ACCEPTANCE OF TECHNOLOGY METAVERSE IN MALAYSIA EDUCATION

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2025

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A report submitted in partial fulfilment of the

requirements for the degree of Bachelor of Technology

Management (High Technology Marketing) with Honours

Faculty of Technology Management and Technopreneurship

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2025

SUPERVISOR DECLARATION

"I/We hereby declare that I/We had read through this thesis and in my/our opinion that that thesis is adequate in terms of scope and quality which fulfil the requirements for the award of Bachelor Degree of Technology Management (High Technology Marketing)"

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DECLARATION

I declare that the thesis entitled " ACCEPTANCE OF METAVERSE IN MALAYSIA EDUCATION " is the result of my own reseach 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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DEDICATION

I would like to express my deepest gratitude to my beloved parents and family, who have been my unwavering pillar of support throughout my academic journey. Their unconditional love, sacrifices, and prayers have been the foundation of my success. They have been my source of motivation, strength, and care, always inspiring me to push forward even during the most challenging times. Their moral, spiritual, emotional, and financial support has been invaluable, and I am forever grateful for their presence in my life.

I would also like to extend my heartfelt thanks to my esteemed supervisor, Dr. Nur Erma Suryani Binti Mohd Jamel, whose guidance, encouragement, and patience have been instrumental in the completion of this research. Her wealth of knowledge, constructive feedback, and constant support have greatly enriched my understanding and motivated me to strive for excellence. I wish to acknowledge the contributions of my panel members, whose valuable insights and expertise have been crucial in refining this work. Their feedback and encouragement have been greatly appreciated. A special note of gratitude goes to my course mates, who have been by my side throughout this journey. Their willingness to share knowledge, experiences, and support has created a sense of camaraderie that made this challenging process more manageable and rewarding. Lastly, I extend my thanks to everyone who has directly or indirectly contributed to my academic journey. Each of you has played an important role in shaping my path, and I am truly grateful for your presence in my life.

ACKNOWLEDGEMENTS

In preparing this report, I had the privilege of being in contact with many supportive individuals, including researchers, academicians, and practitioners, who have significantly contributed to my understanding and perspective throughout this journey. In particular, I wish to express my heartfelt appreciation to my main project supervisor, Dr. Nur Erma Suryani Binti Mohd Jamel, for her unwavering encouragement, guidance, constructive feedback, and support. Her dedication and expertise have been instrumental in shaping the direction and quality of this work.

I am also deeply grateful to my fellow students and peers who provided valuable insights, shared their experiences, and supported me throughout this project. Their camaraderie and collaboration made this journey both productive and enjoyable. A special note of thanks is extended to my colleagues and friends who, at various moments, offered their assistance and advice. Your suggestions and words of encouragement have been truly invaluable.

Lastly, I would like to express my profound gratitude to my beloved family for their endless support, patience, and love. Their unwavering belief in me has been my greatest source of strength and motivation. Although it is impossible to list everyone individually in this limited space, please know that your contributions are deeply appreciated and will always be remembered.

ABSTRACT

In recent years, technological advancements have significantly influenced various sectors, including education. The metaverse, a virtual reality-driven immersive environment, has emerged as a potential tool to revolutionize traditional teaching and learning methods. This research explores the factors that influence the acceptance of the metaverse in the Malaysian education system. The study aims to identify the key determinants that encourage or hinder its adoption among students and educators.Primary data were collected through an online survey using a self-administered questionnaire, targeting participants within Malaysia's educational institutions. This research leverages the Unified Theory of Acceptance and Use of Technology (UTAUT) framework to examine behavioral intentions and attitudes toward the metaverse. A quantitative analysis method was employed, and the data were analyzed using statistical tools, including SPSS.The findings indicate that perceived usefulness, perceived ease of use, social influence, and facilitating conditions significantly impact the acceptance of the metaverse in education. These insights highlight the importance of addressing technological barriers and fostering awareness to enhance its integration into learning environments.

Keywords: Metaverse, Education Technology, UTAUT, Behavioral Intention, Malaysia, Immersive Learning

ABSTRAK

Dalam beberapa tahun kebelakangan ini, kemajuan teknologi telah memberi kesan yang signifikan kepada pelbagai sektor, termasuk pendidikan. Metaverse, sebuah persekitaran imersif yang didorong oleh realiti maya, telah muncul sebagai alat yang berpotensi untuk merevolusikan kaedah pengajaran dan pembelajaran tradisional. Penyelidikan ini meneroka faktor-faktor yang mempengaruhi penerimaan metaverse dalam sistem pendidikan Malaysia. Kajian ini bertujuan untuk mengenal pasti penentu utama yang mendorong atau menghalang penerimaannya dalam kalangan pelajar dan pendidik. Data utama dikumpulkan melalui tinjauan dalam talian menggunakan soal selidik yang dijawab sendiri, yang menyasarkan peserta dari institusi pendidikan di Malaysia. Penyelidikan ini menggunakan kerangka teori Unified Theory of Acceptance and Use of Technology (UTAUT) untuk mengkaji niat tingkah laku dan sikap terhadap metaverse. Kaedah analisis kuantitatif digunakan, dan data dianalisis menggunakan alat statistik seperti SPSS. Hasil kajian menunjukkan bahawa persepsi terhadap kegunaan, kemudahan penggunaan, pengaruh sosial, dan syarat sokongan memainkan peranan penting dalam mempengaruhi penerimaan metaverse dalam pendidikan. Penemuan ini menekankan kepentingan menangani halangan teknologi dan meningkatkan kesedaran untuk memperkukuhkan integrasi teknologi ini dalam persekitaran pembelajaran.

Kata Kunci: Metaverse, Teknologi Pendidikan, UTAUT, Niat Tingkah Laku, Malaysia, Pembelajaran Imersif

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Chapter 1

INTRODUCTION

1.0 Introduction

Chapter 1 of this study provides a comprehensive introduction to the research project, focusing on the the acceptance of metaverse technology in Malaysia's education sector. This chapter delves into the study's background, exploring the phenomenon of technology acceptance within the contexe of the metaverse. By presenting the research topic, defining the problem statement, outlining the research question, objective, gaps, scope and significance, it sets the foundation for the entire study. The primary aim of this chapter is to engage readers, emphasize the relevance of the research, and establish a clear direction for subsequent chapters.

1.1 Background study

Although the metaverse gained significant attention when Facebook rebranded as Meta, the concept has historical roots tracing back to the 1830s with Sir Charles Wheatstone's invention of the stereoscope. This invention marked a milestone in the exploration of binocular vision, enabling the application of physics to the study of

spatial perception (Wade, 2002). Mystakidis (2022) defines the metaverse as a "post-reality universe," a persistent and multiuser environment that exists beyond conventional reality. Similarly, Cheng et al. (2022) describe it as a technology powered by immersive systems like augmented reality (AR), virtual reality (VR), and mixed reality (MR). With its reliance on these advanced technologies, the metaverse promises a transformative leap in AR and VR, providing users with an unparalleled virtual experience (Bojic, 2022).

The metaverse is broadly understood as a networked, immersive social environment, enabling real-time communication and interaction with digital elements on multiuser platforms (Mystakidis, 2022). For instance, the metaverse enhances virtual sociability, allowing users to feel physically present in remote locations, such as through VR-powered snapshots or gaming experiences. Players in virtual games can interact with friends as though they are physically together, even within a simulated environment (Bojic, 2022). Although still under development, various technology companies have initiated their own metaverse platforms. Facebook, now Meta, introduced Horizon, while Microsoft developed Altspace VR. Earlier efforts, such as Second Life, paved the way by creating 3D virtual environments for social interaction.

This study emphasizes the broader concept of "meta" and the metaverse's purpose, as it is widely recognized and accepted. Mark Zuckerberg described the metaverse as an "immersive, embodied internet" where users engage in experiences rather than passively observe them (Zuckerberg, 2021). He highlighted the metaverse's potential to transcend physical boundaries, allowing users to teleport virtually as holograms to various locations, such as workplaces or events. Meta envisions a future where people seamlessly transition between devices, from phones and laptops to VR and AR glasses, creating a convergence of the virtual and physical realms.

As the metaverse continues to grow, its impact on the media industry is inevitable. Many brands and events have already begun leveraging metaverse technologies. Companies like Nike and Louis Vuitton have embraced it through non-fungible token (NFT) collections and acquisitions of virtual goods firms (Nike, 2022; Bodenès, 2022). During the COVID-19 pandemic, artists like DJ Marshmello (Webster, 2019) and Travis Scott (Tassi, 2020) held virtual concerts on platforms like Fortnite, circumventing restrictions on live events. A recent example includes Karen X Cheng's

collaboration with McDonald's for a Lunar New Year celebration, featuring a metaverse space showcasing 3D sculptures and artworks by Asian American Pacific Islander (AAPI) artists (Vismaya, 2023).

1.2 Problem statement

The incorporation of metaverse technology into Malaysia's education system presents an innovative opportunity to transform learning experiences and equip students for the demands of an increasingly digital world. Recognized as a powerful educational tool, the metaverse facilitates immersive and interactive learning through virtual environments, simulations, and gamified activities. Interest in the metaverse surged globally in 2021, which has been labeled as its inaugural year (Zhang et al., 2022a). Scholars widely predict that this technology will redefine education by introducing dynamic and engaging learning approaches (Choi & Kim, 2017; Dwivedi et al., 2022; Tlili et al., 2022). Despite this potential, research on metaverse applications in education, particularly within the Malaysian context, remains in its early stages.

The integration of metaverse technology in Malaysian education is still in its infancy, with initiatives such as Metaversity™ and Pythaverse spearheading efforts in higher education. However, several significant challenges hinder its widespread adoption. A primary barrier is the digital divide, particularly between urban and rural areas. While urban regions generally have reliable internet access, rural areas often struggle with inconsistent connectivity and the high costs of broadband services (Ahmed & Abdul, 2021). Additionally, the adoption of metaverse technology requires advanced and costly hardware, such as virtual reality headsets and augmented reality devices, which may be unaffordable for schools and families in economically disadvantaged communities.

Another pressing issue is the lack of culturally relevant and curriculum-aligned content for the metaverse. Much of the available educational material is not tailored to Malaysian students, creating challenges for educators trying to integrate it into the national curriculum. This is further complicated by the need to ensure compliance with Malaysia's language standards and cultural norms. Privacy and data security concerns also pose significant obstacles, as metaverse platforms collect extensive user data. Issues such as data breaches, misuse of personal information, and adherence to regulations like the Personal Data Protection Act 2010 (Wang & Zhao, 2019) must be addressed to build trust and encourage adoption.

As a relatively novel concept, the metaverse combines multiple advanced technologies, including virtual reality, augmented reality, blockchain, and artificial intelligence (Kang, 2021). While existing research has explored these technologies individually, there has been limited examination of the metaverse as a cohesive framework for education. Many educators and researchers remain unaware of the metaverse's components, functionality, and potential applications in learning environments (Guo & Gao, 2022; Park & Jeong, 2022). This lack of understanding poses a significant barrier to developing effective implementation strategies.

In 2021, the metaverse gained recognition as a key future trend in education due to its immense potential (Choi & Kim, 2017; Dwivedi et al., 2022; Gartner, 2022; Guo & Gao, 2022; Hwang & Chien, 2022; Park & Jeong, 2022; Park & Kim, 2022; Rospigliosi, 2022; Shin, 2022; Tlili et al., 2022). While the metaverse integrates various emerging technologies (Kang, 2021), prior studies have primarily focused on these technologies separately rather than examining the metaverse holistically within an educational context. Consequently, many educational professionals lack a clear understanding of what the metaverse entails and how it can be effectively applied in learning environments. To address this gap, this research aims to explore the factors influencing students' acceptance of metaverse technology in education, with a particular focus on Malaysia.

1.3 Research Question

RQ1 : What is the relationship between Perceive Usefulness and acceptance technology metaverse in education in Malaysia ?

RQ2 : What is relationship between Social Influence and accept technology metaverse and education in Malaysia ?

RQ3 : What is the relationship between the Perceived Ease of Use and acceptance technology metaverse and education in Malaysia ?

1.4 Research Objective

RO1 : To examine the relationship between Perceive Usefulness and acceptance technology metaverse in education in Malaysia.

RO2 : To examine the relationship between Social Influence and acceptance technology metaverse and education in Malaysia.

RO3 : To examine the relationship between Perceived Ease of Use and acceptance technology metaverse education in Malaysia.

1.5 Scope of study

This study investigates the acceptance of metaverse technology within Malaysia's education sector, focusing on identifying the factors that influence its adoption among educators and students. Specifically, the research examines key constructs such as Perceived Usefulness (PU), Social Influence (SI), and Perceived Ease of Use (PEOU) to understand their relationships and impact on the willingness to adopt metaverse technology for teaching and learning purposes. The first construct explored is Perceived Usefulness, which pertains to the belief among educators and students that metaverse technology enhances educational outcomes and experiences. This includes an analysis of how advanced features of the metaverse—such as immersive virtual environments, simulations, and interactive learning tools—contribute to improved educational performance. The study further investigates whether perceived advantages, such as increased engagement, personalized learning opportunities, and skill development, drive the acceptance of metaverse platforms.

The second aspect of this research focuses on Social Influence, examining the impact of external factors such as peer support, societal expectations, and institutional encouragement on attitudes toward adopting metaverse technology. By analyzing the influence of significant individuals and groups, the study seeks to understand the role of social dynamics in either promoting or discouraging the integration of the metaverse into the education system. The third construct, Perceived Ease of Use, evaluates whether the simplicity and user-friendliness of metaverse platforms affect their adoption. The study examines factors like intuitive interfaces, accessibility, and minimal learning curves, assessing how these elements shape educators' and students' readiness to adopt the technology. Technological barriers, along with the level of training or support needed to ensure seamless use, are also considered within this dimension.

In addition to these constructs, the research seeks to identify the most critical variables influencing the acceptance of metaverse technology in Malaysian education. It delves into the interplay between cultural, technological, and institutional factors specific to the Malaysian context, recognizing their potential to significantly shape the outcomes of metaverse adoption. The aim is to determine which factors have the

strongest influence on fostering acceptance and integration of this technology. This research ultimately aspires to develop a comprehensive framework for understanding the adoption of metaverse technology in education. It offers valuable insights for policymakers, educators, and technology developers by identifying the key determinants of acceptance. The findings aim to guide the creation of effective strategies for implementing metaverse tools, thereby fostering a technology-enriched learning environment tailored to the needs and expectations of Malaysian educational institutions.

1.6 Signification of study

The significance of examining the acceptance of metaverse technology in Malaysia's education system is both multifaceted and impactful, carrying important implications for the future of the educational landscape. As digital transformation becomes an essential component of global educational practices, understanding the factors influencing the adoption and integration of metaverse technology is critical. This study seeks to provide insights that can shape educational policies, teaching methodologies, and technological innovations, enabling Malaysia's educational institutions to fully harness the potential of metaverse technology.

This research aims to contribute to the formulation of effective strategies for integrating metaverse technology into educational settings. By identifying the key determinants of acceptance, it enables educators and policymakers to develop targeted interventions that address barriers and encourage the adoption of immersive learning environments. Such strategies have the potential to improve the quality of education by making it more engaging, interactive, and personalized to meet individual student needs (Ahmad & Khalid, 2022). Furthermore, this study underscores the importance of addressing the digital divide by emphasizing equitable access to advanced educational technologies. In Malaysia, disparities in internet connectivity and resource availability can hinder widespread adoption. By understanding these challenges,

efforts can be directed toward enhancing infrastructure and providing essential resources, ensuring that all students, irrespective of socio-economic background, can benefit from innovative learning tools (Rahim & Abdullah, 2021).

Additionally, this research can support the development of teacher training and professional development initiatives. Since the successful integration of metaverse technology relies on educators' proficiency with these tools, identifying gaps in skills and knowledge can lead to the creation of robust training programs. These initiatives will empower teachers to effectively utilize metaverse technology, enhancing their teaching capabilities and improving student outcomes (Hashim, 2023). The study also explores the socio-cultural factors that influence technology acceptance, providing valuable insights into how cultural attitudes and values shape the adoption of new educational technologies. By understanding these dimensions, culturally relevant strategies can be developed to promote acceptance and utilization of metaverse tools, ensuring their alignment with local contexts and values. This approach can significantly enhance the integration of metaverse technology in Malaysian education (Lee & Tan, 2022).

