DETERMINANTS OF E-COMMERCE ADOPTION IN KUALA LUMPUR: TESTING THE MEDIATION EFFECTS OF PERCEIVED EASE OF USE AND PERCEIVED USEFULNESS

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Determinants of E-Commerce Adoption in Kuala Lumpur: Testing the Mediation Effects of Perceived Ease of Use and Perceived Usefulness

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DECLARATION

I hereby declare that:

(1) This Research Project is the end result of my own work and that due acknowledgement has been given in the references to all sources of information be they printed, electronic, or personal.
(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.
(3) The word count of this research report is 15078 words.

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PREFACE

Moving forward into the future with Industry 4.0, a rise in the importance and growth of the Digital Economy has greatly been observed. Technology that is connected online through the internet has allowed society to communicate and do businesses online, on a potentially global scale.

As new technologies begin to play more significant roles in the growth of the digital economy. One of the technologies that has become greatly important is the e-commerce platform. This system has become imperative in today's society, due to the COVID-19 pandemic, which created a need for a method to buy and sell products in a contactless fashion.

An e-commerce is a method of buying and selling goods and services online. It is a new market platform that exists purely electronically, and one of the most secure, convenient methods of buying and selling that we have today. The term is short for electronic commerce, ie. The "e" of e-commerce stands for "electronic".

Therefore, this research is determined to examine the factors that influence the adoption rate of e-commerce in Malaysia. The findings in this study will be useful for e-commerce platform providers, entrepreneurs who are willing to adopt e-commerce as their online business platform, as well as related parties who would like to further nurture the growth of the digital economy.

ABSTRACT

The research topic is “Determinants of E-Commerce Adoption in Kuala Lumpur: Testing the Mediation Effects of Perceived Ease of Use and Perceived Usefulness”. Moving forward, commerce has developed to the point where it is no longer required to view the product first-hand to make a rational purchasing decision. Consumers tend to look for new purchasing methods that will provide them with a higher degree of customisation, or one that they find most convenient. Furthermore, the current pandemic case has become an accelerator for the Digital Economy, and contactless transactions.

In order to handle the newfound demands and issues of the consumers, vendors must replan their business models to cater to their needs, to ensure that they are able to stay ahead in the market. With that in mind, several vendors have opted to lean towards online marketing. This has led to the development of the digital economy. The digital economy has affected the economy in multiple aspects, whether it may be through improvement, or additional threats.

The objective of this research is to study the relationship between the adoption rate of e-commerce, and the influential factors of the digital economy that is related to it. This research will help researchers determine and predict the future growth of the e-commerce platform. The influential factors of the digital economy that will be researched upon this topic are perceived usefulness, perceived ease-of-use, facilitating conditions, subjective norms, and perceived risk, which are the factors of the Digital Economy that will be observed.

CHAPTER 1: INTRODUCTION

1.1 Background of Study

The history of online businesses dates back to the early days of the internet in the 1990s. At that time, the World Wide Web was just starting to gain popularity, and businesses began to explore the potential of this new medium.

According to the Corporate Finance Institute (CFI) (2018), products that are bought by individuals or households for personal use are defined as consumer products. In other terms, these are products that are purchased to be used on a day-to-day basis. Consumer products can be categorized into 4 different categories; convenience, shopping, specialty, and unsought products. As each persons' needs may vary, different people would purchase different kinds of products based on their own specific needs. With the emergence of e-Commerce, the methods on how to obtain consumer products have increased, as people have begun to opt for purchasing products online. By understanding how e-Commerce has grown and developed over the times, we will be able to have a prediction on how e-Commerce will affect a consumer's spending habits to a certain degree.

With the presence of the internet, society has taken a large step in providing accessibility to the people. The benefits of the Internet have greatly affected the development of e-Commerce. When it first emerged, the digital economy was defined as an economic activity in which the key factor in production is digital data, processing large volumes and using the results of analyzing them. (Negroponte, 1996). However, as the digital economy continues to develop, the World Economic Forum has defined it as "a broad range of economic activities comprising all jobs in the digital sector as well as digital occupations in non-digital sectors. Most, if not all businesses today have made use of digital technology to supplement their businesses, whether it may be through the assistance in production,

development or marketing. As an example, in order to capitalize on the benefits of the digital economy, online merchants have emerged, in order to make use of the changing conceptions and the advantages that are e-Commerce. Online merchants are entrepreneurs who reach out to the public in order to advertise, and sell their products online. Merchants would need to have the necessary skills to convince potential customers to purchase the product without seeing the actual product, as it is only received upon delivery (Torpey, 2013).

One of the first online businesses was Amazon, which was founded in 1994 by Jeff Bezos. Initially, the company started as an online bookstore, but it quickly expanded into other product categories, including electronics, clothing, and more. Around the same time, eBay was also founded, which allowed individuals to buy and sell items online through an auction-style platform. In the late 1990s and early 2000s, many other online businesses emerged, including Google, Yahoo, and PayPal. These companies helped to lay the foundation for the modern internet economy.

As the internet continued to grow and become more accessible, online businesses continued to proliferate. Today, online businesses can be found in almost every industry, from retail and e-commerce to finance, healthcare, and more. The rise of social media platforms like Facebook, Twitter, and Instagram has also created new opportunities for online businesses to reach customers and build their brand online.

Overall, the history of online businesses has been marked by innovation, experimentation, and a willingness to embrace new technologies and platforms. As the internet continues to evolve, it is likely that we will see even more exciting developments in the world of online business in the years to come.

In Malaysia, 80% of the population (25.84 million people) are active internet users, whereas 50% of the population (16.53 million people) are using the internet to purchase products online (export.gov, 2019).

