersive and interactive learning experiences are made possible by the combination of AI, virtual reality, and augmented reality technology. Students can explore and engage with simulations, virtual laboratories, historical reconstructions, and other instructional scenarios in VR-created virtual environments. By superimposing digital content over the physical world, augmented reality (AR) can enrich the learning environment with new facts, images, or interactive features. These tools improve participation, support experiential learning, and offer practical experience across a range of subject areas.

2.3 Benefit of Artificial Intelligence in E-Learning

The field of e-learning has seen significant breakthroughs in artificial intelligence (AI) during the past few years. AI has been able to develop personalized learning experiences that enhance information retention and learner engagement by using cutting-edge techniques that mimic human intelligence, such as deep learning and natural language processing (Pappas, 2023).

I. Faster Course Development

Although educators will always play a crucial role in the construction of courses, AI systems can give experts a solid foundation on which to build. With regard to creating learning environments, AI can do it relatively immediately rather than taking hours to develop and implement by hand. By adapting current content to create "smart" courses or

focusing it on a different audience, AI authoring tools can also assist instructors. The less time spent on course design, the more time educators have to devote to providing learners with further assistance or planning their next course (J.Wen et al., 2021).

II. Round The Clock Assistance

Let's discuss further help as we examine a key advantage of utilizing AI in e-learning. Even if they had more time, instructors would still be unable to effectively supervise and respond to distant student questions that might come in at all hours. Fortunately, AI can help by providing them with bots, which are excellent at handling repetitive inquiries, and more sophisticated virtual tutors or assistants, which may provide students with real-time support, direction, and resources. These AI helpers are very well-liked by teachers because of their neutrality and simplicity. They are useful for online learners as well because they can study independently and receive assistance from a helper when needed.

III. Personalized Content

According to Bisen (2021), the use of AI in eLearning may be extremely helpful to individualized learning, even though significant efforts have been made to ensure that adaptable learning spreads more and more in the classroom. Having intelligent, customized material that adapts to the demands of your team is vital for their learning path whether you're employing AI in a corporate context or a classroom. Artificial intelligence-based intuitive systems will be able to change lesson plans by giving the appropriate information to the right person at the right time, resulting in an adaptive learning environment. This will make information retention and sharing more effective.

IV. Accessibility

The fact that knowledge is made easily accessible to everyone is an essential advantage of employing AI in learning. It has never been simpler to translate course materials from one language to another. Think about how many more people you could educate if you offered a virtual course that could be delivered in any language! Accessibility for people with disabilities is a crucial component of AI in eLearning. AI can easily work in tandem with assistive technology (AT) or perhaps reduce the need for extra AT hardware.

Through features like voice-directed navigation, it may offer the learner individualized help during the learning process and make it simple for them to access training materials. AI will soon play a significant role in all contemporary jobs, including remote learning environments.

V. Progress Tracking

As your students advance through your course, AI can offer in-depth insights to track their achievement in accordance with pre-set standards. This is a wonderful technique to identify knowledge gaps and develop a strategy for bridging them. You may get ahead of the game and give your students what they need before they even realize it by identifying their shortcomings. In addition, compared to in-person evaluations with a mentor or an educator, these online tests may not be as stressful. A significant step towards personalizing the learning experience is data-driven progress analysis (Jian Huang, 2021).

VI. Learner Engagement

According to Ramadan M. Ramo (2021), these days, it's challenging to focus on lengthy passages of text or to patiently listen to a speaker ramble on and on. With so many stimulants available to us at all times of the day, traditional classroom learning is no longer interesting. However, applying AI can aid in enhancing students' involvement as well as ensuring greater levels of productivity, inspiration, and memory recall. Because it meets your requirements and offers you engaging ways to learn, learning becomes a thrilling journey. Consider how involved students would be, for instance, if you used an AI-powered VR course as part of a class activity.

2.4 Types of Artificial Intelligence in E-Learning

The field of e-learning has entered a new era of possibilities due to artificial intelligence (AI), which has completely changed how we gain knowledge and skills. By utilizing AI, educators and developers are reimagining conventional online learning platforms as intelligent systems that respond to the needs of students, deliver individualized feedback, and offer interactive and interesting instructional content.

I. Intelligent Tutoring System (ITS)

The leading edge of AI in e-learning is being used by Intelligent Tutoring Systems (ITS). To analyze enormous volumes of learner data, including performance indicators and user interactions, these systems use machine learning techniques. ITSs provide individualized education, adaptive feedback, and specialized learning experiences by determining a person's strengths and limitations. The customized content, practice exercises, and assessments that are provided to learners allow them to advance at their own speed and concentrate on areas that still need work. The system adjusts to each learner's changing needs thanks to the ongoing analysis of learner data, which optimizes the learning process and improves educational outcomes.

II. Natural Language Processing (NLP)

A core component of artificial intelligence (AI) in e-learning is natural language processing (NLP). NLP makes it possible for computers to comprehend and analyze human language, allowing for more engaging discussions and on-the-spot assistance for students. NLP-enabled chatbots and virtual assistants may interact in real-time, respond to questions from learners, explain things, and give advice. With their 24/7 accessibility, these conversational agents can provide a personalized and accessible learning environment that encourages engagement and aids students in overcoming obstacles.

III. Machine Learning (ML)

Adaptive learning systems heavily rely on machine learning (ML) methods. To produce precise predictions and recommendations, ML systems examine huge datasets, including learner behaviours, preferences, and performance. The complexity of activities is dynamically adjusted by these systems, which also suggest useful learning resources and offer tailored feedback. ML is used by adaptive learning platforms to design personalized learning pathways, ensuring that each learner receives the right content, direction, and challenges based on their particular needs and learning preferences. In addition to helping instructors and educational institutions to track student progress, pinpoint problem areas, and improve teaching approaches, ML algorithms also enable data-driven insights.

IV. Recommender System

AI-powered recommender systems address the issue of information overload in e-learning. These systems examine student preferences, prior activities, and performance data using collaborative filtering and content-based filtering algorithms. Recommender systems make pertinent and individualized learning resource suggestions, such as courses, articles, videos, or forums, by understanding individual learning profiles. These suggestions make sure that students have access to a variety of worthwhile materials that are in line with their interests and objectives, which improves their motivation, engagement, and overall learning experience.

V. Computer Vision

E-learning has greatly benefited from computer vision technologies. Computers can automate processes like assessing handwritten assignments or identifying items in educational simulations by analyzing and interpreting visual input. Automated evaluation is made possible by computer vision, leading to quicker and more impartial grading procedures. Additionally, by monitoring students' motions, gestures, and interactions in virtual worlds, computer vision promotes immersive learning experiences. This promotes deeper knowledge and the development of useful skills by increasing engagement and enabling students to interact with and modify digital objects.

VI. Sentiment Analysis

AI technology known as sentiment analysis allows for the investigation of how students feel and view the course or learning materials. Sentiment analysis algorithms can estimate students' levels of satisfaction, engagement, and motivation by examining text-based data. The course enhancement, learner assistance, and individualized interventions can all benefit from this data. By identifying areas for improvement, changing instructional approaches, and providing targeted support to students who might be having trouble or are losing interest, instructors and educational platforms can help students.

VII. Virtual Reality (VR) & Augmented Reality (AR)

Immersive and interactive learning experiences are provided by virtual reality (VR) and augmented reality (AR) technology. AR projects digital information over the real world, whereas VR builds scenarios from computer-generated images. Through the use of these tools, students can explore difficult subjects, participate in realistic simulations, and practice their abilities in a secure setting. Applications for VR and AR in e-learning include virtual labs and field visits as well as interactive visualizations and training simulations. VR and AR improve learning retention, understanding, and application by delivering practical experiences and multisensory interaction.

The integration of AI in e-learning is an ongoing journey, with continuous advancements and innovations. The potential of AI in e-learning holds enormous promise for changing education and making it more approachable, interesting, and effective as the area develops. AI-powered e-learning systems equip students with individualized and efficient learning resources, guaranteeing that instruction in the digital age adjusts to the needs and preferences of each student.

2.5 Factors Influencing Student's Behavioral Intentions to Used Artificial Intelligence in E-Learning

Artificial intelligence (AI) technology advancements have a significant impact on education. According to research, AI technology is a useful tool that may deliver individualized education to develop students' problem-solving skills (W. Ma, 2014) However, there aren't many studies that concentrate on encouraging students' behavioral intentions to study and apply AI in the long run. Research that focuses more specifically on students' intentions to learn AI is required because it is a developing field with significant potential. The purpose of this study was to examine how certain constructs, such as AI literacy, confidence in learning AI, and using AI for social good, relate to university students' intention to learn and use AI.

I. AI Literacy

Intelligent tutoring systems have been developed using AI research to support learning. It would be appropriate to expect students to have a basics understanding of AI in order to profit from it. The term "literacy" refers to a student's capacity to gather, analyze, and comprehend relevant information in order to make judgements. Literacy encompasses knowledge, motivation, and the capacity to find, comprehend, assess, and use relevant information to enhance results. According to related research, students' and teachers' intentions to adopt mobile learning were influenced by digital literacy, which also made it easier to use e-learning. Similar to this, one of the crucial elements to encourage students' ambition to learn AI may be their level of AI literacy.

II. Confidence in AI

Positive student emotions like confidence may be related to AI learning and boost students' intention to utilize AI. Keller (2010) found that students who were sufficiently comfortable utilizing technology for learning tended to be more open to learning, and Jong's (2020) latest work has confirmed this. In other words, a person is more likely to use technology in the future if they feel more comfortable using it. According to related study, instructors' adoption of technology in the classroom and students' usage of computers as learning tools are both strongly influenced by teachers' confidence. This

implies that encouraging students' confidence in AI may improve their propensity to employ AI technologies in the future.