1.7 Motivation of study

The transformative potential of metaverse technology in Malaysia’s education sector serves as the foundation for this research on its acceptance in educational settings. The integration of metaverse technology has the capability to revolutionize teaching and learning approaches by offering immersive and interactive experiences that traditional methods cannot provide, particularly with the continuous growth of the digital ecosystem. This study aims to identify the key factors influencing the adoption of metaverse technology in Malaysian education, examine the elements affecting its acceptance, and explore the relationship between this technology and educational outcomes.

One of the significant advantages of implementing metaverse technology in education is its ability to create dynamic and engaging learning environments. By providing access to interactive simulations and experiences through virtual reality (VR) and augmented reality

(AR), students' understanding and retention of complex concepts can be greatly enhanced. Additionally, metaverse technology enables personalized learning experiences, allowing students to progress at their own pace and according to their individual preferences. This personalized approach may result in higher levels of student satisfaction and improved academic performance.

Despite its potential, the acceptance of metaverse technology comes with various challenges. For many educational institutions, the high cost of VR and AR devices, along with the required infrastructure, presents a significant barrier. Furthermore, educators may lack the necessary skills and expertise to effectively incorporate this technology into their teaching practices. Resistance to change is another potential issue, as both educators and students who are accustomed to traditional teaching and learning methods may be reluctant to embrace new approaches.

This study seeks to address these benefits and challenges by examining the factors that significantly influence the adoption of metaverse technology, the relationship between its acceptance and educational outcomes, and the elements that affect its integration into the classroom. The first objective focuses on identifying the factors that drive the use of metaverse technology in Malaysian classrooms. The second objective explores the connection between adopting this technology and its impact on student performance. Lastly, the third objective aims to determine the most critical factors that influence the successful implementation of metaverse technology in educational settings.

1.8 Summary

The study explores the background analysis of the integration of the metaverse in Malaysia's education system, examines the factors facilitating or hindering its acceptance, investigates the impact of its adoption on educational outcomes, and identifies the key determinants influencing its implementation. It also considers the roles of teachers, students, and institutions while addressing technological, pedagogical, and cultural influences, highlighting the importance of leveraging innovative technologies for enhanced educational experiences.

Chapter 2

LITERATURE REVIEW

2.0 Introduction

This chapter delves into the literature review, providing a detailed discussion on the definition of metaverse technology, Perceived Ease of Use (PEOU), Technology Acceptance of the Metaverse, and the challenges related to accepting metaverse technology in Malaysia's education sector. In the concluding section of the chapter, the researcher presents a conceptual framework to offer a clearer understanding of the study.

2.1 The Technology of Metaverse

An exploration of the metaverse's fictional and non-factual development was discussed in a Forbes article detailing its brief history (Marr, 2022). One of the earliest imaginative references to a metaverse appeared in 1935 in Stanley Weinbaum's speculative fiction work

Pygmalion’s Spectacles. In the story, the protagonist uses goggles that simulate taste, smell, touch, sound, and vision to navigate a virtual world. However, the term "metaverse" was first introduced in Neal Stephenson's novel Snow Crash, describing a virtual world where characters sought refuge from a dystopian reality. The concept was further explored in the book Ready Player One, which focused on the immersive experiences of a virtual environment.

The factual evolution of the metaverse began after the stereoscope era, with the invention of the first virtual reality device, the Sensory Environment Simulator, in 1956. This device integrated 3D visuals, sound, smell, and a vibrating chair to simulate the sensation of riding a motorbike (Marr, 2022). One notable advancement came from the Massachusetts Institute of Technology (MIT), which developed the Aspen Movie Map, a computer-generated tour of Aspen, Colorado. Another significant milestone was achieved in the 1990s when Sportsvision introduced the concept of overlaying graphics on real-world images by broadcasting an NFL game with a virtual yellow yard marker (Marr, 2022).

Interest in virtual reality saw a resurgence in the 2000s, driven by the creation of the Oculus Rift prototype by Palmer Luckey. This headset offered a 90-degree field of vision and leveraged advanced computer processing capabilities (Marr, 2022). The entry of major tech companies like Sony, Samsung, and Google into the virtual reality headset market further boosted its popularity. Facebook's acquisition of Oculus VR in 2014 marked another turning point, followed by Microsoft’s introduction of the HoloLens in 2016. This line of headsets pioneered mixed reality, merging virtual and augmented reality to produce holographic images that seamlessly integrate with the physical world (Marr, 2022). IKEA showcased the practical application of this technology in 2017 with its Place app, which allowed users to visualize IKEA furniture in their own spaces (Marr, 2022).

As mixed reality became increasingly accessible through smartphones, Apple incorporated LiDAR cameras into its Pro series of smartphones to enhance augmented reality and depth scanning capabilities. In 2021, Facebook's rebranding to Meta marked a significant shift in the media landscape. This move signaled the company’s commitment to developing a metaverse that would revolutionize virtual communication and interaction

2.2 Definition of Metaverse

A descriptive explanation offers greater value than a single dictionary definition, as the metaverse paradigm continues to evolve. One of the most detailed descriptions of the metaverse is provided in a journal article from Cornell University, which divides its development into three distinct phases known as the "digital twins-native continuum" (Lee et al., 2021). This framework categorizes the evolution of the metaverse into three stages: (i) digital twins; (ii) digital natives; and (iii) a coexistence of physical and virtual realities, referred to as surreality. The concept of digital twins serves as the foundation for digitizing physical environments, where virtual replicas of the nine real-world domains are created. As a result, changes in the physical world are mirrored in their digital counterparts.

The second stage, digital natives, focuses on how users utilize avatars to engage in virtual environments and create new projects. Content creation plays a central role during this phase, as creators produce digital works within virtual spaces that connect with the real world, with avatars serving as their representations. The third stage, surreality, involves the gradual merging of virtual and physical realities, resulting in a coexistence that fosters new virtual worlds. According to Lee et al. (2021), the metaverse has the potential to evolve into "a selfsustaining and persistent virtual world that coexists and interoperates with the physical world with a high degree of independence."

Uspenski and Guga (2022) suggest that the metaverse lacks a single, universally accepted definition. Their article explores the term "metaverse" from an etymological perspective. The Greek word "meta" signifies "beyond" or "adjacent to self." In epistemology, "meta" refers to something that transcends and encompasses its own essence. When combined with "verse," the term "metaverse" denotes a realm that extends beyond and includes all universes. This can be interpreted as "an open and shared collection of all virtual reality spaces that are computer-generated, interconnected, immersive, and participatory." However, etymology alone cannot fully encapsulate or define the complexities of the metaverse.

The metaverse, also referred to as social VR, enables individuals to interact and communicate through a network of interconnected virtual realities and experiences. Social VR immerses users in digital worlds where they can engage with both other users and their surroundings. Beyong conventional phone screens, the metaverse facilitates the integration of physical and virtual realities through advanced immersive technologies. It leverages tools such as virtual reality (VR), augemented reality (AR), and other connectivity technologies while remaining open to emerging innovations that align with the real word (Uspenski & Guga,2022).

2.2.1 Challenge of Acceptance Metaverse of education in Malaysia

The immense potential of metaverse technology to transform Malaysia's education sector forms the basis of this study, which focuses on its acceptance in educational contexts. The integration of metaverse technology into education has the capacity to revolutionize teaching and learning practices by providing immersive and interactive experiences that go beyond traditional methods. This is especially relevant in the context of an increasingly digitalized ecosystem. The aim of this research is to identify the key factors influencing the adoption of metaverse technology in Malaysia's education system, evaluate its acceptance, and examine its relationship with educational outcomes.

One of the significant benefits of utilizing metaverse technology in education is its ability to foster highly engaging and interactive learning environments. With tools like virtual reality (VR) and augmented reality (AR), students can experience simulations and interactive activities that enhance their understanding and retention of complex concepts. Additionally, the personalized learning opportunities enabled by metaverse technology allow students to learn at their own pace and based on their individual preferences, potentially improving satisfaction and academic outcomes.

Despite its advantages, there are notable challenges associated with the acceptance of metaverse technology. The high costs of VR and AR equipment, along with the required infrastructure, create substantial barriers for many educational institutions. Furthermore, educators may lack the skills and training needed to effectively incorporate this technology into their teaching processes. Resistance to change, especially among teachers and students accustomed to conventional teaching methods, adds another layer of complexity to its adoption.

This research seeks to address these opportunities and challenges by exploring the factors that significantly influence the adoption of metaverse technology, the connection between its acceptance and educational outcomes, and the variables that affect its integration into classrooms. The first objective is to analyze the factors that impact the use of metaverse technology in Malaysian classrooms. The second objective examines the relationship between its adoption and student performance. Finally, the third objective identifies the critical factors that drive the successful implementation of metaverse technology in educational environments.

2.3 Technology Acceptance Metaverse

Fred Davis introduced the Technology Acceptance Model (TAM) in 1986 as a framework for evaluating user attitudes towards new technologies. The model is built upon the Theory of Reasoned Action (TRA), a widely recognized theory explaining human behavior. TRA suggests that behavioral intentions are shaped by individual attitudes and subjective norms, which then drive actual behavior. TAM adapts and simplifies these principles, focusing on factors that influence users' acceptance and adoption of technology.

According to Davis, TAM identifies two key factors that shape user attitudes toward adopting technology: perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness refers to the extent to which an individual believes that

using a particular technology will enhance their job performance. This factor emphasizes the expected practical benefits, such as improved efficiency, productivity, or task effectiveness. Perceived ease of use, on the other hand, reflects the belief that using the technology will require minimal effort. This factor focuses on the simplicity or complexity of the technology, with user-friendly systems being more likely to be adopted as they lower potential barriers.

The combined influence of PU and PEOU shapes users' attitudes (AT) toward using the technology. When users hold a positive attitude, they are more likely to develop a strong behavioral intention (BI) to adopt the technology. Behavioral intention, which indicates a user's willingness and readiness to interact with a technology, serves as a critical predictor of actual usage. TAM posits that attitudes toward technology are directly influenced by perceived usefulness and ease of use, and these attitudes in turn affect users' behavioral intentions, ultimately determining whether or not the technology is adopted.

Additionally, social influence plays a significant role in the adoption process. Social influence pertains to the degree to which individuals perceive that important people, such as peers, superiors, or societal expectations, believe they should use a specific technology. Derived from the Theory of Planned Behavior (TPB), this factor can significantly impact behavioral intention, especially in settings where social approval or compliance drives adoption. Depending on social norms and pressures, social influence can either promote or hinder technology adoption. This element is particularly critical for technologies that require collaboration or coordinated usage among multiple users.

TAM provides valuable insights into the factors that drive technology acceptance and highlights areas where user adoption can be enhanced. For instance, demonstrating the practical benefits of a technology through effective marketing or showcasing its utility can positively influence users' attitudes. Similarly, simplifying the design and providing adequate training can improve perceived ease of use, reducing resistance to adoption. Leveraging social influence through strategies such as engaging early adopters, building supportive communities, or utilizing influencers can further accelerate adoption rates. TAM offers a comprehensive framework for understanding and predicting user acceptance of new technologies. It assists

researchers and practitioners in designing, implementing, and evaluating technological advancements to maximize user adoption and satisfaction (Davis, 1986; Venkatesh & Davis, 2000).

2.4 Independent Variable

2.4.1 Perceived Ease of Use (PEOU)

One of the central concepts in the Technology Acceptance Model (TAM) is Perceived Ease of Use (PEOU), which refers to the extent to which an individual believes that using a particular technology will be straightforward and require minimal effort. This concept plays a crucial role in shaping users' attitudes toward adopting and utilizing new technologies. In this study, PEOU will be examined to gather insights into respondents' perceptions of the simplicity and ease of operating metaverse technologies. The importance of PEOU lies in its direct influence on the likelihood of technology adoption. When users perceive a technology as userfriendly, they are more inclined to adopt it, as it reduces the challenges associated with learning and frustration caused by complex systems. Conversely, even if a technology offers significant benefits, it may deter users if it is perceived as difficult to navigate or operate. Thus, enhancing PEOU can significantly improve the acceptance and success of new technological innovations (Davis, 1989).

PEOU will examine different aspects of user interaction in relation to metaverse technologies, such as the user interface's intuitiveness, the ease of navigation, the taskcompletion process's simplicity, and the user's overall experience. This entails evaluating the respondents' perceptions of how simple and user-friendly the metaverse platforms are. Particular factors to take into account could be the user interface's design, the responsiveness and clarity of the navigation controls, the simplicity of completing tasks like making and customising avatars or joining virtual meetings, and the metaverse's general learning curve (Davis, 1989).

Surveys, interviews, and observational techniques will all be used to collect information on respondents' opinions of these factors. The purpose of the questions is to elicit in-depth answers regarding their experiences and difficulties utilising metaverse technologies. For example, respondents may be asked to assess on a Likert scale the following statements: "I find the metaverse platform easy to navigate" or "Performing tasks in the metaverse requires minimal effort". The examination of this data will yield important insights into the elements that either enhance or diminish the perceived usability of metaverse technology. Developers and designers can create more user-friendly metaverse settings by identifying common pain points and areas for development (Venkatesh & Davis, 2000).

Furthermore, by comprehending PEOU, training and support tactics can be improved, enabling users to become more accustomed to and proficient with these technologies. This study intends to emphasise the significance of user-centric design and the necessity of minimising complexity to promote uptake and effective utilisation by focusing on PEOU within the framework of metaverse technologies. For metaverse technologies to be widely adopted and to realise their full potential in a variety of contexts, such as business, education, and social interactions, it is imperative that they be simple to use (Davis, 1989).

2.4.2 Social Influence (SI)

Social influence plays a significant role in the acceptance of new technologies, especially in an educational setting. When it comes to the metaverse, social influence refers to how much people are impacted by the opinions or behaviors of those around them, such as teachers, classmates, or people they respect. In Malaysia, where social and community norms are highly valued, the decisions of peers, family, and teachers can heavily influence the decision to adopt a new technology like the metaverse. If students and educators witness others using and benefiting from the metaverse, they

are more likely to adopt it themselves, as it becomes a socially accepted and even expected behavior (Venkatesh et al., 2003).

The influence of educational institutions also plays a crucial role. If a school or university actively incorporates the metaverse into its programs, students and staff may feel motivated to use the technology as part of their learning and teaching processes. Institutional support, especially when led by influential leaders or backed by government endorsements, makes the technology seem more credible and essential to the academic experience. This in turn encourages wider adoption across the educational community (Venkatesh & Davis, 2000).

Moreover, peer influence can drive adoption, as students are often eager to keep up with the latest technologies used by their peers. The idea of engaging with the same tools and experiences as others fosters a sense of shared experience and increases the likelihood of adopting the metaverse. Therefore, social influence is a key factor in determining how quickly and broadly the metaverse might be adopted in Malaysia's education system (Venkatesh et al., 2003).

By leveraging social influence, educational institutions and developers can foster a supportive environment for metaverse adoption. Encouraging early adopters, providing community-driven training, and promoting positive peer experiences can significantly enhance the rate of acceptance and usage of metaverse technologies (Venkatesh et al., 2003).

2.4.3 Perceived Usefulness (PU)

Perceived Usefulness (PU) is a fundamental concept within the Technology Acceptance Model (TAM) and plays a vital role in influencing users' willingness to adopt new technologies. In the context of education, PU refers to the perception that a technology, such as the metaverse, can enhance learning outcomes. When students and educators believe that incorporating the metaverse will lead to improved engagement,

deeper understanding, and greater academic success, they are more likely to adopt and utilize the technology (Davis, 1989).

For example, the metaverse offers the possibility of virtual environments where students can engage in interactive simulations or explore educational content in 3D, which traditional learning methods may not provide. This immersive experience can make complex subjects more accessible, fostering a more hands-on approach to learning. Educators, too, can see the benefit of using metaverse platforms to create more interactive and personalized learning experiences for students, catering to a variety of learning styles (Venkatesh & Davis, 2000).

Additionally, the perceived usefulness of the metaverse is strengthened when it aligns with the goals of its users. For example, if students see that the technology can improve their understanding or help them accomplish educational tasks more effectively, they are more likely to adopt it. Positive feedback from others who have had successful experiences with the metaverse can further validate its usefulness, making it more appealing to new users (Davis, 1989).

Social influence and perceived usefulness are vital in determining whether the metaverse will be widely accepted in Malaysia's educational system. While social influence encourages the initial adoption through peer and institutional pressure, perceived usefulness sustains that adoption by showcasing the educational benefits that the metaverse brings. Together, these factors create a compelling case for the widespread integration of the metaverse into educational practices (Venkatesh et al., 2003).

2.5 Theoretical Framework

This study's theoretical framework examines the acceptance of metaverse technologies in Malaysia's education sector by utilizing a combination of established models, including the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and its extension, UTAUT2. Together,

these models offer a detailed perspective on the factors influencing technology adoption, focusing on key constructs such as Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Social Influence (SI). Each construct is analyzed within the context of Malaysia's educational environment to better understand the adoption of metaverse technologies.

Perceived Ease of Use (PEOU) plays a pivotal role in determining whether users will adopt a new technology. Defined as the degree to which individuals perceive a technology to be easy to use and free from effort (Davis, 1989), PEOU is especially critical in education, as it influences how effectively students and educators interact with metaverse platforms. Technologies with user-friendly interfaces, intuitive navigation, and minimal learning requirements are more likely to encourage positive attitudes toward adoption. For instance, Bhatiasevi and Naglis (2016) found that ease of use strongly correlates with increased technology acceptance in their research on cloud computing. In the context of metaverse technologies, simplifying activities like avatar creation, navigation within virtual environments, or participation in virtual classrooms can significantly lower barriers, especially in Malaysia, where technical proficiency varies widely. Enhancing PEOU requires the application of user-centric design principles. Developers should prioritize accessibility, compatibility with commonly used devices, and support features such as multilingual options, step-by-step tutorials, and integration with existing educational tools like learning management systems (LMS). Addressing these factors is essential to accommodate Malaysia's diverse educational ecosystem, which ranges from advanced urban institutions to under-resourced rural schools. By improving PEOU, adoption can be encouraged while promoting equitable access to cutting-edge educational tools.

Perceived Usefulness (PU) is another core determinant of metaverse adoption, defined as the extent to which individuals believe a technology enhances their performance or helps them achieve specific goals (Davis, 1989). In Malaysia's education sector, metaverse technologies have the potential to revolutionize traditional teaching methods by providing immersive learning experiences. For example, students can engage with 3D simulations, collaborate in virtual environments, and visualize complex concepts more effectively. Research by Alfaisal et al. (2022) highlights that technologies perceived as beneficial for improving academic outcomes and

engagement are more likely to be adopted. PU also depends on the alignment of metaverse capabilities with user expectations. Students who perceive the metaverse as an effective tool for collaborative learning or exploring content beyond textbook limitations are more likely to embrace it. Likewise, educators who recognize the metaverse as a means to tailor learning experiences for diverse student needs are more inclined to adopt it. Examples such as virtual field trips or lab simulations illustrate how metaverse platforms can offer unique educational opportunities that traditional classrooms cannot. As these benefits become evident, the perceived usefulness of the metaverse will further drive its adoption across Malaysian educational institutions.

Social Influence (SI) is a significant factor, particularly in Malaysia, where cultural and societal norms heavily influence individual behavior. SI refers to the extent to which individuals perceive that important others, such as peers, instructors, or institutional leaders, expect them to use a specific technology (Venkatesh et al., 2003). In educational contexts, SI can manifest through students adopting metaverse platforms after observing their peers or teachers successfully utilizing the technology. Similarly, educators may feel motivated to incorporate metaverse tools into their teaching practices when supported by institutional policies or professional development opportunities. Institutional support further amplifies the impact of SI. For instance, if Malaysia's Ministry of Education endorses metaverse technologies by integrating them into national curricula or providing financial incentives for their implementation, educational institutions are more likely to adopt these tools. Cimperman et al. (2016) noted that endorsements from trusted figures or organizations significantly influence user behavior. In Malaysia, leveraging influential stakeholders, such as prominent universities or government initiatives, can create a ripple effect, encouraging widespread adoption of metaverse platforms. SI interacts with both PEOU and PU to shape behavioral intentions. For instance, when peers and institutions demonstrate the advantages of metaverse adoption through case studies or testimonials, individuals are more likely to perceive the technology as both easy to use and highly beneficial. This interaction reinforces positive attitudes and intentions, making SI a critical component of the theoretical framework.

The integration of PEOU, PU, and SI within this framework provides a holistic understanding of the factors influencing the adoption of metaverse technologies in

Malaysia's educational context. Insights from TAM, UTAUT, and UTAUT2 clarify the interrelationships among these constructs and emphasize the need for a comprehensive approach to fostering acceptance. By prioritizing user-friendly designs, showcasing educational benefits, and leveraging social dynamics, stakeholders can facilitate the effective implementation of metaverse technologies. This framework serves as a foundation for theoretical exploration and practical strategies aimed at improving the adoption of innovative educational tools.

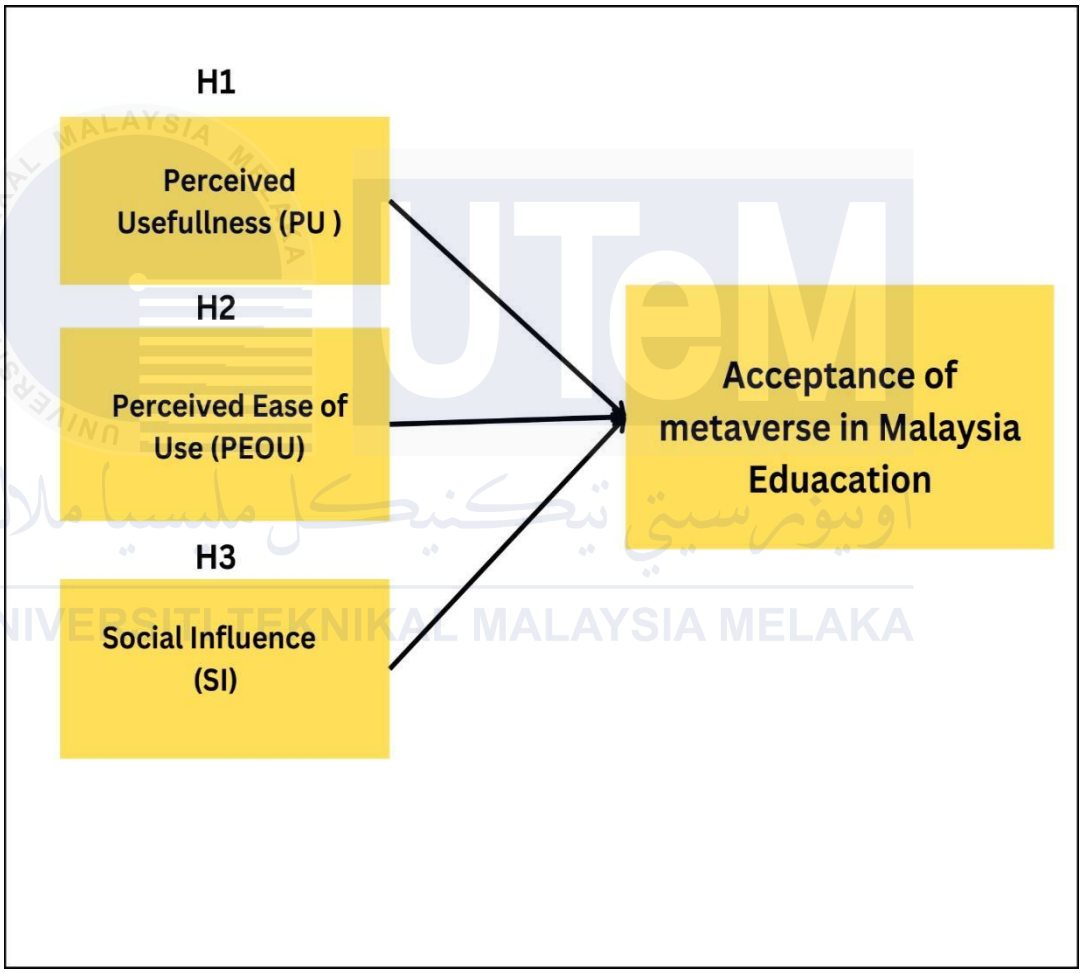


Figure 1 : Theoretical Framework

The diagram represents the conceptual framework for this study, showcasing the connections between three independent variables—Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Social Influence (SI)—and their influence on the dependent variable, Acceptance of the Metaverse in Malaysian Education. This framework highlights the combined effect of these factors in shaping individuals'

willingness to accept and adopt metaverse technologies within educational settings. It aligns with the study's aim to examine the role of technological, usability, and social factors in promoting the integration of metaverse technology into Malaysia's educational system.

2.6 Hypothesis

The 3 hypothesis that are established for this study are :

Hypothesis 1 (H1)

H0 : There is no significant relationship between Perceived Usefulness (PU) and acceptance of metaverse.

H1: There is a significant relationship between Perceived Usefulness (PU) and acceptance of metaverse.

Hypothesis 2 (H2)

H0 : There is no significant relationship between Perceived Ease of Use (PEOU) and acceptance of metaverse.

H1 : There is a significant relationship between Perceived Ease of Use (PEOU) and acceptance of metaverse.

Hypothesis 3 (H3)

H0: There is no significant relationship between Social Influence (SI) and acceptance of metaverse.

H1 : There is a significant relationship between Social Influence (SI) and acceptance of metaverse.

2.7 Summary

In summary, this chapter has provided an overview of the key concepts and definitions associated with metaverse technologies within Malaysia's education system. The discussion is supported by information sourced from articles, websites, and e-books. Both the independent and dependent variables have been outlined to establish the study's hypotheses, and a conceptual framework has been designed to illustrate the relationships between these variables. The following chapter will delve into the research methodology in greater detail.

Chapter 3

RESEARCH METHODOLOGY

3.0 Chapter overview

This chapter outlines the research methodology, covering key sections including research design, data collection methods, research instruments, as well as data processing and interpretation.

3.1 Research Design

This research adopts a quantitative design to investigate the acceptance of metaverse technologies within Malaysia's education system. Utilizing a quantitative approach allows the collection of measurable data to explore the relationships among key variables, including Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Social Influence (SI). This design ensures objectivity and facilitates the analysis of trends and patterns within a specified population (Creswell, 2014).

3.2 Data Collection Method

3.2.1 Primary Data

This research collects primary data using an online survey created with Google Forms. The survey consists of structured questions designed to assess participants' perceptions of Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Social Influence (SI), and their intentions to adopt metaverse technologies. Each item is measured using a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree," to maintain consistency and clarity in the responses. The survey questions are adapted from validated scales within the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), ensuring reliability and alignment with the study's objectives. To provide comprehensive data, the survey includes demographic questions to capture participant characteristics such as age, educational background, and location (urban or rural). These details offer valuable context for analyzing how different population segments perceive and accept metaverse technologies. For example, items such as "I find the metaverse platform easy to navigate" and "Using the metaverse will enhance my learning experience" are included to directly address PEOU and PU.

The survey will be disseminated through email and social media platforms, targeting university students and educators throughout Malaysia. Google Forms is chosen for its accessibility, ease of use, and efficiency in data collection and organization. Participants will be encouraged to share the survey link within their networks to increase the response rate and ensure a diverse sample from various regions and institutions. Reminders will be periodically sent to boost participation, and the survey will remain open for four weeks to allow ample time for responses. Additionally, a pilot test will be conducted with a small group of participants to evaluate the clarity and validity of the survey questions. Feedback obtained from the pilot test will be used to refine and improve the survey items, ensuring the overall quality of the instrument and minimizing potential biases or ambiguities.

3.3 Proposed Conceptual Framework

The conceptual framework proposed in this study integrates constructs from the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) to explore the factors affecting the acceptance of metaverse technologies in Malaysian education. The framework focuses on three primary independent variables: Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Social Influence (SI). PEOU is defined as the extent to which individuals believe that using metaverse technologies will require minimal effort, potentially fostering positive attitudes by minimizing complexity. PU refers to the degree to which individuals perceive these technologies as advantageous for improving performance or learning outcomes. SI highlights the influence of important individuals or groups, such as peers, educators, or institutions, on adoption behaviors.

These independent variables collectively influence Behavioral Intention (BI), which reflects individuals' willingness and readiness to adopt metaverse technologies. The framework suggests that PEOU has a direct impact on PU, while PEOU, PU, and SI all significantly contribute to shaping BI. In turn, BI serves as a predictor of the actual usage of metaverse technologies. This conceptual framework offers a structured perspective for understanding the factors driving metaverse adoption, serving as the basis for hypothesis development and data analysis in the study.

3.4 Sampling Design

3.4.1 Target Population

The target population for this study comprises students currently attending educational institutions across Malaysia, including those enrolled in public and private universities, colleges, and secondary schools. As primary users of metaverse technologies in education, students' perceptions and acceptance are crucial for evaluating the feasibility and success of integrating this technology into Malaysia's education system.

This research employs random sampling to ensure fair representation and unbiased participant selection from various institutions and regions across Malaysia. Random sampling allows the study to capture diverse perspectives, providing a well-rounded understanding of the factors that influence the acceptance of metaverse technologies in education. Creswell (2014) highlights that random sampling improves the generalizability of research findings and minimizes selection bias, which is particularly important when investigating the adoption of new technologies.

Malaysia's student population, which includes over 1.3 million individuals enrolled in higher education institutions (Ministry of Education Malaysia, 2015), serves as a strong foundation for this research. These students, who are increasingly accustomed to digital platforms, represent a demographic that is well-positioned to adopt and adapt to innovative educational technologies like the metaverse. Their participation is essential for identifying both barriers and enablers of technology acceptance, offering valuable insights for educators, policymakers, and technology developers.

3.4.2 Sampling Frame and Sampling Location

The sampling frame for this research includes students from all levels of education in Malaysia, spanning primary schools, secondary schools, and higher education institutions, up to the doctoral (PhD) level. This comprehensive approach ensures that the study captures the perspectives of students across different educational stages, offering a holistic view of the acceptance of metaverse technology in the Malaysian education system. Data for the sampling frame will be sourced from official enrollment records maintained by the Ministry of Education Malaysia and higher education institutions. These records include student lists from public and private primary and secondary schools, as well as enrollment databases from public universities, private universities, polytechnics, colleges, community colleges, and institutions like Universiti Teknikal Malaysia Melaka (UTeM). This broad coverage ensures that the study addresses diverse experiences and adoption factors, making the findings representative of the entire Malaysian student population. For instance, younger students in primary and secondary schools might prioritize usability and engagement, while university and postgraduate students may focus on advanced applications for learning and professional development. A random sampling method applied to this structured frame guarantees equitable representation across all levels, thereby enhancing the reliability and validity of the research findings (Creswell, 2014).

The sampling location for this study spans educational institutions across Malaysia, covering urban, suburban, and rural areas. By including this geographical diversity, the research ensures that the sample captures a wide range of perspectives on metaverse technology acceptance. Specific sampling locations include public and private primary and secondary schools in various states, as well as higher education institutions such as Universiti Malaya (UM), Universiti Teknologi MARA (UiTM) and Universiti Teknikal Malaysia Melaka (UTeM). Additionally, polytechnics, community colleges, and private colleges will be part of the sampling location. Data collection will take place in both online and offline settings, depending on institutional accessibility and respondent availability. This comprehensive approach to sampling location ensures that the findings are generalizable and relevant to the Malaysian educational context.

3.4.3 Sampling Size and Sampling Elements

The sample size for this study will be determined based on the target population, which includes students from various educational levels in Malaysia, such as those in primary, secondary, and higher education institutions, including universities, colleges, and polytechnics. To ensure the accuracy and reliability of the research findings, an appropriate sample size will be selected. Considering the large and diverse population, a recommended sample size of 300 to 400 students will be utilized, representing different educational stages and geographical regions across Malaysia. This range is informed by prior studies on technology acceptance in education, which suggest that such a sample size is sufficient to yield valid and generalizable results. Additionally, the sample size has been chosen to maintain a 5% margin of error and a 95% confidence level, as recommended by Saunders, Lewis, and Thornhill (2012) and Sekaran and Bougie (2016).