III. Behavioral Intention to Learn AI

An individual's conviction about his or her potential desire to carry out a specific activity is referred to as behavioral intention. Intentions are hints as to how someone will attempt to carry out a behavior. In general, students who are more inclined to engage in a behaviour are more likely to obtain the skills and knowledge that go along with it. Research concerning the theory of reasoned action put forth by Fishbein and Azjen, which is extended as the theory of planned behaviour, served as the foundation for the concepts of "behavioural intention" and "intention to learn". Three factors, in accordance with Ajzen, determine behavioural intentions: a person's attitude towards behaviour, subjective norms, and perceived behavioural control. An integrated theoretical framework was proposed in this study to investigate the elements that influence a person's desire to learn AI technology. The three factors in the study are comparable to the three determinants suggested by Ajzen. We used a person's "confidence in AI" as a proxy for their favorable feelings towards engaging in behaviour to gauge how the students felt about their behaviour. "AI literacy" assessed a person's opinion of their capacity to complete a task, which is related to their sense of behavioural control. "AI for social good" assessed a person's perspective of the social context of a behaviour, which is conceivably connected to a subjective norm.

IV. AI for Social Good

There are various ways that AI could benefit society. For instance, Japan is actively developing AI robots to assist the ageing population. Students must, nevertheless, acquire the information and skills necessary to create solutions to social problems. Establishing a curricular standard for creating AI applications that improve social wellbeing may increase students' motivation to learn AI. AI might help a large population with a variety of social challenges, including housing, safety, education, and health. Consult the study by Damon, Menon, and Bronk to see how a meaningful objective might encourage intention while learning.

2.6 Student's Acceptance Toward Artificial Intelligence (AI)

Artificial intelligence (AI) integration in educational contexts has received a lot of attention lately, especially when it comes to e-learning. Personalized learning experiences, adaptive feedback, and increased overall student engagement are all possible with AI-enabled e-learning. However, research into students' perceptions, attitudes, and beliefs about this cutting-edge technology is essential if we are to completely comprehend how AI will affect how they learn. With a focus on many dependent variables that capture different aspects of students' experiences, this study attempts to examine how students accept artificial intelligence in online learning.

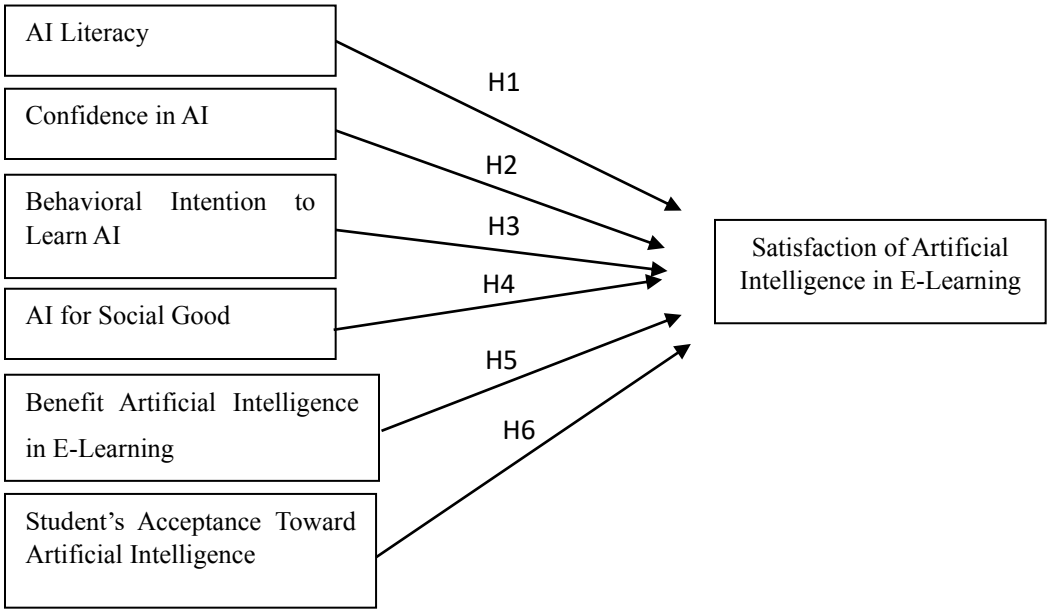
One important aspect of students' acceptance is their attitude toward the use of AI in the e-learning environment. This variable aims to comprehend students' comfort level, excitement or skepticism towards AI in e-learning, as well as if they have positive or negative views towards it. Researchers can learn more about how students are generally accepting of and open to using AI technology in their learning process by examining students' opinions. Next, perceived usefulness of AI in e-learning assesses students' subjective evaluation of how beneficial or advantageous the integration of AI is to their learning experience. It is to capture students' acceptance of how AI enhances their learning process, engagement, or effectiveness in acquiring knowledge. Understanding students' perceived usefulness of AI can provide valuable insights into the potential benefits and limitations of AI in e-learning platforms. Besides that, user satisfaction is a crucial measure in determining the effectiveness of AI-enabled e-learning platforms. It focuses on how satisfied students are with the AI functionalities and features built into the e-learning platform. It includes aspects like how satisfied users are with tailored recommendations, flexible tests, intelligent training programs, or AI-driven feedback mechanisms. Researchers can pinpoint areas for improvement and modify the AI-enabled e-learning experience to better suit students' needs by looking at satisfaction among users.

Impact on students' learning performance is also an essential consideration to take into account when assessing the efficiency of AI-enabled e-learning. The amount to which students believe or perceive that AI has enhanced their academic performance or learning outcomes is captured by this measure. It investigates how they subjectively perceive AI to affect their overall learning progress, skill development, and knowledge acquisition. Researchers can learn more

about how well AI supports students' academic objectives by studying how students feel their learning performance has improved. In addition, examining students' acceptance and intention to use AI in e-learning is crucial for future implementation and adoption. This variable explores factors such as perceived ease of use, usefulness, and trustworthiness of AI, as well as students' future adoption intentions. By investigating students' acceptance and intention to use AI, researchers can identify barriers, concerns, and motivations that may influence the adoption and integration of AI in e-learning environments. In order to fully comprehend students' attitudes towards e-learning supported by artificial intelligence, it is necessary to examine a number of dependent variables. These factors include attitudes among students, perceived utility, user satisfaction, perceived progress in learning performance, and acceptability and intention to utilize AI. Researchers can obtain important information about how students feel about the use of AI in the e-learning environment by examining these factors. This information will help researchers create and implement AI-enabled educational technology.

2.7 Conceptual Framework

Source: International Symposium on Educational Technology (ISET) (2020)



2.8 Hypothesis

I. AI Literacy

(H0); There is no significant relationship between AI literacy to satisfaction of artificial intelligence in e-learning.

(H1); There is a significant relationship between AI literacy to satisfaction of artificial intelligence in e-learning.

II. Confidence in AI

(H0): There is no significant relationship between confidence in AI to satisfaction of artificial intelligence in e-learning.

(H2): There is a significant relationship between confidence in AI to satisfaction of artificial intelligence in e-learning.

III. Behavioral Intention to Learn AI

(H0): There is no significant relationship between behavioral intent to learn AI to satisfaction of artificial intelligence in e-learning.

(H3): There is a significant relationship between behavioral intent to learn AI to satisfaction of artificial intelligence in e-learning.

IV. AI for Social Good

(H0): There is no significant relationship between AI for social good to satisfaction of artificial intelligence in e-learning.

(H4): There is a significant relationship between AI for social good to satisfaction of artificial intelligence in e-learning.

V. Benefit of Artificial Intelligence

(H0): The benefit of artificial intelligence has no significant relationship between satisfaction of artificial intelligence in e-learning.

(H5): The benefit of artificial intelligence has significant relationship between satisfaction of artificial intelligence in e-learning.

VI. Student's Acceptance Toward Artificial Intelligence

(H0): There is no significant relationship between student's acceptance toward artificial intelligence to satisfaction of artificial intelligence in e-learning.

(H6): There is a significant relationship between student's acceptance toward artificial intelligence to satisfaction of artificial intelligence in e-learning.

2.9 Summary

In this chapter, the researcher has discussed the factor that influences students' behavioral intention to use artificial intelligence in e-learning. The proposed research framework consists of dependent and independent variables. The dependent variables which is satisfaction of AI in e-learning. Behavioral intention to learn AI, AI literacy, confidence in AI, AI for social good, benefit of AI and students' acceptance are the most important things in independent variable. Last but not least, the following chapter will discuss the research methodology.

Chapter 3

RESEARCH METHODOLOGY

3.0 Introduction

The researcher will discuss the methods used to gather the data and information for this research in this chapter. To begin with, the explanatory research design is created to clarify the relationship between the variables. The optimal alternative for the methodological selection has been determined to be the quantitative approach. Information for this study was gathered from both primary and secondary sources. The study site, research design, time horizon, dependability and validity, and the method for data analysis will be the following subjects that will be covered. One will be better able to examine and understand the results of this study by following the steps laid forth below for the research technique.

3.1 Research Design

Research design is a framework for the investigation of data collection to address research questions and run into research objectives. It is also very important for the flow of how the research questions and objectives are addressed. In addition, research design is important because it enables the researcher to depend on it for the delivery of crucial data that will allow them to respond to the research question clearly, precisely, and firmly under regulated conditions. Law (2017) asserts that there are three types of study designs: exploration, descriptive, and explanatory.

The purpose of this study is to explore the link between the variables; hence the researcher has chosen an exploratory research design to investigate this circumstance. Exploratory research is carried out to ascertain the problem's nature. While this method is not designed to offer conclusive proof, it can aid the researcher in developing a better knowledge of the issue. This method is utilized to address new problems, particularly those for which there is a lack of data or no prior research has been conducted. (Brown, 2006). The main objective of this study is to

identify the factors that affect students' perceptions of AI-enabled e-learning systems, as well as investigate the most significant factors that influences students' Artificial Intelligence enabled e-learning system usage.