The sampling elements in this study refer to the individual students selected from the sampling frame to participate in the research. These elements will include students from a variety of educational institutions, such as primary and secondary schools, public and private universities, polytechnics, and community colleges. To ensure fairness, students will be randomly selected from lists provided by the respective educational institutions. This random selection process guarantees that every student has an equal chance of being included, thereby eliminating bias. The selected sampling elements will represent the broader student population in Malaysia, providing insights into the acceptance of metaverse technology within the educational context. Studies conducted by Hair et al. (2010) and Sekaran (2006) highlight the importance of employing random sampling to ensure that findings remain valid and free from bias.

3.4.4 Sampling Technique

This study on the acceptance of metaverse technologies in Malaysian education will utilize a stratified random sampling method to ensure that the sample accurately represents students from various educational levels. This technique is particularly suitable given the diverse target population, which includes students from primary schools, secondary schools, and higher education institutions such as universities, polytechnics, and community colleges. Using this method, the population will first be divided into distinct groups, or strata, based on their educational level (primary school, secondary school, undergraduate students, and postgraduate students). A random sample will then be drawn from each stratum, ensuring that all educational levels are adequately represented in the study.

Stratified random sampling is especially advantageous for this research as it ensures a more accurate representation of the population's diversity, allowing the findings to be generalized across various groups within Malaysia's student population. By stratifying the population, the study minimizes potential biases and ensures that all subgroups are proportionately represented. Additionally, this approach enhances the study's precision by accounting for differences in educational levels, which may influence how students perceive and accept metaverse technologies (Saunders, Lewis, & Thornhill, 2012; Sekaran & Bougie, 2016).

An alternative approach that could be considered is simple random sampling, where each individual in the population has an equal chance of selection. However, this method may not sufficiently capture the diversity within the population, particularly if certain educational levels or regions are underrepresented. The choice to employ stratified random sampling aligns with recommended practices for achieving a representative and accurate sample, as outlined by Saunders et al. (2012) and Sekaran & Bougie (2016).

3.5 Research Statergy

3.5.1 Quantitative Research

This research on the acceptance of metaverse technologies in Malaysian education adopts a quantitative approach to collect numerical data and analyze it using statistical methods to identify patterns and trends among students. Data will be gathered through a survey distributed via Google Forms, enabling participation from students across various educational levels in Malaysia. The survey will evaluate students' perceptions, attitudes, and behaviors toward the use of metaverse technologies in education, with responses measured on a Likert scale to capture the intensity of their views.

The study is guided by established theoretical frameworks such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). According to TAM, perceived ease of use and perceived usefulness are critical factors influencing individuals' intentions to adopt technology (Davis, 1989). UTAUT, on the other hand, identifies performance expectancy, effort expectancy, social influence, and facilitating conditions as key determinants of technology acceptance (Venkatesh et al., 2003). These models inform both the survey design and the subsequent data analysis. The primary objective of this research is to generate objective and reliable data on the factors influencing students' intentions to adopt the metaverse. The findings aim to offer valuable insights that can be applied to the broader student population in Malaysia, contributing to a better understanding of the potential for integrating metaverse technologies into the education system.

3.5.2 Questionnaires

This study on the acceptance of metaverse technologies in Malaysian education will utilize a questionnaire designed to evaluate three key constructs from the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use

of Technology (UTAUT): Perceived Usefulness (PU), Social Influence (SI), and Perceived Ease of Use (PEOU). The questionnaire will start by gathering demographic data, including age, gender, educational level, and the type of institution attended. This demographic information will enable the analysis of responses across different groups within the student population.

The second section of the questionnaire will address PU, focusing on students' beliefs about how the metaverse can enhance their learning experiences and academic outcomes. The third section will examine SI, exploring how social factors, such as influence from peers, instructors, or family members, shape students' intentions to adopt the metaverse for educational purposes. The final section will assess PEOU, analyzing students' perceptions of how easy it is to use the metaverse as a learning tool.

The questionnaire will conclude with a section measuring students' behavioral intentions to utilize the metaverse for educational purposes in the future. This section will examine how students' intentions are influenced by their perceptions of PU, SI, and PEOU. A 5-point Likert scale will be employed to quantify responses, facilitating a structured statistical analysis of the data. This methodical approach will provide important insights into the factors driving the acceptance of the metaverse in Malaysian education, emphasizing the roles of perceived usefulness, social influence, and ease of use.

Section	Questionnaire
A	Respondent Background Age Gender Race Level Education

B	Awareness of the metaverse I am aware about the metaverse I am aware of Facebook's rebranding to meta I am aware of Meta's development on the metaverse
C	Independent Variable : Perceived Usefulness (PU) Perceived Ease of Use (PEOU) Social Influence (SI)
D	Dependent Variable : Acceptance of Metaverse in Malaysia Education

Table 1: shows the questionnaire design

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Table 2 : Five-point Likert Scale

3.5.3 Operationalization Constructs

Constructs	No of Item	Scale of Measurement
Perceived Usefulness (PU)	5	Likert Scale (1-5)
Perceived Ease of Use (PEOU)	5	Likert Scale (1-5)
Social Influence (SI)	5	Likert Scale (1-5)
Acceptance of Metaverse in Malaysia Education	5	Likert Scale (1-5)

Table 3 : Shows the operational construct

3.5.4 Pilot Test

A pilot test will be carried out as part of this study on the acceptance of metaverse technologies in Malaysian education to ensure the questionnaire's reliability and validity. This test will involve a small sample of 20 to 30 participants from different educational levels. The purpose is to identify potential issues with the survey, such as unclear questions, ambiguous language, or technical challenges with the online survey platform. Participants will complete the survey and provide feedback on their experience, enabling the researcher to evaluate whether the questions

accurately measure the intended constructs: Perceived Usefulness (PU), Social Influence (SI), and Perceived Ease of Use (PEOU).

Based on the feedback received, necessary adjustments will be made to improve the clarity and relevance of the questions. The internal consistency of the survey will also be examined using Cronbach's alpha, where a value greater than 0.7 will indicate acceptable reliability. This pilot test will ensure that the final version of the questionnaire is both clear and effective in capturing students' perceptions of metaverse technologies in education, providing reliable data for subsequent analysis.

3.6 Reliability and Validity Analysis

Researchers must conduct validity and reliability analyses to ensure the accuracy and dependability of their methods and findings. This involves utilizing data and statistical tools to achieve results that are as precise and reliable as possible. In this study, experiments were carried out to confirm that the measurement tools accurately assessed the intended research variables. All measured items demonstrated consistency and reliability. The variables in the study were expected to share a common foundational structure. Correlation occurs when two variables are interconnected and influence each other.

Validity testing focuses on two main aspects: the effectiveness of the measurement tool and how closely the results align with the true values. Ensuring accurate and consistent measurements enables researchers to produce trustworthy data. In this investigation, tests were conducted to evaluate the accuracy of the measurement tools. Precise terms were used to describe the methods for measuring the research variables. While ensuring measurement accuracy can be challenging, it remains essential to the process. This includes determining the reliability of the tools used.

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

Table 4 : Cronbach's Alpha Coeffiecient

3.7 Data analysis Method

The gathered data are imported into SPSS (The Statistical Packages for Social Science) in order to do the analysis. Tables and graphs for the study can be created, as well as data entry and analysis, using a window-based application called SPSS. It is able to manage substantial volumes of gathered data and are analytically useful. All gathered data are loaded into the SPSS software to produce the findings. The SPSS makes it easier to conduct the analysis and acquire all of the results in text and graph form because each result from the questionnaire data has its own sign, making it easy to intercept and comprehend.

3.8 Pearson Correlation Analysis

Using the Pearson correlation coefficient is one way to find the link between two continuously variable variables. It is the best way to figure out how two things are related since it looks at how they change at the same time. We applied a mathematical technique called Pearson correlation analysis to ascertain whether two elements are related. A very weak relationship to almost no association at all is indicated by the correlation's display on a scale from -1 to 1. The number, or "r," that is referred to as the Pearson Correlation Coefficient

R	Interpretation
0.81 to 1.00	Very Strong
0.61 to 0.80	Strong
0.41 to 0.60	Moderate
0.21 to 0.40	Low
0.00 to 0.20	Very low

Table 5 : Peason Correlation Coefficient

3.9 Multiple Regression Analysis

Regression analysis is a statistical technique used to assess the relationship between one or more independent variables and a dependent variable. This study focuses on three independent variables: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Social Influence (SI). To analyze these relationships, the researcher

applies linear regression analysis, which can be expressed through the following equation

:y = a + bx1 + cx2 + dx3

Where:

y = dependent variable value (Acceptance of Metaverse in Education)

a = constant

b, c, d = regression coefficients

x1 = independent variable value (Perceived Usefulness)

x2 = independent variable value (Perceived Ease of Use)

x3 = independent variable value (Social Influence)

This equation highlights the impact of Perceived Usefulness, Perceived Ease of Use, and Social Influence on the acceptance of metaverse technology in education.

3.10 Normality Test

Normality test is a test that is used to determine whether the data set is normally distributed or not. If the data follows the normal distribution, it means that the data is under mean value (Gupta, Mishra, Pandey, Singh, Sahu & Keshi, 2019). In this research, the skewness and kurtosis were used to show the result of the normality test and whether the data had been distributed normally. According to Gupta et.al (2019), the distribution is considered as normal if both value of skewness and kurtosis are between -1 and +1.

3.11 Summary

This chapter explains how the researcher conducted the study. A quantitative research approach was used, with surveys as the primary method of data collection. The researcher focused on gathering information from Malaysian educators and students through convenience sampling. A trial run was conducted to ensure the reliability and consistency of the questionnaire using Cronbach's Alpha coefficient. Data was analyzed using SPSS software, incorporating concepts from the Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM) to develop a conceptual framework.

Chapter 4

DATA ANALYSIS AND DISCUSSION

4.0 Introduction

This chapter presents the analysis and interpretation of data collected through distributed questionnaires, showcasing the successful achievement of the research objectives. The structure of this chapter includes an analysis of the pilot test, dissemination of questionnaire results, data analysis, demographic analysis, descriptive analysis of all variables, hypothesis testing to evaluate the relationship between independent and dependent variables, multiple regression analysis, and regression coefficients. For this study, 303 responses were collected via researcher-administered surveys using an online Google Form. Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 23.

4.1 Normality Test

Normality Test is to test whether the data set normally distributed or not. In this research, the outcome of the normality test is displayed in term of skewness and kurtosis. The distribution is considered as normal if the value of skewness and kurtosis

are between -1 and +1 (Ghasemi, 2012). Table 4.1 shows the values of skewness and kurtosis of all variables.

Variable	Skewness	Kurtosis
Dependent Variable		
Acceptance of Metaverse in Malaysia Education	-0.872	0.943
Independent Variable		
Perceived Usefulness	-0.912	0.867
Perceived Use OF Use	-0.837	0.899
Social Influence	-0.805	0.921

Table 4.1 : Show the Normality Test for Dependent and Independent Variable

The Normality Test is used to assess whether a data set follows a normal distribution. In this study, the results of the normality test are evaluated based on skewness and kurtosis values. According to Ghasemi (2012), a distribution is considered normal if the skewness and kurtosis values lie between -1 and +1. Table 4.1 presents the skewness and kurtosis values for each variable analyzed in this research.

For the dependent variable, Acceptance of Metaverse in Malaysia Education, the skewness value is -0.872, and the kurtosis value is 0.943. Since both values are within the acceptable range of -1 to +1, the data set for this variable is considered normally distributed, as per Ghasemi (2012).

For the independent variables, the skewness and kurtosis values are as follows:

- Perceived Usefulness: Skewness is -0.912, and kurtosis is 0.867.
- Perceived Ease of Use: Skewness is -0.837, and kurtosis is 0.899.
- Social Influence: Skewness is -0.805, and kurtosis is 0.921.

All independent variables exhibit skewness and kurtosis values within the acceptable range of -1 to +1. This confirms that the data sets for these variables are also normally distributed, as supported by Ghasemi (2012).

4.2 Analysis of Pilot Test

The pilot test is conducted to ensure that the questionnaire effectively captures the necessary data as intended. This test enables the researcher to assess the reliability and overall effectiveness of the survey instrument. To evaluate internal reliability, Cronbach's Alpha will be utilized. For this pilot test, 30 respondents are randomly selected from the total sample of 303 participants to complete the questionnaire. The data gathered during the pilot test will be analyzed using SPSS to determine the reliability of the survey items. The results indicate that all items in the questionnaire are both reliable and valid.

4.2.1 Validity of Pilot Test

Table 4.2 : Validity of Pilot Test

[Sources : Data Analysis of SPSS]

Perceived Usefulness (PU)

Item	Correlation Value	Critical Value	Validity
Using the metaverse in education helps me accomplish my learning tasks more effectively	0.484	0.113	Valid
I find the metaverse useful for enhancing the quality of my educational experience.	0.484	0.113	Valid
The metaverse improves the way I communicate and collaborate with peers and educators.	0.459	0.113	Valid
Using the metaverse saves time compared to traditional learning methods.	0.421	0.113	Valid
The metaverse enhances my overall academic performance.	0.421	0.113	Valid

Perceived Ease Of Use (PEOU)

Item	Correlation Value	Critical Value	Validity
Learning to navigate the metaverse for educational purposes is straightforward.	0.484	0.113	Valid
The features of the metaverse are clear and easy to understand.	0.484	0.113	Valid
I find the metaverse flexible to use for various learning activities.	0.405	0.113	Valid
It is easy for me to become skillful at using the metaverse in education.	0.419	0.113	Valid
Completing tasks in the metaverse requires minimal effort.	0.391	0.113	Valid

Social Influence (SI)

Item	Correlation Value	Critical Value	Validity
My educators encourage me to use the metaverse for learning.	0.458	0.113	Valid
My friends and classmates think using the metaverse is beneficial for education..	0.528	0.113	Valid

People whose opinions I value support the adoption of the metaverse in learning environments.	0.403	0.113	Valid
Using the metaverse is considered a common trend in my learning community.	0.537	0.113	Valid
The positive feedback from others motivates me to use the metaverse for educational purposes..	0.501	0.113	Valid

Acceptance of Metaverse in Malaysia Education

Item	Correlation Value	Critical Value	Validity
I believe the metaverse can enhance the quality of education in Malaysia.	0.458	0.113	Valid
I am confident in my ability to use the metaverse for educational purposes.	0.528	0.113	Valid
I feel that the metaverse provides a more interactive and engaging learning experience.	0.403	0.113	Valid
I think the metaverse can improve accessibility to education in Malaysia.	0.537	0.113	Valid

I am willing to explore the use of metaverse technology for my learning.	0.501	0.113	Valid

4.2.2 Reliability Test

The researcher utilizes Cronbach's Alpha analysis to evaluate the reliability and internal consistency of the variables, as it is widely recognized as an effective method for this purpose. The analysis is conducted using SPSS to ensure accurate results. Table 4.3 presents the Cronbach's Alpha values derived from the data collected from 30 respondents. The results confirm that all items in the questionnaire demonstrate strong reliability, as the Cronbach's Alpha values exceed the threshold of 0.7, indicating that the set of questions is both reliable and valid.

Alpha Coefficient Range, α	Level of reliability
0.80 to 0.95	Excellent reliability
0.70 to o.80	Good reliability
0.60 to 0.70	Poor reliability
A < 0.60	Very poor reliability/questionable

Table 4.3 : shows the Cronbach's Coefficient Alpha scale

Table 4.4 : Validity of Pilot Test

[Sources : Data Analysis of SPSS]

Variable	Cronbach's Alpha	Number of Item	Reliability
Perceived Usefulness	0.802	5	Reliable
Perceived Ease of Use	0.802	5	Reliable
Social Influence	0.834	5	Reliable
Acceptance of Metaverse in Malaysia Education	0.806	5	Reliable

Table 4.4 displays the validity of the pilot test conducted to verify the reliability of the research variables using SPSS. Reliability analysis was carried out using Cronbach's Alpha, with all variables surpassing the acceptable threshold of 0.7, indicating a high level of reliability. Both Perceived Usefulness and Perceived Ease of Use achieved a Cronbach's Alpha value of 0.802, with each variable consisting of 5 items, confirming their internal consistency.

Similarly, Social Influence demonstrated strong reliability with a Cronbach's Alpha value of 0.834, and the Acceptance of Metaverse in Malaysia Education variable recorded a Cronbach's Alpha of 0.806, also with 5 items. These findings affirm that the items for each variable are consistent and reliable, supporting the suitability of the pilot test for subsequent data collection and analysis.

The Case Processing Summary table indicates that the dataset used in the analysis included a total of 303 cases, with 100% valid responses. No cases were excluded during the analysis, as evidenced by 0 excluded cases (0.0%). This ensures

that the dataset is complete, with no missing data. The use of listwise deletion further confirms that only fully completed responses were included, enhancing the consistency of the results.

The Reliability Statistics table provides an overview of the overall reliability of the survey items. The Cronbach's Alpha value for the 20 items in the dataset was calculated at

0.932, indicating excellent internal consistency. A Cronbach's Alpha value above 0.9 signifies that the items are highly reliable and effectively measure the intended constructs. These results validate that the survey instrument is robust and appropriate for further analysis, ensuring the credibility and reliability of the research findings.

Table 4.5 Reliability for 303 Respondent

Case Processing Summary

		N	%
Cases	Valid	303	100.0
	Excluded[a]	0	.0
	Total	303	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.932	20

[Souces : Data Analysis of SPSS]

Table 4.5 shows the Cronbach's alpha for 303 respondents used to collect the data. From the table can be concluded that questionnaire have strong reliability and the were proving to be valid as the values of Cronbach's Alpha is above 0.7 which is 0.932.

4.3 Result Dissemination Questionnaire

This study on the acceptance of metaverse technologies involved 303 respondents, selected through a random sampling method to capture diverse perspectives. Data was collected using an online survey created with Google Forms, which was distributed via popular social media platforms such as Facebook, Instagram, and WhatsApp. These platforms were chosen for their wide reach and accessibility, enabling the survey to gather responses from a broad audience across various demographic groups. The online distribution method ensured that respondents could easily participate, leading to a high response rate within a short timeframe.

To enhance the diversity of the respondent pool, the survey was shared with individuals from various educational institutions, including universities, schools, and polytechnics. This strategy ensured the inclusion of participants from different educational levels, providing a comprehensive view of perceptions toward metaverse technologies in education. By targeting a range of institutions and employing random sampling, the study successfully captured a wide variety of opinions regarding the acceptance and potential benefits of metaverse technology. This diverse dataset served as a strong basis for analyzing the acceptance level of the metaverse within educational environments.

Table 4.6 Show the total respondent for random sampling

Category	Total Respondents
Age	303
race	303
Gender	303
Level of Education	303
Total	303

Evidence	Total
Distributed questionnaire	303
Receive questionnaire return	303
Response rate	100%
No returned questionnaire	0
Incomplete questionnaire	0
Total analyzed qualified questionnaire	303

Table 4.7 Result Dissemination Questionnaire

4.4 Result and Analysis

The analysis of the acceptance of the metaverse revealed several significant correlations, using a critical Pearson correlation value of 0.1478 at a significance level of $p < 0.01$ (two-tailed). All correlation values analyzed exceeded this threshold, indicating strong and meaningful relationships between the variables studied. Notably, the perception that the metaverse enhances interactive and engaging learning experiences showed a strong positive correlation with its acceptance. This suggests that students who view the metaverse as a tool for creating dynamic educational environments are more likely to adopt it. Similarly, the belief that the metaverse can improve accessibility to education was significantly correlated with acceptance, highlighting its potential to break down barriers in learning.

The findings demonstrate that the acceptance of the metaverse is closely tied to its perceived benefits in enhancing educational outcomes. Students are more inclined to explore and adopt the metaverse when they recognize its ability to improve learning experiences, engagement, and accessibility. This underscores the importance of promoting the educational advantages of the metaverse to drive its adoption. Overall, the results suggest that the metaverse holds great potential for transforming education, provided that its capabilities are effectively aligned with the needs and expectations of students.

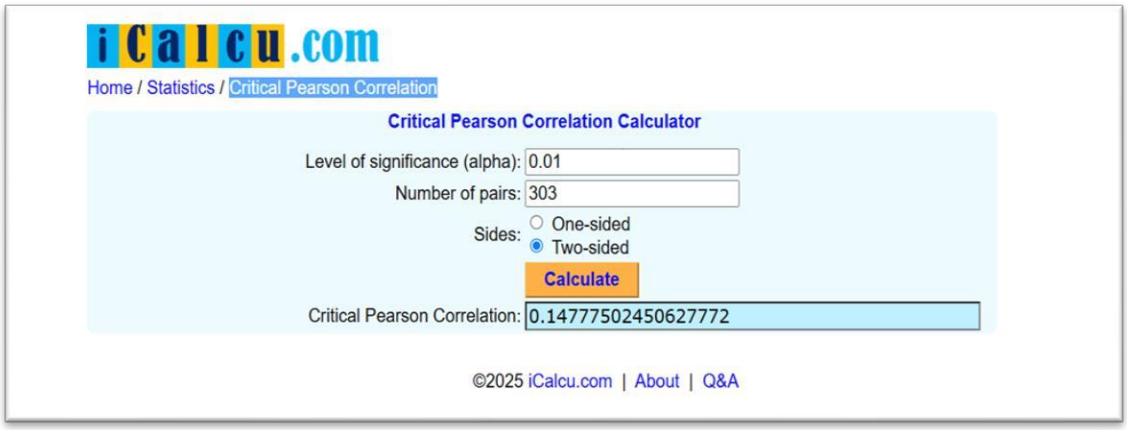


Figure 4.3 Critical Peason Correlation Calculator

Figure 4.3 is a calculator that a researcher using to calculate the critical value for 303 respondents at random to fill out the questionnaire. The researcher utilized SPSS to

examine the data's reliability. All of the items in the table below were found to reliable and valid. Critical value of 303 respondent is 0.1477 (df – 2).

4.5 Demographic Analysis (Section A)

In this part of the demographic profile, the researcher compiled all the relevant criteria and information that constituted it. This section helps the researcher understand the purpose of this research. The demographic profiles included in the questionnaire are age, gender, race, level of education, and awareness about technology related to the Metaverse.

4.5.1 Age

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-20	43	14.2	14.2	14.2
	21-23	126	41.6	41.6	55.8
	24-26	113	37.3	37.3	93.1
	26 and above	21	6.9	6.9	100.0
	Total	303	100.0	100.0	

Table 4.8 : Respondent Demographic of Age

[Soucers : Data Analysis of SPSS]

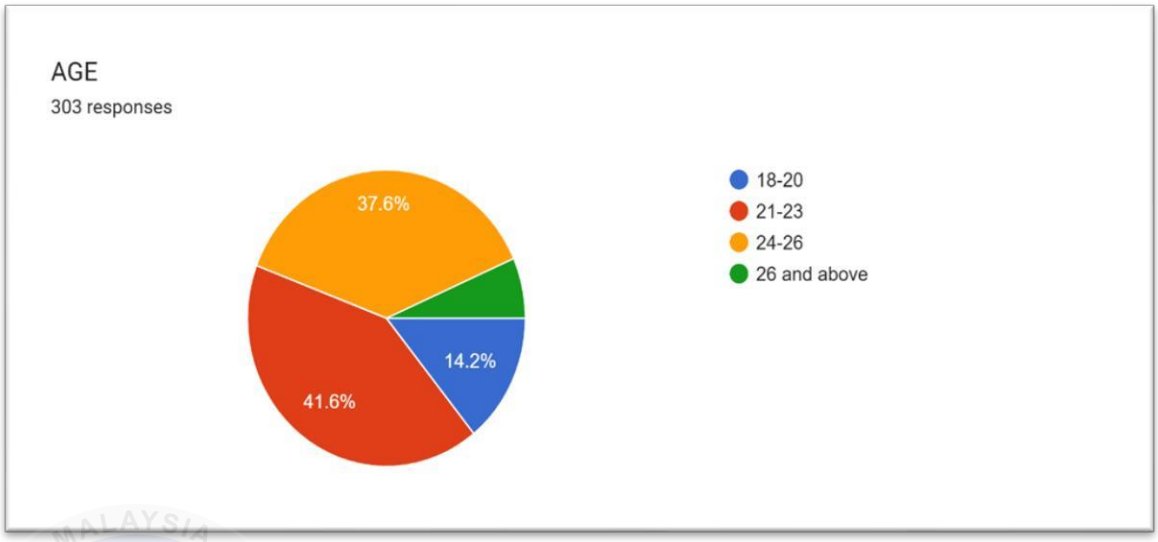


Figure 4.4 : Respondent Demographic of Age

The table and pie chart illustrate the distribution of respondents based on their age. Out of the total 303 respondents, the majority fall into the 21-23 age group, accounting for 41.6% of the total, followed by the 24-26 age group, which constitutes 37.3%. Respondents aged 1820 make up 14.2%, while those in the 26 and above age group represent the smallest proportion, at 6.9%. The cumulative percentage column highlights that by the 24-26 age group, 93.1% of respondents are accounted for, with the remaining 6.9% adding up to a complete 100% for the 26 and above group. This age distribution indicates that the study primarily targets young adults, with the highest concentration in the 21-26 age range, which is likely reflective of the target demographic for metaverse technology acceptance research.

4.5.2 Gender

Gender (1M,2F)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	231	76.2	76.2	76.2
	Female	72	23.8	23.8	100.0
	Total	303	100.0	100.0	

Table 4.9 Respondent Demographic of Gender

[Sources : Data Analysis of SPSS]

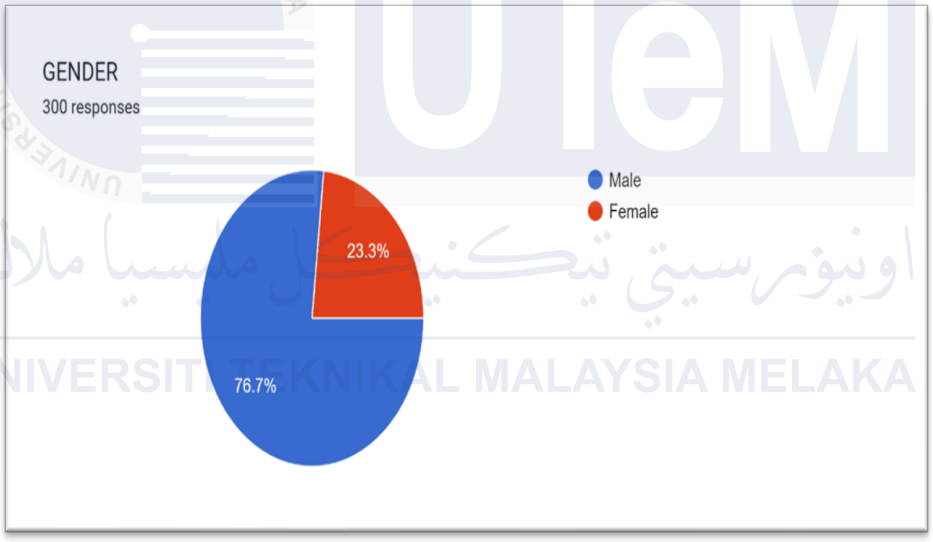


Figure : 4.5

The table and pie chart provide a breakdown of respondents based on their gender. Out of the 303 respondents, the majority are male, comprising 76.2% of the total, while female respondents make up the remaining 23.8%. The cumulative percentage shows that male respondents account for the larger proportion, with female respondents completing the total to reach 100%. This gender distribution highlights a significant male dominance among the respondents, which may reflect the demographic characteristics of the sample population relevant to the study on metaverse acceptance.

4.5.3 Race

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Malay	183	60.4	60.4	60.4
	Chinese	73	24.1	24.1	84.5
	Indian	47	15.5	15.5	100.0
	Total	303	100.0	100.0	

Table 4.10 : Respondent Demographic of Race

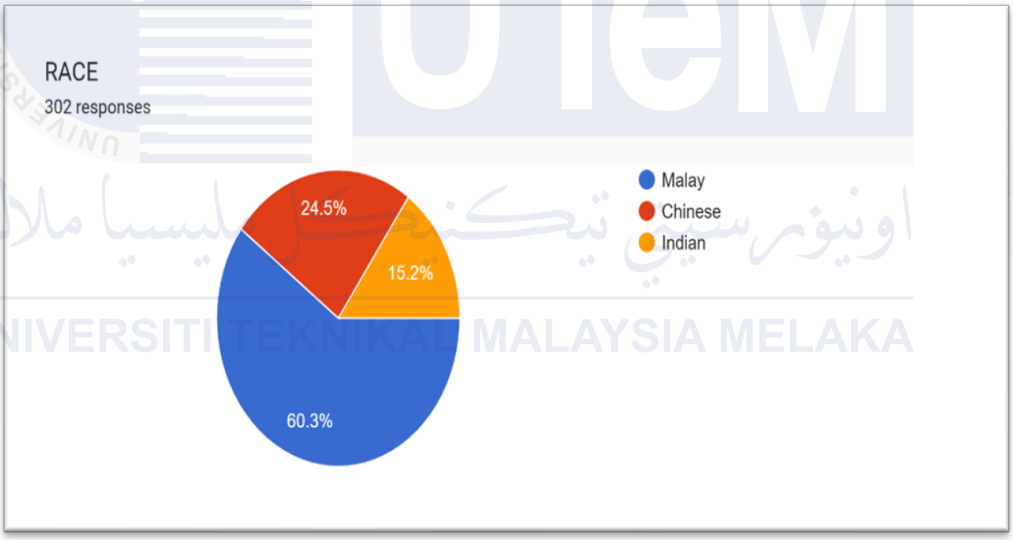


Figure 4.6 : Respondent Demographic of Race

The table and pie chart display the distribution of respondents based on their race. Out of the total 303 respondents, the majority are Malay, with a frequency of 183, accounting for 60.4% of the total. Chinese respondents represent the second-largest group, with a frequency of 73, contributing 24.1%. Meanwhile, Indian respondents make up the smallest proportion, with a frequency of 47, which is 15.5%.The cumulative percentage column indicates that Malay respondents form the majority group, followed by Chinese and Indian respondents, with the cumulative total reaching 100%. This frequency and percentage distribution provide insight into the

racial composition of the sample population, reflecting a diverse representation of ethnic groups relevant to the study.

4.5.4 Level Education

Level Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary	1	.3	.3	.3
	Secondary	40	13.2	13.2	13.5
	Diploma	105	34.7	34.7	48.2
	Degree	144	47.5	47.5	95.7
	Master	11	3.6	3.6	99.3
	Other	2	.7	.7	100.0
	Total	303	100.0	100.0	

Table 4.11: Respondent Demographic of Level Education

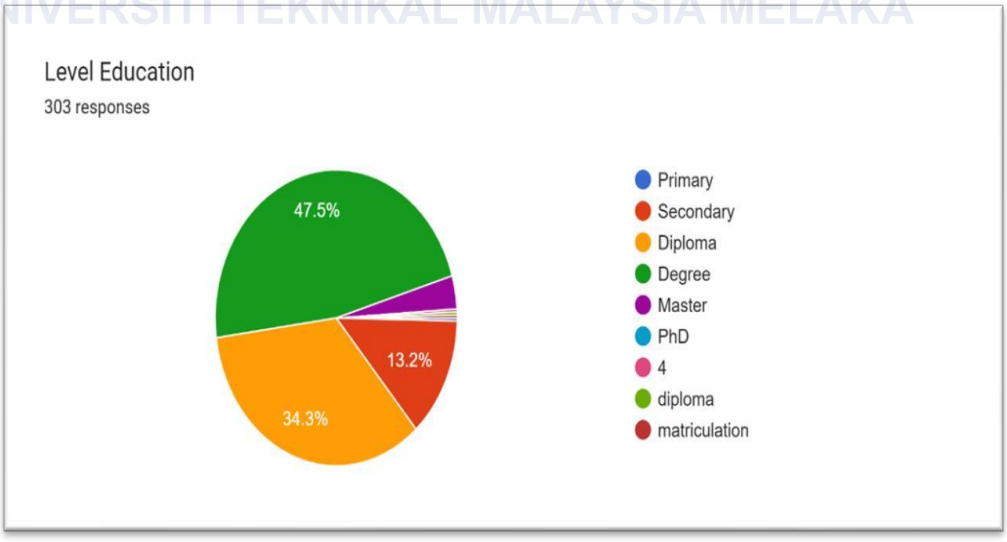


Figure 4.7 : Respondent Demographic of Level Education

The table and pie chart provide a breakdown of respondents by their level of education. Out of the 303 respondents, the majority hold a Degree, with a frequency of 144, accounting for 47.5% of the total. Diploma holders make up the second-largest

group, with a frequency of 105 (34.7%), followed by respondents with a Secondary education, at 40 (13.2%). Respondents with a Master's degree total 11 (3.6%), while the smallest groups include those with Primary education (1 respondent, 0.3%) and Other qualifications (2 respondents, 0.7%).