3.2 Research Methodology

3.2.1 Quantitative Data

Quantitative and qualitative methods are available for research design. In the quantitative technique, it is typical to use surveys to collect data and graphs or statistics to analyses that data. In contrast, qualitative data collection and analysis processes generate or utilize data types other than numerical data, whereas quantitative data collection and analysis methods only generate or use data types that are numerical. The researcher investigates the association between variables using a quantitative method. This method makes use of a range of statistical and graphical tools to measure and assess the independent and dependent variables. Quantitative research relates to a deductive approach that places an emphasis on testing theoretical concepts using facts. This approach generates well-formed theories that are based on broad ideas and definitions using a set of observable data. Since the association between the two has already been established, the researcher wants to confirm whether it persists.

3.2.2 Time Frame of Study

In terms of duration time frames, cross-sectional and longitudinal research are the two basic categories. In longitudinal investigations, data are gathered over a lengthy period of time. Cross sectional studies only gather data once, but it may still take a few days, weeks, or even months before the findings are made public. Due to limitations on time, the researchers conducted cross-sectional investigations. In ten months, researchers must finish Chapters 1 through 5. By the end of the month, the data must be collected and analyzed.

3.3 Research Method

Researchers examine strategies like questionnaire design and response rate optimization to better understand population sampling and the methodologies that go with it. This helps them to better understand how to collect survey data. Instruments or processes that ask a single question and produce an answer that may or may not be correct are the focus of survey methodology. The researcher in this study used quantitative approaches to ascertain how the various elements interacted. The analytical method offers a substantial amount of quantitative information while having a poor resolving power and is widely applicable (Ghauri, 2020).

3.3.1 Primary Data Sources & Secondary Data Sources

Primary data and secondary data are the two types of information that will be used to gather information for this study. According to Lau (2017), secondary data that comprise both quantitative and qualitative data can be used in explanatory research. Before doing the study, the researcher would seek for the secondary data by using a variety of other sources (Saunders, Lewis, & Thronhill, 2012). The secondary data for the study will be acquired online, such as journal articles or website papers, as the secondary data will be able to assist in providing answers to some of the research questions. Due to its ability to support and improve the research's conclusions as well as serve as a reference source that adds value to the research problem, the researcher will thus get the secondary data from the selected website of the artificial intelligence in e-learning system. By collecting secondary data at the start of the study, the researcher is better able to grasp the research issue and is better equipped to establish a procedure for collecting the primary data.

3.3.2 Research Instrument

This research technique is well-liked since it enables data collection by delivering questionnaires to a sample. The information acquired in this way can be used to develop models for these linkages and to explain why particular variables are linked. It's also advised to employ survey design because it makes it easy to gather a lot of data efficiently, accurately, and swiftly.

Some of the most popular methods for conducting quantitative research include experimentation, surveys, telephone, self-administered, and in-person interviews.

3.3.3 Questionnaires

A questionnaire is a structured written series of questions to which respondents record their responses, generally within a narrow range of options. The questionnaire will be employed since the variables under research, such as the respondents' views, opinions, perceptions, and feelings, cannot be observed. The questionnaire will also be employed since information must be gathered from a big sample in a short amount of time when the respondents are able to read and write. The questionnaire will be used to collect data from respondents (University Teknikal Malaysia Melaka students). The surveys will include closed-ended questions and will be distributed to respondents from the University Teknikal Malaysia Melaka students located in Durian Tunggal, Melaka.

3.3.4 Observation

Researchers want to observe students' perception toward artificial intelligence enabled e-learning systems usage and factors that influence students' behavioral intention to use artificial intelligence. The method will disclose whether the respondents employ manage the effects artificial intelligence in e-learning.

3.4 Pilot Study

A pilot study is a test run for a research study that enables you to assess the research methodology with a limited number of test subjects before carrying out your main study (Matt & Nick, 2022). Pilot experiments are essential to the conduct of scientific research. They could assist in identifying design concerns and assessing a project's viability and practicability prior to doing the primary research. It entails picking a select group of people and conducting research on them. Finding problems with a researcher's process can help them save time and money. The outcomes of a pilot study may assist the researcher in identifying any inaccuracies or ambiguities in the participant instructions as well as any difficulties with the activity. As a result, up to 15

respondents will participate in the survey to be evaluated. Their suggestions and opinions will be considered while creating the research's final survey questionnaire.

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

Likert Scale

Source: Mark (2019)

3.5 Sampling Design

A sample is a group of individuals who will really participate in the study. To draw valid inferences from the data, researchers must carefully evaluate how to select a sample that is typical of the group. The two main types of sampling procedures that can be used in scientific studies are probability sampling and non-probability sampling. Probability sampling relies heavily on random selection to allow the researcher to make solid statistical inferences about the entire group. On the other hand, non-probability sampling involves non-random selection based on convenience or other criteria, which makes it simpler for the researcher to collect data (Shona, 2019). The sample is different from the population. A population is the total group from which you want to draw assumptions. A sample, however, is a pre-selected group from which you will take data. The sample size is always less than the entire population (Pritha, 2020).

3.5.1 Population

A population is the entire group from whom researchers want to infer conclusions. Rarely is the term "population" used in study to describe people. Any group of items that a researcher chooses to study may be described using it, including people, places, things, events, groups, nations, animals, and more (Pritha, 2020). Populations are used when a research topic requires or permits data from every member of the population. Data collection from a large population is

only simple when the population is small, reachable, and cooperative. The population for this research is the students who had experienced artificial intelligence in UTeM that enabled e-learning. In addition, the location of this study will be at Universiti Teknikal Malaysia Melaka because of environmental condition that meet the requirements of this study which is UTeM is a place that have many students with many demographics and UTeM has the availability resource since mostly students in UTeM have been exposed to the use of artificial intelligence in their learning, this will make it simpler for researchers to collect responses.

3.5.2 Sample Technique

The two primary sampling techniques used in scientific investigations are probability sampling and non-probability sampling. In this study, the researcher will select a random sample. It is because it is most usually used in quantitative research. The researcher will use a probability sampling technique in an effort to get results that are generalizable to the full population. This option is the best one for this study. Simple random sampling is the sort of probability sampling approach used in this investigation. Every member of the population has an equal probability of being chosen by a simple random sample. The entire population is included in the span of our sample frame. The researcher will employ tools like random number generators or other methods that purely rely on the chance to carry out this type of sampling.

3.5.3 Sample Size

According to the Universiti Teknikal Malysia Melaka (2023), UTeM now has a total of almost 12,000 students enrolled with a majority at the undergraduate level. Researcher calculated a sample size of 370 out of a possible 12,000 students based on the table of Krejcie and Morgan (1970). As a result, the researcher will use more than 370 sets of surveys and will be given out to the intended respondents for this research.

Table 3.1: Determining sample size of a known population Source: Krejcie and Morgan (1970)

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

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

3.6 Questionnaire Design

A tool with a collection of questions on it is called a questionnaire design, and it's used to collect data from individuals or groups of individuals. Depending on the specific goals of the study, the purpose of a questionnaire may alter. It might aim to gather demographic information, evaluate views or opinions, evaluate levels of satisfaction, gather factual data, or look at behavioral patterns, among other things. Since the researcher thinks that most respondents will be able to understand and respond to the questionnaire in English, it will be written in that language. The study's objectives and the researcher's contact information will be listed at the beginning of the questionnaire as well, giving respondents more confidence as they fill it out. A well-designed questionnaire will motivate respondents to deliver complete and exact information.

SECTION	QUESTION
A	Respondents Background - Age - Gender - Race - Educational Level - How often do you use e-learning platforms for your education? - Are you familiar with the concept of Artificial Intelligence (AI)? - Have you used e-learning platforms that incorporate AI or machine learning features?
B	Independent Variables Factors Influence Student's Toward Artificial Intelligence in E-Learning - AI Literacy - Confidence in AI - Behavioral Intention to Learn AI - AI for Social Good - Benefit of Artificial Intelligence (AI) in E-Learning - Student's Acceptance Toward Artificial Intelligence
C	Dependent Variables Satisfaction of Artificial Intelligence in E-Learning

3.6.1 Questionnaires Development

Participants were surveyed as part of this study's quantitative methodology to gather data. The questionnaire is a reliable method for collecting data to test the study constructs. Sekaran and Bougie (2010) state that surveys might be electronically delivered or sent directly to respondents. Using questionnaires as survey instruments has both benefits and drawbacks. Positives include increased assurance of anonymity, lack of interview bias, and the potential to

cover a wider range of locations because it is cost-effective because the replies are gathered at the respondents' convenience. According to Sekaran and Bougie (2010), questionnaires have limitations as survey instruments, including a low response rate, questions that go unaddressed, and no control over the date of response. The questionnaire items were scored on a five-point Likert scale in order to provide precise information. On the Likert scale, there were five possible answers, with one denoting "strongly disagree" and five denoting "strongly agree." To find out more about the respondents, Section A included demographic questions. But Section B asked questions regarding identifying characteristics, and Section C asked about the objectives of the potential investor.

3.7 Reliability and Validity

Researchers quoted cited articles and books in this thesis paper to verify the validity of the concepts presented. The first step in data collecting is gathering all the information, which is then double-checked with the hotel management to determine if there are any discrepancies or contested facts. Mutual verification was followed by the development of an agreed-upon checklist, which was then discussed with the original respondents during a second interview. The authors and management acquired and assessed all of the empirical data, which increased the reliability of the data collection.

Table 3.2: Cronbach's Alpha Coefficient Range and Strength of Association Sources: Saunders et al., (2016)

Cronbach's Alpha Coefficient Range	Strength Of Association
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

3.8 Data Analysis

Data analysis tools for Quantitative Data must be used to show raw information in a digestible way. Quantitative data must be examined in order to discover evidence that will be useful during the research process. The Statistical Package for Social Science (SPSS) will be used by the researcher to analyze the information collected from the respondent. Market researchers, health researchers, survey companies, governments, educational researchers, marketing organizations, data miners, and many other types of researchers utilize SPSS to analyze and analyze survey data collected using an online survey platform like Google Form. The information will be gathered at the end of this month.