The cumulative percentage column highlights that the majority of respondents (95.7%) have either a diploma or degree qualification, with the remaining educational levels completing the total to reach 100%. This educational distribution indicates that the study largely targeted individuals with higher education, reflecting the demographic most likely to engage with or understand metaverse-related technology.

4.5.5 Awareness about Technology Metaverse

B2 - I am aware of Facebook's rebranding to meta

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	244	80.5	80.5	80.5
	No	59	19.5	19.5	100.0
	Total	303	100.0	100.0	

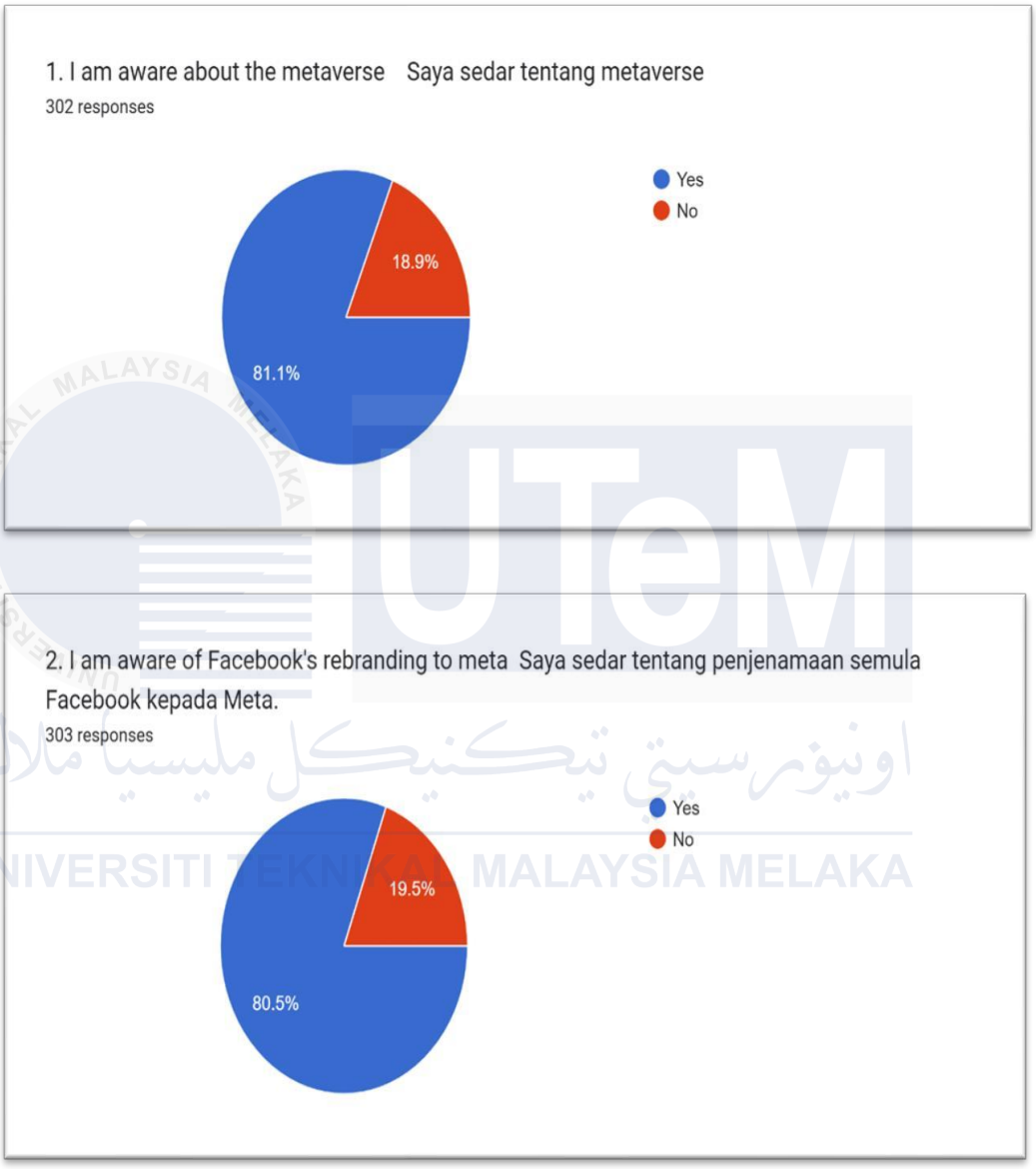
B1 - I am aware about the metaverse

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	244	80.5	80.5	80.5
	No	59	19.5	19.5	100.0
	Total	303	100.0	100.0	

B3 - I am aware of Meta's development on the metaverse .

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	275	90.8	90.8	90.8
	No	28	9.2	9.2	100.0
	Total	303	100.0	100.0	

Table 4.12 : Respondent Demographic of Awareness of Technology Metaverse



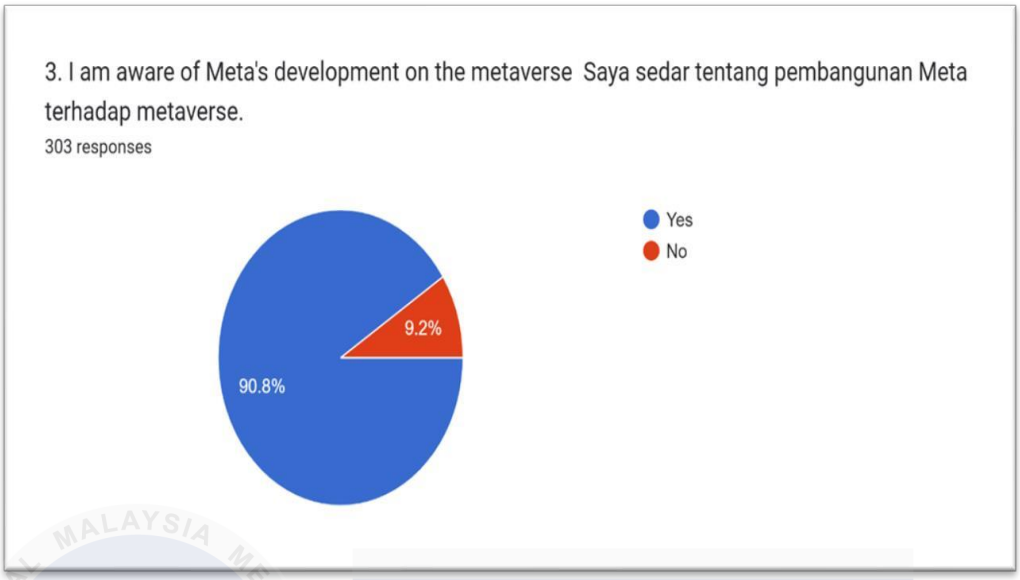


Figure 4.8 : Respondent Demographic of Awareness of Technology Metaverse

The tables and pie charts illustrate respondents' awareness of the metaverse, Facebook's rebranding to Meta, and Meta's development efforts on the metaverse. For awareness of the metaverse, 244 respondents (80.5%) indicated that they were aware of it, while 59 respondents (19.5%) were not. Similarly, regarding Facebook's rebranding to Meta, the same proportion was observed, with 244 respondents (80.5%) confirming their awareness and 59 respondents (19.5%) indicating otherwise. In terms of awareness of Meta's development on the metaverse, 275 respondents (90.8%) reported being aware, while only 28 respondents (9.2%) were unaware. These findings highlight a generally high level of awareness among respondents about Meta's involvement with the metaverse, with slightly greater familiarity concerning Meta's development efforts compared to the metaverse concept and Facebook's rebranding itself.

4.6 Descriptive Analysis

The descriptive analysis in this study offers insights into the demographic profiles of the respondents and their awareness of the metaverse, along with Meta's related advancements. A total of 303 respondents participated in the survey, with the majority aged between 21 and 23 years (41.6%), followed by those aged 24 to 26 years (37.3%). Regarding gender distribution, 76.2% of the respondents were male, while 23.8% were female, reflecting a sample predominantly composed of males. In terms of ethnicity, Malays made up the largest proportion (60.4%), followed by Chinese (24.1%) and Indians (15.5%). For educational qualifications, the highest percentage of respondents held a degree (47.5%), followed by diploma holders (34.7%).

Data related to awareness revealed that 80.5% of the respondents were familiar with the concept of the metaverse, and an equal proportion (80.5%) were aware of Facebook's rebranding to Meta. Additionally, 90.8% of respondents indicated awareness of Meta's initiatives in developing the metaverse. These findings demonstrate a high level of familiarity among the participants, particularly regarding Meta's contributions to advancing metaverse technologies.

This analysis provides valuable context regarding the respondents' backgrounds and their levels of awareness, which is crucial for interpreting their acceptance and perceptions of metaverse technology. The findings indicate a solid basis for further investigation into the factors influencing metaverse adoption and its potential applications in education and beyond.

4.6.1 Independent Variable (Section B)

4.6.1.1 Perceived Usefulness

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Perceived Usefulness 1 - Using the metaverse in education helps me accomplish my learning tasks more effectively .	303	2.00	5.00	4.0825	.58383
Perceived Usefulness 3 - The metaverse improves the way I communicate and collaborate with peers and educators.	303	2.00	5.00	4.1188	.68019
Perceived Usefulness 2 - I find the metaverse useful for enhancing the quality of my educational experience	303	1.00	5.00	4.4389	.77336
Perceived Usefulness 4 - Using the metaverse saves time compared to traditional learning methods.	303	1.00	5.00	4.1353	.72206

Perceived Usefulness 5 The metaverse enhances my overall academic performance.	303	1.00	5.00	4.1584	.75554
Valid N (listwise)	303				

Table 4.13 : Shows the descriptive statistic for Perceived Usefulness

	Highest
	Lowest

According to the descriptive statistics, respondents generally had positive perceptions of the Perceived Usefulness of the metaverse in education, based on 303 valid responses. All items scored high mean values on a scale of 1 to 5, indicating agreement with the metaverse's benefits. The highest mean score was for "I find the metaverse useful for enhancing the quality of my educational experience" (4.4389, SD = 0.77336), highlighting strong recognition of its value in improving educational quality. Similarly, "The metaverse enhances my overall academic performance" had a high mean of 4.1584 (SD = 0.75554), showing its perceived impact on academic outcomes. Other items, such as "Using the metaverse saves time compared to traditional learning methods" (4.1353, SD = 0.72206) and "The metaverse improves the way I communicate and collaborate with peers and educators" (4.1188, SD = 0.68019), emphasize its efficiency and collaborative benefits. The item "Using the metaverse in education helps me accomplish my learning tasks more effectively" had the lowest mean of 4.0825 (SD = 0.58383), but still reflects positive perceptions. Overall, these results indicate a consistent agreement among respondents that the metaverse significantly enhances learning quality, efficiency, collaboration, and academic performance, with relatively low variability across responses.

Question	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
Using the metaverse in education helps me accomplish my learning tasks more effectively.	0	2	7.3	71.3	19.5
I find the metaverse useful for enhancing the quality of my educational experience.	0.3	0.7	13.5	25.7	59.7
The metaverse improves the way I communicate and collaborate with peers and educators.	0	1.7	12.9	57.4	28.1
Using the metaverse saves time compared to traditional learning methods.	0.7	1	13.2	54.5	30.7
The metaverse enhances my	0.7	1.7	12.9	50.8	34

overall academic performance.					

Table 4.14 : Shows the descriptive frequencies for Perceived Usefulness

Based on Table 4.14 , the descriptive frequencies for Perceived Usefulness indicate that respondents generally have positive perceptions of the metaverse's role in education. For the statement "Using the metaverse in education helps me accomplish my learning tasks more effectively," the majority, 71.3%, agreed, and 19.5% strongly agreed, highlighting its effectiveness. Similarly, 59.7% of respondents strongly agreed and 25.7% agreed with the statement "I find the metaverse useful for enhancing the quality of my educational experience," showing its perceived impact on educational quality. For "The metaverse improves the way I communicate and collaborate with peers and educators," 57.4% agreed, and 28.1% strongly agreed, emphasizing its collaborative benefits. Additionally, 54.5% agreed, and 30.7% strongly agreed that "Using the metaverse saves time compared to traditional learning methods," highlighting its efficiency. Lastly, 50.8% agreed, and 34% strongly agreed with the statement "The metaverse enhances my overall academic performance," indicating its contribution to academic success. Overall, the results reflect strong agreement on the metaverse's usefulness across various educational aspects, with minimal disagreement or neutrality

4.6.1.2 Perceived Ease of Use

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Perceived Ease of Use 1 - Learning to navigate the metaverse for educational purposes is straightforward.	303	1.00	5.00	4.1155	.79518
Perceived Ease of Use 2 - The features of the metaverse are clear and easy to understand.	303	2.00	5.00	4.1221	.74692
Perceived Ease of Use 3 - I find the metaverse flexible to use for various learning activities.	303	1.00	5.00	4.1980	.74166
.Perceived Ease of Use 4 - It is easy for me to become skillful at using the metaverse in education.	303	2.00	5.00	4.2145	.72115
Perceived Ease of Use 5 - Completing tasks in the metaverse requires minimal effort.	303	2.00	5.00	4.1914	.71617
Valid N (listwise)	303				

Table 4.15 : Shows the descriptive statistic for Perceived Ease of Use

	Highest
	Lowest

Question	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
Learning to navigate the metaverse for educational purposes is straightforward.	0.3	3	15.5	47.2	34
The features of the metaverse are clear and easy to understand.	2.3	2.3	15.5	49.8	32.3
I find the metaverse flexible to use for various learning activities.	0.3	2.3	10.6	50.8	36
It is easy for me to become skillful at using the metaverse in education.	1.7	1.7	12.5	48.5	37.3
Completing tasks in the metaverse requires minimal effort.	1.7	1.7	12.9	50.2	35.3

Table 4.16 : Shows the descriptive frequencies for Perceived Ease of Use

Based on this table, the descriptive frequencies for Perceived Ease of Use demonstrate a positive perception of the metaverse's ease of use in education. For the

statement "Learning to navigate the metaverse for educational purposes is straightforward," most respondents agreed (47.2%) or strongly agreed (34.0%), with minimal disagreement (3.3%). Similarly, "The features of the metaverse are clear and easy to understand" saw 49.8% agreement and 32.3% strong agreement. The statement "I find the metaverse flexible to use for various learning activities" received 50.8% agreement and 36.0% strong agreement, highlighting its adaptability. For "It is easy for me to become skillful at using the metaverse in education," 48.5% agreed and 37.3% strongly agreed, reflecting confidence in skill acquisition. Lastly, "Completing tasks in the metaverse requires minimal effort" had 50.2% agreement and 35.3% strong agreement, emphasizing efficiency. These results indicate widespread agreement on the metaverse's usability, with minimal neutral or negative responses.

4.6.1.3 Social Influence

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Social Influence 1 - My educators encourage me to use the metaverse for learning.	303	1.00	5.00	4.1914	.73893
Social Influence 2 - My friends and classmates think using the metaverse is beneficial for education.	303	2.00	5.00	4.1716	.74380

Social Influence 3 - People whose opinions I value support the adoption of the metaverse in learning environments.	303	1.00	5.00	4.1551	.76710
Social Influence 4 - Using the metaverse is considered a common trend in my learning community.	303	1.00	5.00	4.1419	.80745
Social Influence 5 - The positive feedback from others motivates me to use the metaverse for educational purposes.	303	2.00	5.00	4.2442	.74123
Valid N (listwise)	303				

Table 4.17 : Shows the descriptive statistic for Perceived Ease of Use

	Highest
	Lowest

Question	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
My educators encourage me to use the metaverse for learning.	0.3	1.7	12.5	49.5	36

My friends and classmates think using the metaverse is beneficial for education.	0	2.6	12.5	49.8	35	
People whose opinions I value support the adoption of the metaverse in learning environments.	1	1.7	11.9	51.8		33.7
Using the metaverse is considered a common trend in my learning community.	0.7	4	10.6	50.2	34.7	
The positive feedback from others motivates me to use the metaverse for educational purposes.	2	2	12.2	45.2		40.6

Table 4.18 : Shows the descriptive frequencies for Perceived Ease of Use

Based on this table, the responses indicate strong social influence regarding the use of the metaverse in education. For "My educators encourage me to use the metaverse for learning," the majority agreed (49.5%) or strongly agreed (36.0%), with minimal disagreement (2.0%). Similarly, "My friends and classmates think using the metaverse is beneficial for education" had 49.8% agreement and 35.0% strong agreement, emphasizing peer support. For "People whose opinions I value support the adoption of the metaverse in learning environments," over half (51.8%) agreed, and 33.7% strongly agreed. The statement "Using the metaverse is considered a common trend in my learning community" also showed positive agreement (50.2%) and strong agreement (34.7%). Finally, "The positive feedback from others motivates me to use the metaverse for educational purposes" had the highest strong agreement (40.6%), reflecting the motivational impact of external feedback. Overall, the results highlight that social support plays a significant role in encouraging metaverse adoption.

4.6.1.4 Acceptance of Technology Metaverse

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
D1 - I believe the metaverse can enhance the quality of education in Malaysia.	303	2.00	5.00	4.2013	.56592
D2 - I am confident in my ability to use the metaverse for educational purposes.	303	2.00	5.00	4.4620	.70784
D3 - I feel that the metaverse provides a more interactive and engaging learning experience.	303	2.00	5.00	4.3102	.68773
D4 - I think the metaverse can improve accessibility to education in Malaysia.	303	2.00	5.00	4.2244	.65796
D5 - I am willing to explore the use of metaverse technology for my learning.	303	1.00	5.00	4.3465	.66266
Valid N (listwise)	303				

Table 4.19 : Shows the descriptive statistic for Acceptance of Technology Metaverse

	Highest
	Lowest

Question	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)
I believe the metaverse can enhance the quality of education in Malaysia.	0.7	0.7	5.9	66	27.4
I am confident in my ability to use the metaverse for educational purposes.	1	1	9.6	31.7	57.8
I feel that the metaverse provides a more interactive and engaging learning experience.	1.7	1.7	7.9	48.2	42.2
I think the metaverse can improve accessibility to education in Malaysia.	0.7	0.7	10.9	53.8	34.7
I am willing to explore the use of metaverse technology for my learning.	0.3	0.7	6.6	48.8	43.6

Table 4.20 : Shows the descriptive frequencies for Acceptance of Technology Metaverse

Based on the table, respondents generally showed positive perceptions of the metaverse's impact on education in Malaysia. For the statement "I believe the metaverse can enhance the quality of education in Malaysia," the majority agreed (66.0%) or strongly agreed (27.4%), with minimal disagreement (1.4%). Similarly, for "I am confident in my ability to use the metaverse for educational purposes," 57.8% strongly agreed and 31.7% agreed, reflecting high confidence levels. Regarding "The metaverse provides a more interactive and engaging learning experience," 48.2% agreed, and 42.2% strongly agreed, emphasizing its potential to make learning more engaging. For the statement "I think the metaverse can improve accessibility to education in Malaysia," 53.8% agreed, and 34.7% strongly agreed, highlighting its role in enhancing educational accessibility. Lastly, "I am willing to explore the use of metaverse technology for my learning" received strong support, with 48.8% agreeing and 43.6% strongly agreeing. Overall, the results demonstrate a strong consensus on the metaverse's positive impact on education, with minimal neutral or negative responses across all statements.

4.7 Correlation Analysis of All Variable

Variable	PU	PEOU	SI	D	Sig. (2-tailed)	N
Perceived Usefulness (PU)	1	0.802	0.742	0.843	-	303
Perceived Ease of Use (PEOU)	0.802	1	0.798	0.812	0	303
Social Influence (SI)	0.742	0.798	1	0.821	0	303
D (Metaverse Perception)	0.843	0.812	0.821	1	0	303

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

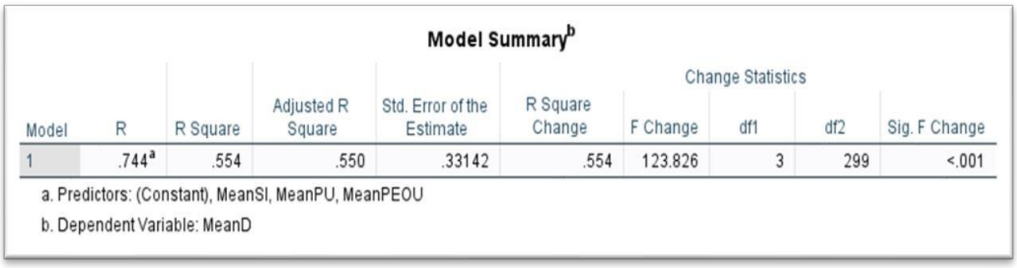
Table 4.21 shows the Peason Correlation Analysis

Based on the table 4.21, the relationships among Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Social Influence (SI), and D (Metaverse Perception) reveal strong positive correlations. The strongest relationship is observed between PU and D with a correlation of 0.843, indicating that perceptions of the metaverse's usefulness are highly related to overall metaverse perception. Similarly, PEOU and D also show a strong correlation of 0.812, highlighting the importance of ease of use in shaping perceptions of the metaverse.

The correlation between SI and D is 0.821, demonstrating that social influence significantly impacts overall perceptions of the metaverse. Additionally, strong relationships exist between PU and PEOU (0.802) and between PEOU and SI (0.798), emphasizing the interconnected nature of these variables. Overall, these results suggest that perceptions of usefulness, ease of use, and social influence are critical factors influencing individuals' acceptance and perception of the metaverse. The strong correlations across all variables highlight their collective importance in shaping attitudes toward the metaverse.

4.8 Multiple Regression Analysis (MRA)

A statistical technique called multiple regression, sometimes referred to as multiple linear regression, was used to forecast the value of a response variable by taking into account many independent explanatory factors. Another name for this technique is multiple linear regression. This goal might be achieved in multiple linear regression by linearly modelling the independent variables (often referred to as the explanatory factors) and the response variables.



Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.744[a]	.554	.550	.33142	.554	123.826	3	299	<.001

a. Predictors: (Constant), MeanSI, MeanPU, MeanPEOU

b. Dependent Variable: MeanD

Table 4.22 Multiple Regression Analysis

According to the Model Summary, the regression analysis reveals a strong and statistically significant relationship between the independent variables (Perceived Usefulness, Perceived Ease of Use, and Social Influence) and the dependent variable (Acceptance of Metaverse). The correlation coefficient (R = 0.744) suggests a robust positive linear relationship between the predictors and the outcome variable. Additionally, the R Square value of 0.554 (55.4%) indicates that the combined predictors account for 55.4% of the variation in metaverse acceptance, emphasizing the importance of these factors in shaping the acceptance level.

The adjusted R^2 value of 0.550 (55%) supports the model's reliability by considering the sample size and number of predictors, while minimizing the risk of overfitting. The Standard Error of the Estimate (0.33142) reflects a relatively low margin of error, suggesting the model's predictions are reasonably accurate. Furthermore, the F-test value of 123.826 ($p < 0.001$) confirms that the regression model is statistically significant, demonstrating that the independent variables collectively have a meaningful impact on the dependent variable.

Overall, these results confirm that Perceived Usefulness, Perceived Ease of Use, and Social Influence are key predictors of metaverse acceptance. The model exhibits strong explanatory power and reliability, providing valuable insights into the factors influencing the adoption of metaverse technologies.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.803	3	13.601	123.826	<.001[b]
	Residual	32.842	299	.110		
	Total	73.646	302			

a. Dependent Variable: MeanD

b. Predictors: (Constant), MeanSI, MeanPU, MeanPEOU

Table 4.23 ANOVA

Referring to the ANOVA table, the F-test value is 123.826, with a significance level of <0.001. The total sum of squares is 73.646, comprising the regression sum of squares at 40.803, which represents the variance explained by the independent variables, and the residual sum of squares at 32.842, indicating the unexplained variance. The mean square for regression is calculated as 13.601, while the mean square for residual is 0.110. To examine the impact of Perceived Usefulness, Perceived Ease of Use, and Social Influence on metaverse acceptance, the researcher conducted multiple regression analysis. The results confirm that the model is statistically significant, highlighting a strong association between the independent and dependent variables.

4.9 Regression Coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.240	.162		7.663	<.001		
	MeanPU	.266	.055	.284	4.791	<.001	.425	2.352
	MeanPEOU	.215	.059	.243	3.635	<.001	.335	2.985
	MeanSI	.253	.050	.302	5.112	<.001	.426	2.347

a. Dependent Variable: MeanD

Table 4.24 Coefficient

Based on the Coefficients table, the strongest predictor for the acceptance of the metaverse is Social Influence, with $\beta = 0.302$ and a significant value of $p < 0.001$. This indicates that Social Influence plays the most substantial role in influencing the dependent variable,

Acceptance of the Metaverse. The second strongest predictor is Perceived Usefulness, with $\beta = 0.284$ and a significant value of $p < 0.001$, showing its positive contribution to the acceptance of the metaverse. Lastly, Perceived Ease of Use has a $\beta = 0.243$ and a significant value of $p < 0.001$, also positively impacting the dependent variable. All predictors have a positive relationship with the dependent variable, and there is no evidence of multicollinearity as the tolerance values are greater than 0.1 and VIF values are less than 10. To sum up, all the independent variables—Social Influence, Perceived Usefulness, and Perceived Ease of Use— are significant and positively influence the acceptance of metaverse technology.

$y = a + bx1 + cx2 + dx3$ $a = 1.240$, $b = 0.266$, $c = 0.215$, $d = 0.253$

Acceptance of technology metaverse = 1.240 + 0.266 (Perceived Usefulness) +

0.215(Perceived Ease of Use) + 0.253 (Social Influence)

Based on the regression equation , the acceptance of metaverse technology is influenced by three key factors: Perceived Usefulness, Perceived Ease of Use, and Social Influence. Among these, Social Influence has the strongest impact, contributing 0.253 to the model, followed by Perceived Usefulness (0.266) and Perceived Ease of Use (0.215). This indicates that the acceptance of the metaverse increases as users perceive it as useful, easy to use, and are influenced by others who support its adoption. The constant value (1.240) reflects the baseline acceptance level in the absence of these factors. Overall, the equation highlights that all three predictors significantly contribute to the acceptance of metaverse technology, with Social Influence being the most dominant driver.

4.10 Hypothesis Testing

	Hypothesis	p-value	Result
H1	H1: There is no significant relationship between Perceived Usefulness (PU) and acceptance of metaverse. H2: There is a significant relationship between Perceived Usefulness (PU) and acceptance of metaverse in Malaysia Education.	<0.001	Strong (Accepted)
H2	H1 : There is no significant relationship between Perceived Ease of Use (PEOU) and acceptance of metaverse. H2 : There is a significant relationship between Perceived Ease of Use (PEOU) and acceptance of metaverse in Malaysia Education	<0.001	Strong (Accepted)
H3	H1 : There is no significant relationship between Social Influence (SI) and acceptance of metaverse. H2 : There is a significant relationship between Social Influence (SI) and acceptance of metaverse in Malaysia Education	<0.001	Strong (Accepted)

Table 4.25 show the hypthothesis test

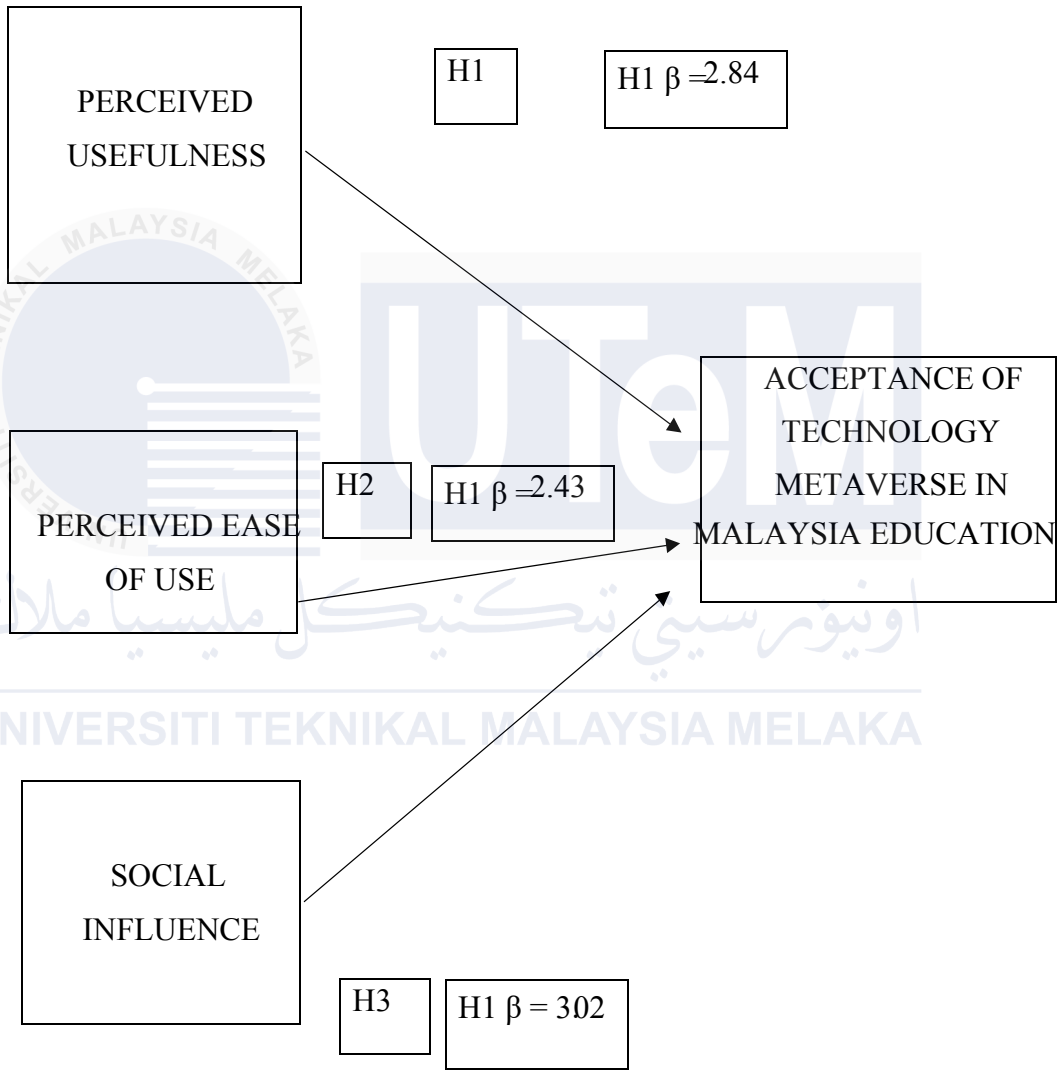


Figure 4.9 : shows the significant β on framework

4.11 Summary

In summary, this chapter presented the findings of the study. Various analyses, including reliability analysis, descriptive analysis, Pearson correlation analysis, and multiple regression analysis, were performed using SPSS version 23. The results revealed significant relationships between the dependent variable (acceptance of the metaverse) and the three independent variables: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Social Influence (SI). All variables demonstrated high reliability, and the hypothesis testing supported all three hypotheses, confirming that PU, PEOU, and SI significantly impact the acceptance of metaverse technology. The next chapter will provide recommendations and conclusions derived from these findings.

Chapter 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings derived from the previous chapter and aligns them with the research objectives and questions. It also discusses the justification for accepting or rejecting the hypothesis. Furthermore, recommendations for future studies are provided to guide upcoming researchers.

5.2 Summary of Decriptive analysis

Demograhic	Demographic Details	Frequency	Percentage (%)
Age	21-23	126	41.6%
Gender	Male	230	76.7%
Race	Malay	182	60.3%

Level Education	Degree	144	47.5%
Awareness about Metaverse	YES	245	81.1%
Awareness of Facebook's rebranding to meta	YES	244	80.5%
Awareness of meta's development on the metaverse	YES	275	90.8%

Table 5.1 : Summary of Descriptive Analysis of Demographic Respondents

A total of 303 individuals participated in this study. Based on the demographic analysis, the majority of participants were male, comprising 76.7% of the sample, with the largest age group being 21-23 years old (41.6%). The majority identified as Malay, accounting for 60.3% of the respondents, while 47.5% were pursuing degree-level education. Regarding awareness, 81.1% of respondents indicated familiarity with the concept of the metaverse, and 80.5% were aware of Facebook's transition to Meta. Additionally, 90.8% of participants were knowledgeable about Meta's ongoing efforts in developing the metaverse.