3.8.1 Descriptive Analysis

To concentrate on the central tendency and dispersion, descriptive analysis involves numerical description and comparison of variables. Although there are various approaches, the most popular ones for calculating descriptive statistics include means, medians, modes, and standard deviation. In this study, descriptive analysis is used to examine the respondents' gender, age, occupation, and level of education. The raw data is translated into a more comprehensible format that more accurately depicts the respondents' demographics.

3.8.2 Multiple Regression Analysis

Six independent variables and one dependent variable can be analyzed using the statistical method known as multiple regression analysis (Saunders et al., 2016). Understanding how the independent factors (AI Literacy, Confidence in AI, Behavioral Intention to Learn AI and AI for Social Good) interact with the dependent variable (E-Learning System Usage) is critical to this study's outcome. Multiple regression analysis aids the researcher in identifying the independent factors that have the greatest impact on the dependent variable. Multivariate regression analysis uses the following equation to calculate the results:

$$\text{Equation of MRA: } Y = a + bX1 + cX2 + dX3 + eX4 + fX5 + gX6$$

Where:

Y = Dependent Variable (E-Learning)

a = Constant value or Intercept

b = Influence of X1 (AI Literacy)

c = Influence of X2 (Confidence in AI)

d = Influence of X3 (Behavioral Intention to Learn Ai)

e = Influence of X4 (AI for Social Good)

f = Influence of X5 (Benefit of AI)

g = Influence of X6 (Student's Perception Toward AI)

X1, X2, X3, X4, X5, X6 = Independent variable

3.9 Summary

In conclusion, this study uses a quantitative method. University Teknikal Malaysia Melaka was the place researcher conduct for this study. Researchers choose the respondents that had used artificial intelligence in e-learning on their daily task. Reaction targets exceed 100 people. This is due to the possibility that more than 100 people may participate in the study and respond to the question. For this survey, there is a limitation on this study. Given that only students who are students at UTeM can give responses to this survey. Response target must have experienced artificial intelligence in e-learning.

3.10 Conclusions

Artificial Intelligence in e-learning had make learning experiences for students smarter and more individualized, enabling them to access knowledge more quickly and effectively. The research will help to analyze student's perception and acknowledge the most significant factor that influence them to use AI.

Chapter 4

DATA ANALYSIS AND DISCUSSIONS

4.1 Introduction

The results of the data analysis conducted on the respondent will be presented and discussed by the researcher in Chapter 4. The data is analyzed using IBM Statistical Package for the Social Sciences (SPSS), version 27. Descriptive analysis is being used in this chapter to ascertain the relationship between the independent and dependent variables. 370 respondents were given the questionnaire using an online Google Form survey. The questionnaire is divided into three sections: Part A requests demographic data from the respondent; Part B is an independent variable that lists factors impacting UTeM students' use of AI-enabled e-learning; and Part C asks about the respondents' satisfaction with artificial intelligence (AI).

4.2 Pilot Test

To reach targeted responders, a pilot test is carried out prior to the data gathering procedure. A pilot test is a small-scale experiment designed to help researchers avoid issues related to data recording (Saunders et al., 2016). For the pilot test, about thirty respondents are selected. The pilot test will be finished by the researcher in one week. Testing the validity of the questionnaire and the reliability of the data is the aim of the pilot test (Barlett, 2013).

4.2.1 Reliability Test

Consistency is measured during the reliability test using Cronbach's Alpha. Internal consistency between the items on a scale is being measured. It serves as proof that questions should not be mixed with positive and negative wording. It has been reported that the Cronbach's Alpha value ranges from 0.6 to 0.7 in Chapter 3's Table 3.2. When the features have a Cronbach's Alpha value of 0.7 to 0.8, it is deemed to have good strength.

Table 4.1: Cronbach's Alpha for Pilot Test

(Source: SPSS Output)

Reliability Statistics			
	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
AI Literacy	0.808	0.815	3
Confidence in AI	0.643	0.639	3
Behavioral intention to Learn AI	0.783	0.789	3
AI for Social Good	0.701	0.703	3
Benefits of AI in E-learning	0.834	0.845	3
Student's Acceptance Toward Artificial Intelligence	0.768	0.778	3
Satisfaction of Artificial Intelligence in E-learning	0.807	0.814	4

4.2.2 Validity Test

This study has undergone a validity test. The questionnaire consists of twenty-four items. As a result, this pilot test establishes the correlation between the dependent and independent variables exhibits internal validity.

4.3 Descriptive Statistics on Demographic Background

A descriptive analysis is used to analyze the demographic background of respondents which includes gender, age, races, education level, how often they use e-learning platform for educational, are they familiar with artificial intelligence (AI) and have they used e-learning platform that incorporate artificial intelligence or machine learning features.

4.3.1 Age

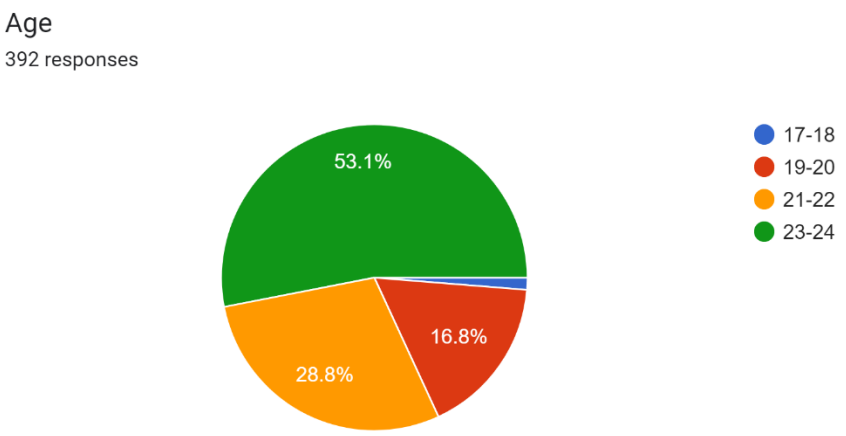


Figure 4.2

Table 4.2: Age

(Sources: SPSS Output)

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17-18	5	1.3	1.3	1.3
	19-20	66	16.8	16.8	18.1
	21-22	113	28.8	28.8	46.9
	23-24	208	53.1	53.1	100.0
	Total	392	100.0	100.0	

Based on Table 4.2, there are a total of 4 categories of age group. Overall, the respondents are mostly from the age group of 23-24 which are 208 respondents, made up of 53.1% of the total respondents. This is then followed by 113 respondents (28.8%) which fall underage group of 21 to 22 and 66 respondents (16.8%) which represents age group of 19 to 20. Only 5 respondents (1.3%) are 17 to 18 years old.

4.3.2 Gender

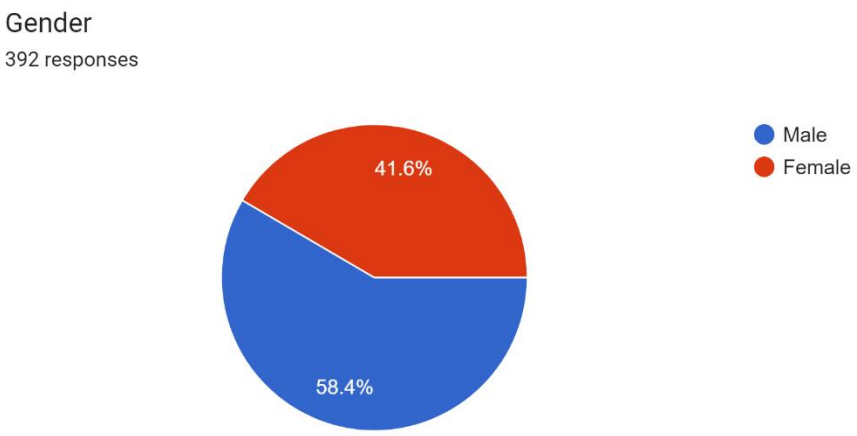


Figure 4.3

Table 4.3: Gender

(Sources: SPSS Output)

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	229	58.4	58.4	58.4
	Female	163	41.6	41.6	100.0
	Total	392	100.0	100.0	

According to Table 4.3, there are total of 392 respondents where 58.4% were made up of male which represent 229 respondents and 41.6% or 163 respondents were female. Male respondents were somewhat higher than female respondents.

4.3.4 Races

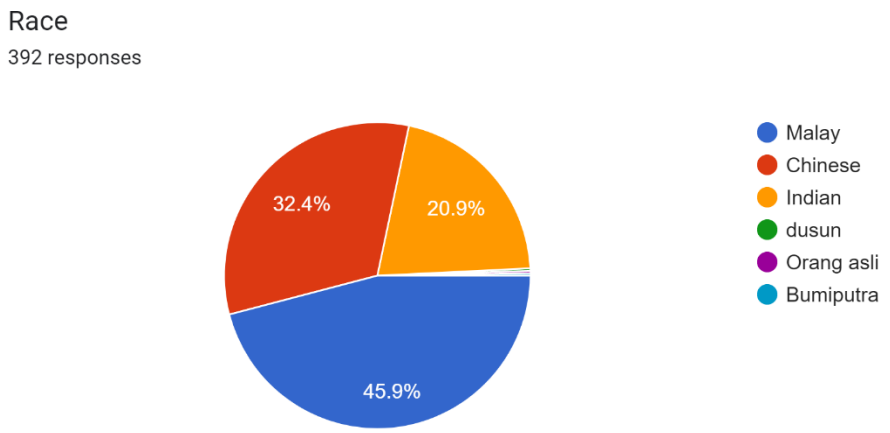


Figure 4.4

Table 4.4: Races

(Sources: SPSS Output)

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	180	45.9	45.9	45.9
	Chinese	127	32.4	32.4	78.3
	Indian	82	20.9	20.9	99.2
	dusun	1	.3	.3	99.5
	Orang asli	1	.3	.3	99.7
	Bumiputra	1	.3	.3	100.0
	Total	392	100.0	100.0	

Table 4.4 shows the races of 392 respondents. The majority races are 180 respondents from Malay (45.9%), 127 respondent from Chinese (32.4%), 82 respondents from Indian (20.9%), and 1 respondent from each races which is Dusun,Orang asli and Bumiputra (0.3%).