5.3 Summary of Findings

This study aimed to explore the acceptance of metaverse technology within Malaysia's education sector. It focused on three key independent variables: perceived usefulness, perceived ease of use, and social influence, to identify the factors influencing acceptance. These variables were analyzed to address the issues

highlighted in the problem statement. Hypotheses were formulated to examine the relationships between perceived usefulness, perceived ease of use, and social influence with the acceptance of metaverse technology in education.

RO1 : To examine the relationship between Perceive Usefulness and acceptance technology metaverse in education in Malaysia ?

RO2 : To examine the relationship between Social Influence and acceptance technology metaverse and education in Malaysia ?

RO3 : To examine the relationship between Perceived Ease of Use and acceptance technology metaverse education in Malaysia ?

5.4 Justification of Research Objective

In this section, the researcher assessed the hypotheses to explore the relationship between the independent and dependent variables, aiming to fulfill the study's objectives. Thus, the results were reviewed to confirm whether the research successfully addressed its objectives.

5.4.1 Fulfillment of first RO1 :

To examine the relationship between Perceive Usefulness and acceptance technology metaverse in education in Malaysia ?

Hypothesis 1 : There is a significant relationship between Perceived Usefulness and acceptance of metaverse in Malaysia Education.

To achieve Objective 1, the hypothesis H1 is supported, as the p-value (<0.001) is significantly below the threshold of 0.05. This demonstrates a strong and significant relationship between perceived usefulness (PU) and the acceptance of the metaverse. The correlation coefficient further confirms a strong relationship, providing additional support for the hypothesis.

Perceived usefulness has been identified as a key factor in determining the acceptance of metaverse technology. As noted by Venkatesh et al. (2020), perceived usefulness is a fundamental component of the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). These frameworks suggest that individuals are more inclined to adopt new technologies if they perceive them as beneficial to their tasks or goals. This aligns with the findings of this study, which reveal that the perceived advantages of the metaverse significantly contribute to its acceptance.

Additionally, Alalwan et al. (2021) emphasize that perceived usefulness plays a critical role in encouraging users to engage with emerging technologies. When users believe a technology will enhance their productivity or learning experiences, they are more likely to adopt it. This is particularly relevant in the educational context, where students prioritize tools that offer practical benefits and align with their academic needs.

Based on the independent variable question related to perceived usefulness, respondents showed a strong inclination towards the belief that the metaverse would enhance their learning experience and provide innovative tools for education. This finding aligns with the study's hypothesis, confirming that the metaverse's perceived benefits are a significant driver of its acceptance in Malaysia's education sector. Thus, this study underscores the importance of emphasizing the practical advantages and usefulness of the metaverse to foster greater acceptance, particularly among students and educators. Future development should ensure the integration of features that highlight these benefits to encourage widespread adoption.

I find the metaverse useful for enhancing the quality of my educational experience.	0.3	0.7	13.5	25.7	59.7%

Figure 5.1 Perceived Usefulness Question

5.4.2 Fulfillment of second RO2 :

To examine the relationship between Social Influence and acceptance technology metaverse and education in Malaysia ?

Hypothesis 2 : There is a significant relationship between Perceived Ease of Use (PEOU) and acceptance of metaverse in Malaysia Education.

To determine Objective 2, H2 is supported in analyzing the acceptance of the metaverse in Malaysia's education sector, as the p-value (<0.001) is significantly lower than 0.05. This indicates a strong and significant relationship between Perceived Ease of Use (PEOU) and the acceptance of the metaverse. Additionally, the correlation coefficient suggests a strong relationship, further validating the hypothesis.

The independent variable, Perceived Ease of Use, has proven to be a crucial factor in defining the acceptance of the metaverse. According to Al-Adwan et al. (2023), extending the

Technology Acceptance Model (TAM) to predict university students' intentions to use metaverse-based learning platforms, perceived ease of use significantly influences behavioral intention. This aligns with the findings of this study, highlighting that the perceived ease of using the metaverse significantly influences its acceptance in educational settings.

Moreover, Misirlis and Munawar (2023) analyzed the Technology Acceptance Model in understanding university students' behavioral intention to use metaverse technologies and found that while self-efficacy and subjective norms positively affect attitude and perceived usefulness, perceived ease of use does not exhibit a strong correlation with attitude or perceived usefulness. This insight is particularly relevant in the context of metaverse adoption among students and educators.

Based on the independent variable question related to Perceived Ease of Use, respondents showed a strong inclination towards the belief that the metaverse would be easy to use and integrate into their educational activities. This finding aligns with the study's hypothesis, confirming that the ease of use of the metaverse is a significant driver of its acceptance in Malaysia's education sector. Thus, this study underscores the importance of designing metaverse platforms that are user-friendly and require

minimal effort to learn and operate. Emphasizing ease of use can foster greater acceptance among students and educators, facilitating the integration of metaverse technologies into educational practices.

It is easy for me to become skillful at using the metaverse in education.	1.7	1.7	12.5	48.5	37.3%

Figure 5.2 Perceived Ease of Use Question

5.4.3 Fulfillment of third RO3 :

To examine the relationship between Perceived Ease of Use and acceptance technology metaverse education in Malaysia ?

Hypothesis 3 : There is a significant relationship between Social Influence (SI) and acceptance of metaverse in Malaysia Education.

To determine Objective 3, H2 is supported in analyzing the acceptance of the metaverse in Malaysia's education sector, as the p-value (<0.001) is significantly lower than 0.05. This indicates a strong and significant relationship between Social Influence (SI) and the acceptance of the metaverse. Additionally, the correlation coefficient suggests a strong relationship, further validating the hypothesis.

The independent variable, Social Influence, has proven to be a crucial factor in defining the acceptance of the metaverse. According to Almarzouqi et al. (2022), social influence significantly affects users' intentions to adopt metaverse systems in medical education, highlighting the role of peers and societal norms in technology acceptance. This aligns with the findings of this study, emphasizing that social influence plays a pivotal role in the acceptance of the metaverse in educational settings.

Moreover, Alshammari (2024) found that social influence is a significant predictor of students' intention to use metaverse technologies in higher education, indicating that encouragement from peers and educators can enhance adoption rates.

This insight is particularly relevant in the context of metaverse adoption among students and educators in Malaysia.

Based on the independent variable question related to Social Influence, respondents showed a strong inclination towards the belief that their peers and instructors' opinions positively impact their decision to accept and use the metaverse for educational purposes. This finding aligns with the study's hypothesis, confirming that social influence is a significant driver of metaverse acceptance in Malaysia's education sector. Thus, this study underscores the importance of fostering a supportive social environment where peers and educators advocate for the use of metaverse technologies. By leveraging social influence, educational institutions can facilitate the integration of metaverse platforms into their teaching and learning practices.

The positive feedback from others motivates me to use the metaverse for educational purposes.	2	2	12.2	45.2		40.6%

Figure 5.3 Social Influence Question

5.5 Implication of Research

Our study's findings suggest that this research could benefit several key stakeholders. The first group would be educational institutions, including universities and schools, that aim to integrate metaverse technologies into their teaching and learning processes. The insights from this study can help institutions understand the factors influencing metaverse acceptance, such as perceived usefulness, ease of use, and social influence. By addressing these factors, institutions can design strategies to improve the adoption and effectiveness of metaverse platforms, ultimately enhancing the learning experience for students.

The second group that stands to gain are developers and technology providers who create metaverse solutions tailored to the education sector. The study highlights the importance of creating user-friendly and engaging platforms that meet the needs of both educators and students. Developers can use these findings as guidelines to prioritize features such as intuitive interfaces, collaborative tools, and immersive learning environments that align with the needs and preferences of educational stakeholders.

Additionally, governance bodies and policymakers also benefit from this research. The findings provide valuable insights into the role of social influence and perceived usefulness in driving metaverse adoption among students and educators. Policymakers can leverage this information to create initiatives and incentives that encourage the adoption of metaverse technologies in education. For instance, governments could introduce grants or funding programs to support the adoption of metaverse platforms in public and private institutions. They could also conduct awareness campaigns to highlight the educational benefits of metaverse adoption, ensuring broader acceptance across Malaysia's education system.

Lastly, this study emphasizes the importance of bridging the digital divide by ensuring equal access to metaverse technologies for students from various socioeconomic backgrounds. By addressing these disparities, stakeholders can foster an inclusive educational environment that leverages the full potential of the metaverse.

5.6 Recommendation for Future Research

5.6.1 Expand the Scope Beyond Students

The demographic scope of this study is limited to students in Malaysia's education sector. While this provides valuable insights, it does not account for other key stakeholders, such as educators, administrators, and parents, who also influence the adoption of metaverse technologies. Future research should include a broader demographic to capture the perspectives of all parties involved in the educational ecosystem. For instance, educators' acceptance and readiness to use the metaverse might differ significantly from students, impacting the overall implementation. By expanding the scope, researchers can provide more comprehensive recommendations that cater to a wider audience, thereby increasing the applicability and relevance of the findings.

5.6.2 Incorporate Qualitative Research Methods

This study primarily employs quantitative methods, which may limit the depth of understanding regarding respondents' motivations and experiences. Future research should integrate qualitative methods, such as interviews or focus group discussions, to address these limitations. By conducting interviews, researchers can gain richer insights into how students and educators perceive the metaverse and identify specific challenges or preferences that may not be captured through a questionnaire.

Additionally, qualitative data allows for exploring subjective factors, such as emotional responses or cultural attitudes, that influence metaverse adoption. This mixed-methods approach will provide a more holistic understanding and yield actionable recommendations for stakeholders.

5.7 Summary

As the conclusion of this chapter, the researcher has summarized the descriptive and inferential analyses. The researcher also discussed the major findings, which interpret the relationship between dependent and independent variables. The results indicate that there is a significant relationship between the acceptance of the metaverse in Malaysia's education sector and the factors of perceived usefulness, perceived ease of use, and social influence. Furthermore, the study has highlighted limitations and provided recommendations for future research to expand the scope and methodology. The researcher hopes that these recommendations and limitations will serve as valuable guidelines for future studies to better understand and explore additional factors influencing the acceptance of metaverse technologies in education.

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APPENDICES

APPENDIX A GANTT CHART PSM1

No	TASK / WEEK	PSM1 STATUS	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
1	Activities/week	Plan														
		Actual														
2	First meeting with supervisor	Plan														
		Actual														
3	Topic discussion	Plan														
		Actual														
4	Topic Confirmation	Plan														
		Actual														
5	Read journal for literature review	Plan														
		Actual														
6	Forming chapter 1	Plan														
		Actual														
7	Identifying Variable and constucting conce	Plan														
		Actual														
8	Forming chapter 2	Plan														
		Actual														
9	Checking chapter 2 with supervisor	Plan														
		Actual														
10	Correction chapter 2	Plan														
		Actual														
11	Studying and finding secondary data, data	Plan														
		Actual														
12	Determining methodology used in the resea	Plan														
		Actual														
13	Forming chapter 3	Plan														
		Actual														
14	Checking chapter 3 with supervisor	Plan														
		Actual														
15	Preparing Slide	Plan														
		Actual														
16	Submission FYP 1 and slide presentation	Plan														
		Actual														
17	Presentation of FYP 1	Plan														
		Actual														

APPENDIX B GANT CHART PSM 2

No	TASK	PSM2														
	WEEK	STATUS	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
1	Constructing of questionnaire	Plan														
		Actual														
2	Revised for Questionnaire	Plan														
		Actual														
3	Questionnaire Distribution	Plan														
		Actual														
4	Data Collection	Plan														
		Actual														
5	Data Analysis	Plan														
		Actual														
6	Chapter 4 - Findings and Discussion	Plan														
		Actual														
7	Revised Chapter 4	Plan														
		Actual														
8	Journal Discussin	Plan														
		Actual														
9	Chapter 5 - Conclusion	Plan														
		Actual														
10	Revised Chapter 5	Plan														
		Actual														
11	Final Edit FYP Report 2	Plan														
		Actual														
12	PSM Presentation 2	Plan														
		Actual														
13	PSM Report Submission 2 and Journal	Plan														
		Actual														
14	Checking chapter 3 with supervisor	Plan														
		Actual														

APPENDIX C QUESTIONNAIRE

Barchelor of Technology Management (High Technology Marketing) with Honours
Faculty of Technology Management and Technopreneurship
Universiti Teknikal Malaysia Melaka (UTeM)

Reseach Project Survey Questionnaire :
Acceptance Of Metaverse In Malaysia Education

Dear Participant,

I am Muhammad Irfan Bin Jaffry, a final-year student pursuing a Bachelor of Technology Management (High Technology Marketing) with Honours at Universiti Teknikal Melaka Malaysia.I am currently conducting my final year research project on “Acceptance of Metaverse in Malaysia’s Education Sector.” Your participation in this survey is greatly appreciated. This questionnaire aims to gather valuable insights into your views, experiences, and perceptions regarding the adoption of metaverse technology in the education sector. Your input will play a crucial role in understanding how this emerging technology can revolutionize learning and how it is perceived within the Malaysian context. Thank you for taking the time to contribute to this research. Your feedback is invaluable in shaping the future of educational technology in Malaysia.

SECTION A: DEMOGRAPHIC

This section will provide valuable demographic information about participants, which can be used to analyze responses in the context of different user profiles and segments. It can modify and expand this section as needed to align with our research objectives. Instruction: This section request respondents to provide their personal information kindly mark (/) in the provided space

AGE

☐ 18-20

☐ 21-23

☐ 24-26

☐ 26 and above

GENDER

☐ Male

☐ Female

RACE

☐ Malay

☐ Chinese

☐ Indian

☐ Other: _____

LEVEL OF EDUCATION

☐ Primary

☐ Secondary

☐ Diploma

☐ Degree

☐ Master

☐ PhD

☐ Other: _____

AWARENESS ABOUT METAVERSE

Awareness of the metaverse and its development

I am aware about the metaverse

☐ Yes

☐ No

I am aware of Facebook's rebranding to Meta

☐ Yes

☐ No

I am aware of Meta's development on the metaverse

☐ Yes

☐ No

SECTION B: INDEPENDENT VARIABLE

This section aims to obtain the opinion of the respondent regarding the factors influencing the acceptance of the metaverse. To gauge the extent of agreement with each statement, participants are kindly requested to indicate their level of agreement using a Likert scale by marking their chosen answer based on the provided scale.

Rate each statement on a 5-point Likert Scale:

Strongly Disagree (1) → Strongly Agree (5)

PERCEIVED USEFULNESS (PU)

Using the metaverse in education helps me accomplish my learning tasks more effectively.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

I find the metaverse useful for enhancing the quality of my educational experience.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The metaverse improves the way I communicate and collaborate with peers and educators.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Using the metaverse saves time compared to traditional learning methods.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The metaverse enhances my overall academic performance.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

PERCEIVED EASE OF USE (PEOU)

Learning to navigate the metaverse for educational purposes is straightforward.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The features of the metaverse are clear and easy to understand.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

I find the metaverse flexible to use for various learning activities.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

It is easy for me to become skillful at using the metaverse in education.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Completing tasks in the metaverse requires minimal effort.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

SOCIAL INFLUENCE

My educators encourage me to use the metaverse for learning.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

My friends and classmates think using the metaverse is beneficial for education.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

People whose opinions I value support the adoption of the metaverse in learning environments.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Using the metaverse is considered a common trend in my learning community.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The positive feedback from others motivates me to use the metaverse for educational purposes. ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

SECTION C : DEPENDENT VARIABLE

ACCEPTANCE OF METAVERSE IN MALAYSIAN EDUCATION

I believe the metaverse can enhance the quality of education in Malaysia.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The metaverse can improve accessibility to education in Malaysia.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

I feel the metaverse provides a more interactive and engaging learning experience.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

The metaverse can improve communication and collaboration in education.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Using the metaverse enhances my academic experience.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5