4.3.5 Educational Level

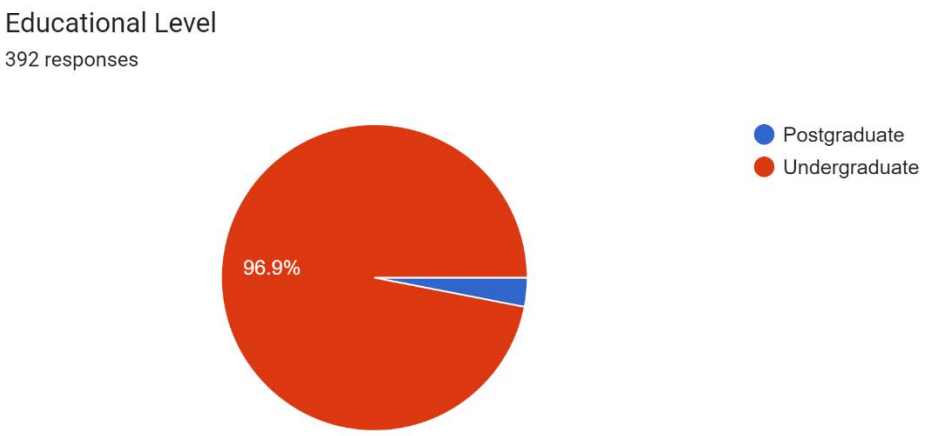


Figure 4.5

Table 4.5: Educational Level

(Sources: SPSS Output)

Educational Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undergraduate	380	96.9	96.9	96.9
	Postgraduate	12	3.1	3.1	100.0
	Total	392	100.0	100.0	

Table 4.5 shows the educational level of 392 respondents with majority level comes from undergraduate which had 380 respondents with (96.9%) and postgraduate with 12 respondent (3.1%).

4.3.6 How often do you use e-learning platforms for your education?

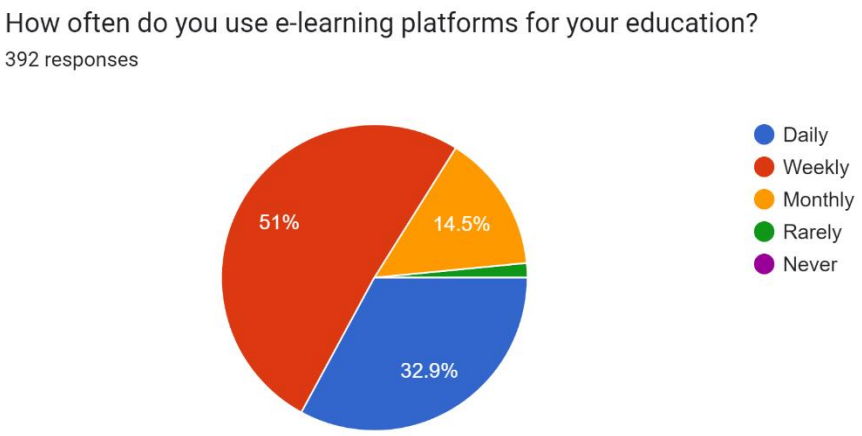


Figure 4.6

Table 4.6: How often do you use e-learning platforms for your education? (Sources: SPSS Output)

How often do you use e-learning platforms for your education?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	129	32.9	32.9	32.9
	Weekly	200	51.0	51.0	83.9
	Monthly	57	14.5	14.5	98.5
	Rarely	6	1.5	1.5	100.0
	Total	392	100.0	100.0	

Based on Table 4.6, there are a total of 392 respondents with the majority frequency is weekly which had 200 respondents (51.0%). Daily comes in second place with 129 respondents (32.9%) then monthly in third place with 57 respondents (14.5%) and last place which is rarely with only 6 respondents (1.5%).

4.3.7 Are you familiar with the concept of Artificial Intelligence (AI)?

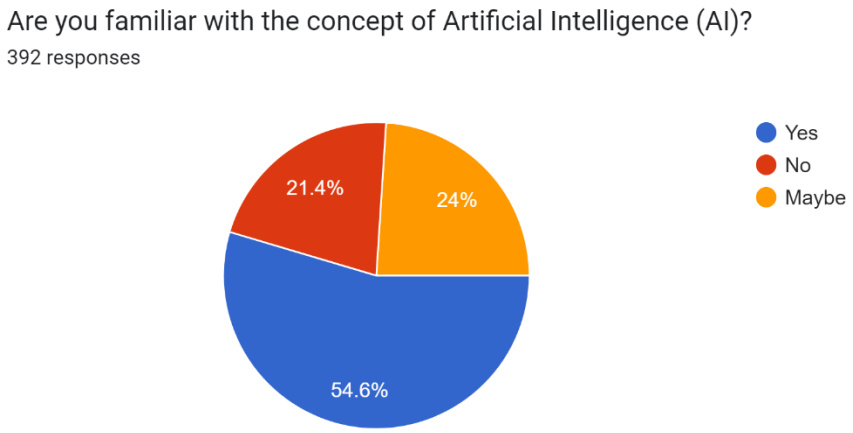


Figure 4.7

Table 4.7: Are you familiar with the concept of Artificial Intelligence (AI)? (Sources: SPSS Output)

Are you familiar with the concept of Artificial Intelligence (AI)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	214	54.6	54.6	54.6
	No	84	21.4	21.4	76.0
	Maybe	94	24.0	24.0	100.0
	Total	392	100.0	100.0	

Table 4.7 shows the total of 392 respondents who are familiar with the concept of Artificial Intelligence (AI). Most of the respondents which represent 214 respondents (54.6%) said Yes, 94 respondents (24.0%) said Maybe, and 84 respondents (21.4%) said No.

4.3.8 Have you used e-learning platforms that incorporate AI or machine learning features?

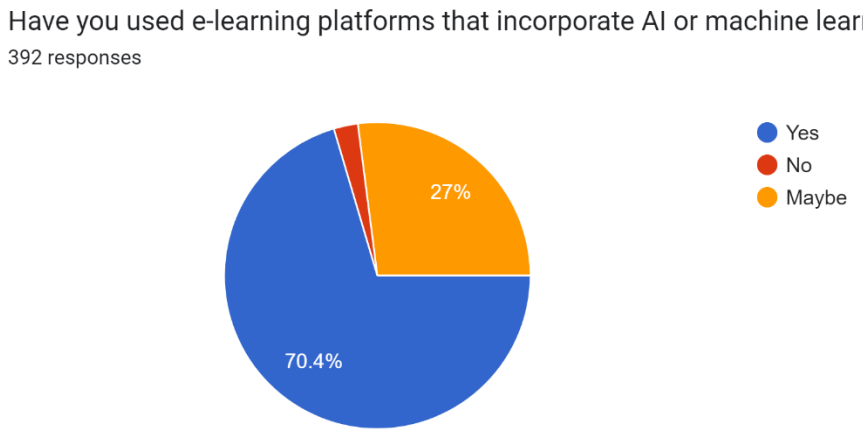


Figure 4.8

Table 4.8: Have you used e-learning platforms that incorporate AI or machine learning features?

(Sources: SPSS Output)

Have you used e-learning platforms that incorporate AI or machine learning features?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	276	70.4	70.4	70.4
	No	10	2.6	2.6	73.0
	Maybe	106	27.0	27.0	100.0
	Total	392	100.0	100.0	

Table 4.8 shows the total of 392 respondents who have used e-learning platforms that incorporate AI or machine learning features. Most of the respondents which represent 276 respondents (70.4%) said Yes, 106 respondents (27.0%) said Maybe, and only 10 respondents (2.6%) said No.

4.4 Descriptive Statistics

Descriptive statistics analysis has been performed by the researcher to compile all of the information from the survey questionnaires.

Table 4.8: AI Literacy

(Source: Output from SPSS)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I have a basic understanding of what artificial intelligence is.	392	1	5	4.18	.764
I can explain the difference between artificial intelligence and traditional computer programs.	392	1	5	4.18	.970
I am familiar with practical applications of AI, such as recommendation systems and virtual assistants.	392	1	5	4.12	.944
Valid N (listwise)	392				

Table 4.8 shows the descriptive statistic AI Literacy. The mean value for the items in this variable ranges from 4.12 to 4.18, which shows that respondents mostly agree with the statements in the items of AI Literacy.

Table 4.9: Confidence in AI

(Source: Output from SPSS)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I am confident in the ability of AI to personalize e-learning content to match my learning style and pace.	392	2	5	3.91	1.123
I'm trusting AI in improving my e-learning experience, such as by providing timely feedback and suggestions.	392	1	5	4.39	.759
I am confident that AI can provide me with more relevant and engaging learning materials.	392	1	5	4.13	.960
Valid N (listwise)	392				

As displayed in Table 4.9, it shows the result from the descriptive analysis for Confidence in AI, and the mean for all items ranging from 4.13 to 3.91. From the mean values, it can be concluded that most of the respondents somewhat agree with the items in the Confidence in AI.

Table 4.10: Behavioral Intention to Learn AI

(Source: Output from SPSS)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I think it is important to learn about artificial intelligence (AI).	392	2	5	4.20	1.108
I believe that AI knowledge and skills will be relevant in various industries and job roles.	392	1	5	3.60	1.396
I am aware of the availability of learning resources (e.g., online courses, books, tutorials) for studying AI.	392	2	5	3.80	1.069
Valid N (listwise)	392				

Next, Table 4.10 displays the result of the descriptive analysis for Behavioral Intention to Learn AI. The result of the mean values of the variable range between 4.20 to 3.80. This could mean that the respondents agree with the items.

Table 4.11: AI for Social Good

(Source: Output from SPSS)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I think AI for social good initiatives are important for the betterment of society.	392	1	5	4.02	1.025
I'm willing to contribute my time or skills to an AI for social good.	392	1	5	4.22	.806
I believe that AI technologies can help bridge societal gaps and reduce inequalities.	392	1	5	4.01	1.118
Valid N (listwise)	392				

As for the AI for Social Good, the descriptive analysis is displayed in Table 4.11. The result of the mean value shows that it ranges from 4.22 to 4.01. The value of means could be interpreted that most of the respondents agreed with the statements in the items.

Table 4.12: Benefit of Artificial Intelligence in E-learning

(Source: Output from SPSS)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
AI's ability to provide personalized learning experiences is a significant benefit.	392	1	5	4.62	.591
The immediate feedback provided by AI in e-learning is beneficial for my learning process.	392	1	5	4.48	.667
AI-enabled e-learning platforms save me time in understanding complex concepts.	392	1	5	4.45	.717
Valid N (listwise)	392				

Then, Table 4.12 shows the descriptive statistic for benefit of artificial intelligence. The mean value for the items in variable ranges from 4.62 to 4.45, which shows that respondents mostly agree with the statements in the items.

Table 4.13: Student's Acceptance Toward Artificial Intelligence

(Source: Output from SPSS)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I believe AI has the potential to enhance the educational experience.	392	1	5	4.60	.627
I am comfortable to use AI in my learning process.	392	2	5	4.20	.970
I believe that AI can help personalize learning experiences to better meet individual needs and preferences.	392	1	5	4.13	.995
Valid N (listwise)	392				

Lastly, as displayed in Table 4.13, the result from the descriptive analysis for Student's Acceptance Toward Artificial Intelligence, and the mean for all items ranging from 4.60 to 4.13. From the mean values, it can be concluded that most of the respondents somewhat agree with the items in the SATAI.

Table 4.14: Satisfaction of Artificial Intelligence in E-learning

(Sources: SPSS Output)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
I completely satisfied in using the artificial intelligence in my learning.	392	1	5	4.01	1.138
I feel very confident in using the artificial intelligence on e-learning.	392	1	5	4.23	.911
I can accomplish the task quickly using this artificial intelligence.	392	1	5	4.53	.623
I found it easy to share information about my learning progress using artificial intelligence.	392	1	5	4.29	.795
Valid N (listwise)	392				

For dependent variable, Table 4.14 shows the descriptive analysis for Satisfaction of Artificial Intelligence in E-learning. The mean value for the items in dependent variable is from 4.53, 4.29, 4.23 and 4.01 which shows that respondents mostly agree with the statements in the dependent variable items.

4.5 Pearson's Correlation Coefficients Analysis

In Chapter 3 of the study, Pearson's Correlation was mentioned as a tool for data analysis. Pearson's Correlation Coefficient (r) assesses the degree of a linear relationship between an independent variable and a dependent one. According to Saunders et al. (2016), it's a method of analyzing the stability of the strength relationship between the data points. Table 4.15 displayed the Pearson's Correlation Coefficients guidelines.

Table 4.15: Pearson's Correlation Coefficients

(Sources: Saunders, Lewis and Thornhill, 2016)

Pearson's Correlation Coefficient (R-values)	Interpretation
±0.70 to ±1.0	Very strong relationship
±0.40 to ±0.69	Strong relationship
±0.30 to ±0.39	Moderate relationship
±0.20 to ±0.29	Weak relationship
±0.01 to ±0.19	No relationship

Table 4.16: Correlation Analysis for all variables

(Sources: SPSS Output)

Correlations

		AI Literacy	Confidence in AI	Behavioral Intention to Learn AI	AI for Social Good	Benefit of Artificial Intelligence In E-learning	Student's Acceptance Towards Artificial Intelligence	Satisfaction
AI Literacy	Pearson Correlation	1	.374**	.453**	.428**	.400**	.573**	.354**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	392	392	392	392	392	392	392
Confidence In AI	Pearson Correlation	.374**	1	.791**	.850**	.451**	.635**	.480**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	392	392	392	392	392	392	392
Behavioral Intention to Learn AI	Pearson Correlation	.453**	.791**	1	.652**	.516**	.675**	.570**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	392	392	392	392	392	392	392
AI for Social Good	Pearson Correlation	.428**	.850**	.652**	1	.299**	.698**	.446**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	392	392	392	392	392	392	392
Benefit of Artificial Intelligence In E-learning	Pearson Correlation	.400**	.451**	.516**	.299**	1	.744**	.788**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	392	392	392	392	392	392	392
Student's Acceptance Towards Artificial Intelligence	Pearson Correlation	.573**	.635**	.675**	.698**	.744**	1	.813**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	392	392	392	392	392	392	392
Satisfaction	Pearson Correlation	.354**	.480**	.570**	.446**	.788**	.813**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	392	392	392	392	392	392	392

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

From Table 4.16, the independent variable in this research is AI Literacy, Confidence in AI, Behavioral Intention to Learn AI, AI for Social Good, Benefit of AI in E-learning and Student's Acceptance Toward Artificial Intelligence while dependent variable is Satisfaction Toward Artificial Intelligence in E-learning. The correlation value for AI Literacy was 0.354 with significant level 0.000 ($p<0.01$). This shows that there was a moderate relationship between AI Literacy and student's satisfaction toward artificial intelligence. Next, the correlation value for Confidence in AI was 0.480 with significant level 0.000 ($p<0.01$). It was a strong relationship between Confidence in AI and student's satisfaction toward artificial intelligence. Third, the correlation value for the behavioral intention to learn AI was 0.570 with significant level 0.000 ($p<0.01$). It was also a strong relationship between behavioral intention to learn AI and student's satisfaction toward artificial intelligence. Moreover, the correlation value for AI for social good was 0.446 with significant level 0.000 ($p<0.01$) which is a strong relationship between AI for social good and student's satisfaction toward artificial intelligence. Furthermore, there was a very strong relationship between benefit of artificial intelligence in e-learning and student's satisfaction toward artificial intelligence which the value for benefit of artificial intelligence in e-learning is 0.788 with significant level 0.000($p<0.01$). Lastly, the correlation value for student's acceptance toward artificial intelligence was 0.813 with significant level 0.000 ($p<0.01$). This is the higher correlation in this research. There was a very strong relationship between student's acceptance toward artificial intelligence and student's satisfaction toward artificial intelligence.

4.6 Multiple Regression Analysis

The significant relationship between the dependent variable (student's satisfaction toward artificial intelligence) and the independent variables (AI literacy, confidence in AI, behavioral intention to learn AI, AI for social good, benefit of artificial intelligence and student's acceptance toward artificial intelligence) is measured using multiple regression analysis. It is a statistical tool for calculating the strength of the cause-and-effect link between the independent and dependent variables.

Table 4.17: Model Summary of Multiple Regression Analysis

(Sources: SPSS Output)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.871[a]	.759	.755	.36317

a. Predictors: (Constant), Student's Acceptance Towards Artificial Intelligence, AI Literacy, Confidence In AI, Benefit of Artificial Intelligence In E-learning, Behavioral Intention to Learn AI, AI for Social Good

Based on table 4.17 about the result of the model summary of multiple regression analysis, there is a positive R value of 0.871 of the independent variables, which meant that there was a relationship exists between the independent variable and dependent variable in this study. Besides, the value of R square represents 0.759 and this indicate that only 76% of the satisfaction of artificial intelligence in e-learning can be explained by the five factors which were student's acceptance towards artificial intelligence, AI literacy, confidence in AI, benefit of artificial intelligence in e-learning, behavioral intention to learn AI, AI for social good. There were another 24% representing other factors that were not mentioned in this research. Moreover, the adjusted R Square values of 0.755 which means that around 75.5% variance in the satisfaction of artificial intelligence in e-learning (dependent variable) could be clarified by the regression predictor variables.

Table 4.18: ANOVA

(Source: Output from SPSS)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	159.753	6	26.626	201.868	.000[b]
	Residual	50.780	385	.132		
	Total	210.533	391			

a. Dependent Variable: Satisfaction of Artificial Intelligence in E-learning

b. Predictors: (Constant), Student's Acceptance Towards Artificial Intelligence, AI Literacy, Confidence In AI, Benefit of Artificial Intelligence in E-Learning, Behavioral Intention to Learn AI, AI for Social Good

Based on table 4.18 above, the F-test result was 201.88 with a significance level of p=0.000. This indicates the total probability that the relationship between the dependent variable (satisfaction of artificial intelligence in e-learning) and the independent variable (AI literacy, confidence in AI, behavioral intention to learn AI, benefit of AI and student's acceptance toward artificial intelligence in e-learning) would occur by chance. The p-value of 0.000 indicates that the probability that these results are an outcome of chance is less than 0.05. Therefore, there is significant relationship between independent variable (AI literacy, confidence in AI, behavioral intention to learn AI, AI for social good, benefit of AI in e-learning and student's acceptance toward artificial intelligence in e-learning) and dependent variable (satisfaction of artificial intelligence in e-learning)

Table 4.19: Coefficient of Multiple Regression Analysis

(Sources: SPSS Output)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.351	.171		2.059	.040
	AI Literacy	-.191	.037	-.161	-5.223	.000
	Confidence in AI	-.090	.062	-.099	-1.457	.146
	Behavioral Intention to Learn AI	.091	.033	.127	2.761	.006
	AI for Social Good	-.028	.055	-.035	-.500	.617
	Benefit of Artificial Intelligence In E-learning	.451	.059	.375	7.675	.000
	Student's Acceptance Towards Artificial Intelligence	.651	.068	.628	9.617	.000

a. Dependent Variable: Satisfaction

Table 4.19 showed the beta value of independent variables which AI literacy (AL) was -0.191, Confidence in AI (CiAI) was -0.090, Behavioral intention to learn AI (BItAI) was 0.091, AI for Social Good (AIfSG) was -0.028, Benefit of AI in E-learning (BoAIiE) was 0.451 and Student's Acceptance Toward Artificial Intelligence (SATAI) was 0.651. Based on ascending order, the least significant beta value was AI literacy, next confidence in AI, then AI for social good, thus behavioral intention to learn AI, then the benefit of AI and student's acceptance have the most significant beta value. The linear equation of Multiple Regression Analysis (MRA) was Y=a+bX1+cX2, thus Satisfaction of Artificial Intelligence in E-learning = 0.351 - 0.191 (AL) - 0.090 (CiAI) + 0.091 (BitAI) – 0.028 (AIfSG) + 0.451 (BoAIiE) + 0.651 (SATAI)

4.7 Hypothesis Testing

Regression analysis was chosen to ascertain the impact of independent variables to evaluate the hypothesis. Furthermore, testing hypotheses can be used to determine whether an experiment's or survey's findings have significant consequences. This is either accepted or it is rejected. Regression analysis revealed that the dependent variable in this study was students' acceptance of artificial intelligence in e-learning, while the independent variables were AI literacy, confidence in AI, behavioral intention to learn AI, AI for social good, and benefit of AI. Table 4.19 displayed the hypothesis testing results.

If the significance value was less than 0.05, there was a meaningful relationship between the two variables. However, if the significance value was more than 0.05, there was no discernible impact of the independent variable on the dependent variable. Consequently, t must be more than 1.96 for a two-sided test to have a significance level of 0.05 (Puri & Treasaden, 2010).

I. AI Literacy

(H0); There is no significant relationship between AI literacy to satisfaction of artificial intelligence in e-learning.

(H1); There is a significant relationship between AI literacy to satisfaction of artificial intelligence in e-learning.

Accept H1

The multiple regression analysis's coefficient of determination was displayed in Table 4.19. AI literacy has a significant value of 0.000 when it comes to artificial intelligence satisfaction in e-learning. Because the significant value is less than 0.05, it thus demonstrates that there is a substantial association between AI literacy and satisfaction of artificial intelligence in e-learning. The null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted.

II. Confidence in AI

(H0): There is no significant relationship between confidence in AI to satisfaction of artificial intelligence in e-learning.

(H2): There is a significant relationship between confidence in AI to satisfaction of artificial intelligence in e-learning.

Accept H0

Table 4.19 shows the result of the coefficient of multiple regression analysis. The significant value of confidence in AI toward satisfaction of artificial intelligence in e-learning is 0.146. Therefore, there is no significant relationship between confidence in AI and satisfaction of artificial intelligence in e-learning as the significant value is more than 0.05. The null hypothesis (H0) is accepted, and the alternative hypothesis (H2) is rejected.

III. Behavioral Intention to Learn AI

(H0): There is no significant relationship between behavioral intent to learn AI to satisfaction of artificial intelligence in e-learning.

(H3): There is a significant relationship between behavioral intent to learn AI to satisfaction of artificial intelligence in e-learning.

Accept H3

Table 4.19 shows the result of the coefficient of multiple regression analysis. The significant value of behavioral intention to learn AI toward satisfaction of artificial intelligence in e-learning is 0.006. Therefore, it proves that there is a significant relationship between behavioral intention to learn AI and satisfaction of artificial intelligence in e-learning as the significant value is less than 0.05. The alternative hypothesis (H3) is accepted, and null hypothesis (H0) is rejected.

IV. AI for Social Good

(H0): There is no significant relationship between AI for social good to satisfaction of artificial intelligence in e-learning.

(H4): There is a significant relationship between AI for social good to satisfaction of artificial intelligence in e-learning.

Accept H0

The results of the multiple regression analysis were displayed in Table 4.19. AI for social good has a high value of 0.617 when it comes to satisfaction of artificial intelligence in e-learning. As a result, since the significant value is greater than 0.05, there is no significant relationship between AI for social good and the satisfaction of artificial intelligence. It is decided to accept the null hypothesis (H0) and reject the alternative hypothesis (H4).

V. Benefit of Artificial Intelligence

(H0): The benefit of artificial intelligence has no significant relationship between satisfaction of artificial intelligence in e-learning.

(H5): The benefit of artificial intelligence has significant relationship between satisfaction of artificial intelligence in e-learning.

Accept H5

The multiple regression analysis's coefficient of determination was displayed in Table 4.19. benefit of artificial intelligence has a significant value of 0.000 when it comes to artificial intelligence satisfaction in e-learning. Because the significant value is less than 0.05, it thus demonstrates that there is a substantial association between the benefit of artificial intelligence and satisfaction of artificial intelligence in e-learning. The null hypothesis (H0) is rejected, and the alternative hypothesis (H5) is accepted.

VI. Student's Acceptance Toward Artificial Intelligence

(H0): There is no significant relationship between student's acceptance toward artificial intelligence to satisfaction of artificial intelligence in e-learning.

(H6): There is a significant relationship between student's acceptance toward artificial intelligence to satisfaction of artificial intelligence in e-learning.

Accept H6

Table 4.19 showed the result of coefficient of multiple regression analysis. The significant value of student's acceptance toward artificial intelligence to satisfaction of artificial intelligence in e-learning is 0.000. Therefore, it proves that there is a significant relationship between student's

acceptance toward artificial intelligence and satisfaction of artificial intelligence in e-learning as the significant value is less than 0.05. The alternative hypothesis (H6) is accepted, and null hypothesis (H0) is rejected.

4.8 Summary

The researcher has examined the information gathered from the 392 respondents by using a questionnaire in chapter 4. SPSS software version 27 was used to analyze all the data. Using reliability analysis for the pilot test, descriptive analysis, Pearson's Correlation Coefficient analysis, and ANOVA analysis, the researcher imported the data into SPSS. The data outputs demonstrated how the independent and dependent variables were related. The result showed that confidence in AI and AI for social good have no significant relationship with satisfaction of artificial intelligence in e-learning while AI literacy, behavioral intention to learn AI, benefit of AI in e-learning and student's acceptance toward artificial intelligence in e-learning have a significant relationship with satisfaction of artificial intelligence in e-learning. The conclusion and recommendations will then be discussed in the following chapter.

Chapter 5

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The discussion that follows in this chapter aims to summarize and conclude the research findings. Furthermore, the hypothesis shall be supported by facts and reasoning, and metrics demonstrating the achievement of the objectives will be provided. The limitations come next, and this chapter also includes recommendations. Additionally, a thorough explanation of the overall outcome has been provided.

5.1 Fulfilment of First Research Objective (RO1)

The results that were discussed in Chapter 4 showed that all of the independent variables used in this study which are AI literacy, confidence in AI, behavioral intention to learn AI, AI for social good, the benefit of AI in e-learning, and students' acceptance towards AI were factors that influenced UTeM students' enabled e-learning, as the descriptive analysis revealed that every variable in the survey questionnaire had been accepted. It shows that most respondents agree with the statements stated in each item of the variable. Thus, RO1 is fulfilled in this research.

5.2 Fulfillment of Second Research Objective (RO2)

Based on the result discussed in Chapter 4, the value of correlation which is 0.813 indicates that the student's acceptance of artificial intelligence in e-learning was the most significant factor that influenced UTeM students to use artificial intelligence in e-learning. Therefore, it has a very strong relationship with the satisfaction of artificial intelligence in e-learning. Thus, the more students accept the existence of artificial intelligence in their e-learning the more it can influence the student to use artificial intelligence in e-learning. The results show

that there is a significant relationship between student's acceptance and satisfaction of artificial intelligence in e-learning.

Furthermore, the value of correlation which is 0.788 indicates that the benefit of artificial intelligence in e-learning was the second significant factor that influenced UTeM students to use artificial intelligence in e-learning. Therefore, it also has a very strong relationship with the satisfaction of artificial intelligence in e-learning. Thus, the more benefits that artificial intelligence can provide to the student in their e-learning the more it can influence the student to use artificial intelligence in e-learning. The results show that there is a significant relationship between the benefit of artificial intelligence and the satisfaction of artificial intelligence in e-learning.

The results of hypothesis testing can be measured when comparing the results of the p-value with a significant value for 392 respondents which is below 0.05. Based on the hypothesis testing in Chapter 4, shows the findings from this research that all the independent variables which are AI literacy, confidence in AI, behavioral intention to learn AI, AI for social good, the benefit of AI in e-learning, and students' acceptance towards AI were factors that influenced UTeM students' enabled e-learning but only AI literacy, behavioral intention to learn AI, the benefit of artificial intelligence and student's acceptance are accepted (H1, H3, H5, H6) because p-value is lower than significant value ($p<0.05$).

5.3 Limitation of the Study

The responses and behavior of the respondents presented certain limitations for the researcher. The majority of UTeM students were offered the opportunity to participate in this study by responding to an online survey. The survey was created as a Google Form and distributed to students who are utilizing artificial intelligence in their online education. Nevertheless, the researcher encountered difficulties gathering survey data. Students occasionally disregard it and fail to submit a response. As a result, the researcher understands that using the Google Form will require more patience and time to receive a response. Some students chose to skip the survey since they didn't want to waste their time filling it out because others weren't interested in doing so. Finally, the researchers take an action which is always share out for more respondents by keeping the questionnaire in status, groups or personal chat by using Whatsapp.

Additionally, this study has certain limitations because the researcher was unable to determine whether or not the respondents were reliable enough to complete the survey. However, even though there was a possibility of bias when selecting the right response for the survey, the researcher must think that every responder is providing a total corporation. The third limitation has to do with UTeM students' level of knowledge. It's possible that some people don't fully comprehend artificial intelligence. The respondents' varying educational backgrounds will have an impact on how they reply to the poll. Thus, the researcher assumes that the respondents possess the fundamental knowledge needed to comprehend every part of this study.

5.4 Recommendation for Future Research

A few suggestions for additional study are made. A suggestion put out by the researcher is to pursue similar research by delving into the impact of artificial intelligence on students. It may result in a better understanding of the relationship between artificial intelligence satisfaction and the variables that encourage students to use it. The public and students can benefit greatly from this study by learning more about artificial intelligence and the consequences of its use and effects. The influence of artificial intelligence throughout Malaysia can also be the researcher's primary area of concentration. As a result, it will present an accurate image of which impact is more significant and merits consideration.

Additionally, research will be done in the future using a qualitative approach that focuses on the effects of artificial intelligence in comparison to the findings of this study. This study may place more emphasis on non-traditional methods for gaining knowledge of artificial intelligence by conducting open-ended interviews with a sample of respondents who range in age from 21 to 51 and have a variety of backgrounds and perspectives, including income level and mature mindset. This could suggest that people are more aware of the variables that most affect how artificial intelligence affects them.

5.5 Conclusion

This research provided an insight into learning about the factors that influence UTeM students' artificial intelligence enabled e-learning brings on students' life. In this study, the

student's acceptance toward artificial intelligence is the strongest influencing factors and has high relationship for the satisfaction of artificial intelligence towards the artificial intelligence. Results showed that the researcher achieves objectives with the limitation and recommendation of this research. This research will be very useful for the public to learn more the artificial intelligence. By recognizing the factors that influence students to use artificial intelligence, people will be able to use the artificial intelligence more efficiently and in the proper way in the future. This research not only can apply to the public but might also be applicable to some industries as well such as manufacturing industry, management industry, hospitality industry and so on. All the industries should understand more about society's needs and make more improvements to their products and services.

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APPENDIX

GANTT CHART FINAL YEAR PROJECT 1

Week / Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Brief FYP	■					SEMBREAK								
First Meet Sv		■												
Draft for research background		■												
FYP title confirmation			■											
Read journal and article			■	■	■									
Matrix creation							■							
Chapter 1							■	■						
Chapter 2								■	■					
Chapter 3										■	■		■	
Submission of FYP 1 to Sv and Panel													■	
Presentation														■

APPENDIX

GANTT CHART FINAL YEAR PROJECT 2

Week / Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Create Questionnaire						SEMBREAK										
Distribute questionnaire																
Collect questionnaire																
Analysis Data																
Submission Chapter 4																
Submission Chapter 5																
Slide preparation and presentation																
Proposal correction																
Submission of FYP 2 to Sv and Panel																

APPENDIX

UNDERSTANDING THE FACTORS THAT INFLUENCE UTeM STUDENT'S TOWARD ARTIFICIAL INTELLIGENCE (AI) ENABLED E-LEARNING

Assalamualaikum and Hello everyone

I'm Muhamad Nazrin Hakim Bin Muhamad Azhar, a student at University Technical Malaysia Melaka (UTeM) studying in the Faculty of Technology Management and Technopreunership (FPTT). This survey is conducted to determined the
Factors that influence UTeM students'
Artificial Intelligence (AI) enabled e-learning.

Most significant factors that influence UTeM students'
Artificial Intelligence enabled e-learning.

The survey questionnaires are prefaced with instructions on how the participants should respond. Kindly read the instructions carefully, and please make the appropriate selection to represent your answer. The entire survey would take about 5-10 minutes to answered it, and I would highly appreciate it if you could respond the questionnaires as soon as possible.

Thank you very much for your participation.

* Indicates required question

Section A: Demographic

INSTRUCTION: Please CHOOSE the most appropriate answer for the following question.

1. Age *

Mark only one oval.

- 17-18
- 19-20
- 21-22
- 23-24

2. Gender *

Mark only one oval.

- Male
- Female

3. Race *

Mark only one oval.

- Malay
- Chinese
- Indian
- Other: _____

4. Educational Level *

Mark only one oval.

- Postgraduate
- Undergraduate

5. How often do you use e-learning platforms for your education? *

Mark only one oval.

- Daily
- Weekly
- Monthly
- Rarely
- Never

6. Are you familiar with the concept of Artificial Intelligence (AI)? *

Mark only one oval.

- Yes
- No
- Maybe

7. Have you used e-learning platforms that incorporate AI or machine learning features? *

Mark only one oval.

- Yes
- No
- Maybe

Section B: Factors That Influence UTeM Student's Toward Artificial Intelligence (AI)

INSTRUCTION: The question will have 5 scales starting from:

1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree and 5. Strongly Agree.

Please choose the appropriate response below

8. I have a basic understanding of what artificial intelligence is. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly Agree

9. I can explain the difference between artificial intelligence and traditional computer programs. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly Agree

10. I am familiar with practical applications of AI, such as recommendation systems and virtual assistants. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly Agree

11. I am confident in the ability of AI to personalize e-learning content to match my learning style and pace. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly Agree

12. I'm trusting AI in improving my e-learning experience, such as by providing timely feedback and suggestions. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly Agree

13. I am confident that AI can provide me with more relevant and engaging learning materials. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

14. I think it is important to learn about artificial intelligence (AI). *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

15. I believe that AI knowledge and skills will be relevant in various industries and job roles. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

16. I am aware of the availability of learning resources (e.g., online courses, books, tutorials) for studying AI. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

17. I think AI for social good initiatives are important for the betterment of society. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

18. I'm willing to contribute my time or skills to an AI for social good. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

19. I believe that AI technologies can help bridge societal gaps and reduce inequalities. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

20. AI's ability to provide personalized learning experiences is a significant benefit. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

21. The immediate feedback provided by AI in e-learning is beneficial for my learning process. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

22. AI-enabled e-learning platforms save me time in understanding complex concepts. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

23. I believe AI has the potential to enhance the educational experience. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

24. I am comfortable to use AI in my learning process. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

25. I believe that AI can help personalize learning experiences to better meet individual needs and preferences. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

Section C

INSTRUCTION: The question will have 5 scales starting from:

1. Strongly Disagree, 2. Disagree, 3. Neutral, 4. Agree and 5. Strongly Agree.

Please choose the appropriate response below

26. I completely satisfied in using the artificial intelligence in my learning. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

27. I feel very confident in using the artificial intelligence on e-learning. *

Mark only one oval.

1 2 3 4 5

Stro ◯ ◯ ◯ ◯ ◯ Strongly Agree

28. I can accomplish the task quickly using this artificial intelligence. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly Agree

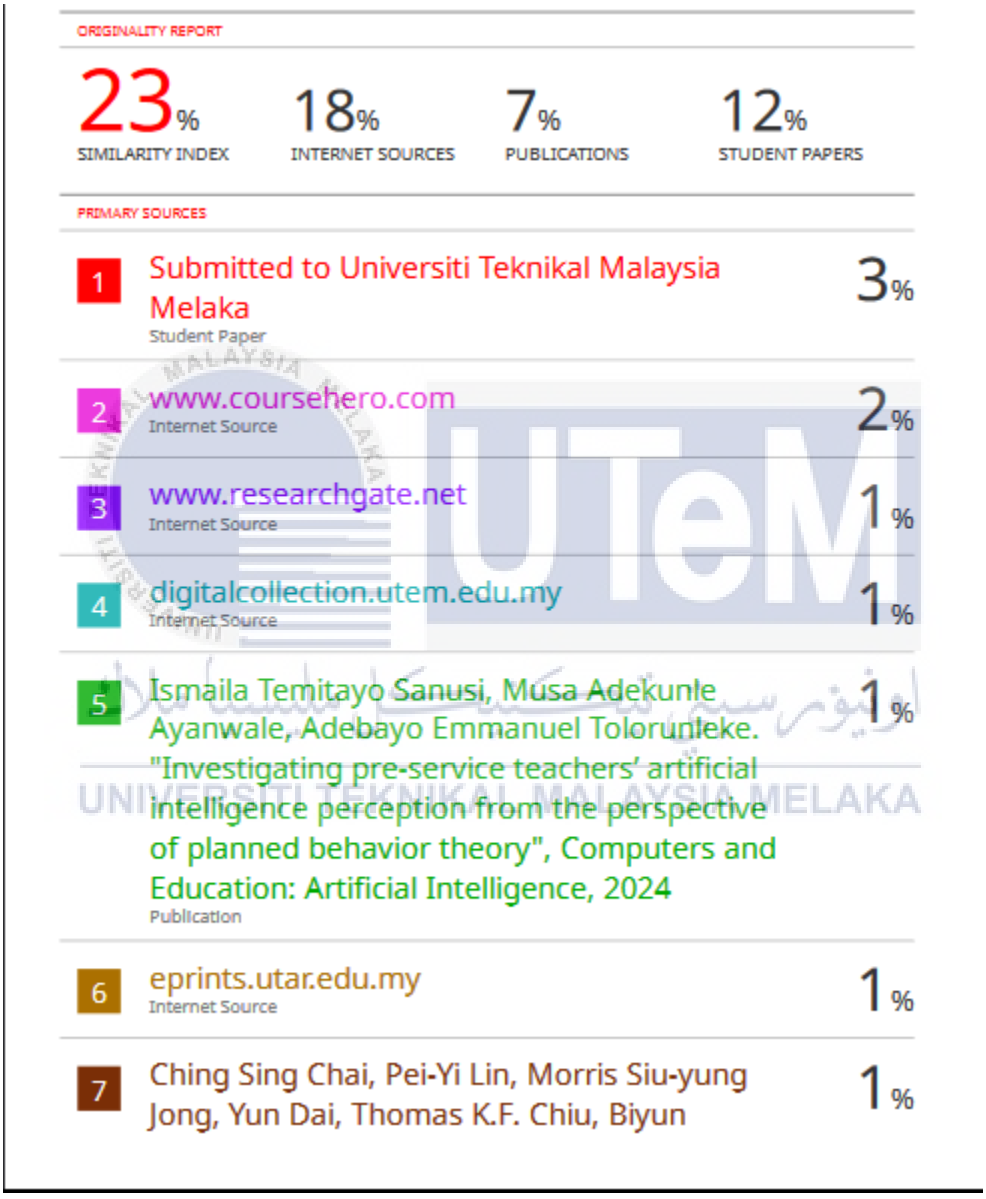
29. I found it easy to share information about my learning progress using artificial intelligence. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly Agree

APPENDIX

TURNITIN REPORT



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