1.2 Problem Statement

As e-Commerce continues to grow at a fast pace, it has begun to assimilate itself towards the basic economy, and has begun to alter the purchasing methods for consumer products. It has improved the convenience of businesses, as well as enhanced the purchasing experience of consumer products. With that in mind, budding entrepreneurs and Small Medium Enterprises (SMEs) in particular, are decidedly making full use of its benefits such as market expansion, increased productivity, and reduced operating costs.

While online businesses are still widely opted as an alternative, instead of being the common norm of vendoring. Most people still opt for having a retail business with a physical store. Thus, as a starting entrepreneur, one of the major decisions that have arisen is whether to set up a physical store, or to sell the products online. Each of these methods have pros and cons which can be much more suitable for the vendor, depending on what vision the company has in mind.

In this research project, we will examine the factors that contribute to e-commerce adoption in Malaysia. The factors that we have identified from the literature review are perceived ease-of-use (PEOU), perceived usefulness (PU), facilitating conditions, subjective norms, and perceived risk. In this study, these five independent variables are hypothesized to contribute to e-commerce adoption directly. This is an eclectic approach because these variables are drawn from different theories, namely, the Theory of Reasoned Action (TRA), Unified Theory of Acceptance and Use of Technology (UTAT), and Technology Acceptance Model (TAM).

1.3 Research Objective

There are two objectives in this study:

The first objective is to study the direct effects of perceived usefulness and perceived ease-of-use on the adoption of e-commerce.

The second objective is to study the direct effects of subjective norms, facilitating conditions, and perceived risk on the adoption of e-commerce.

1.4 Research Questions

1. Do perceived ease-of-use and perceived usefulness directly affect the adoption of e-commerce?
2. Do subjective norms, facilitating conditions, and perceived risk directly affect the adoption of e-commerce?

1.5 Research Hypothesis

Hypothesis 1

H_1: Perceived usefulness has a positive effect on the attitude towards e-commerce adoption.

Hypothesis 3

H_2: Perceived ease-of-use has a positive effect on the attitude towards e-commerce adoption.

Hypothesis 3

H_3: Subjective norms have a direct positive effect on the attitude towards e-commerce adoption.

Hypothesis 4

H_4: Facilitating conditions have a direct positive effect on the attitude towards e-commerce adoption.

Hypothesis 5

H_5: Perceived risk has a direct negative effect on the attitude towards e-commerce adoption.

1.6 Significance of the Research

This study has the purpose of contributing insights for business owners, the government, and e-commerce users.

Business owners have considered e-commerce as a strong alternative to a retail shop in the current state of economy. While e-commerce has its benefits and drawbacks, it needs to be strategically weighed against the traditional method of having a physical shop. Thus, in this study, I would like to assist business owners in identifying what are the deciding factors for business owners to adopt e-commerce as one of their main platforms, or as a supplement to their businesses.

This study will also assist the government in how they can support the growth of e-commerce. By understanding the current limitations of the country's digital infrastructure. The government can proceed on building more advanced infrastructures that will help the quality-of-life benefits that e-commerce provides. This study will allow them to identify what are the main infrastructures that are commonly used by e-commerce business owners in their day-to-day activities.

Lastly, this study would provide insight for e-commerce users on the perspective of e-commerce business owners. By having a deeper understanding of the utility that e-commerce provides, consumers can use this newfound knowledge to make more educated purchases. Several categories of products are more effectively sold online, whereas some of them are not even considered. This study will delve further into what products are more suitable for faceless transactions, and online purchasing.

1.7 Chapter Layout

Chapter 1: Introduction

This chapter provides an overview of the research project including research background, problem statement, research objectives, research questions, significance of the study and chapter layout. This chapter has discussed the growth factors of e-Commerce and how it has affected its development.

Chapter 2: Literature Review

This chapter presents a comprehensive literature review of the 5 variables in this study based on the influential factors of e-commerce adoption (Perceived Ease-of-Use, Perceived Usefulness, Facilitating Conditions, Subjective Norms, and Perceived Risk). Furthermore, the relevant theoretical models are extracted for referencing purposes. With that knowledge, the conceptual framework is developed and proposed here. Lastly, relevant hypotheses are developed based on the literature review the researchers have done in the past.

Chapter 3: Methodology

This chapter presents the procedures carried out to test against the hypotheses in terms of research design, data collection methods, sampling design, research instrument, construct measurement, data processing and data analysis.

Chapter 4: Data Analysis

This chapter presents the overall research findings by using tables and figures so that readers could comprehend it in an easier fashion. In this research, SmartPLS is used to carry out the data analysis. Additionally, the descriptive analysis, scale measurement, inferential analysis are tested, and then presented in this chapter.

Chapter 5: Discussions, Conclusion and Implications

The last chapter discusses the summary of research findings and subsequently interprets the major findings and determines whether the hypotheses are supported by the data. Then, limitations of the study and recommendations are discussed for future research.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In this topic, literature review of the variables and theoretical framework from previous research will be discussed by outlining the independent variables, dependent variables, and mediators. Literature review will be written on the factors of e-commerce, which are subjective norms, facilitating conditions, and perceived risk. Strong arguments for each independent variable will be provided in hypothesis development. Lastly, a research model will be formed at the end of this chapter. This chapter consists of literature review, theoretical framework model, hypothesis development, and conclusion to sum up the chapter.

2.1 Adoption of E-Commerce

Throughout the times, social and economic development of human society is affected by the economic law of permanent increase in people's materials and spiritual needs. (Prudskiy, 2019). The ever-increasing demand requires the economy to grow its supply, by increasing labor and production efficiency, to meet its demands. One of the three economic factors in determining the increase in labor and production efficiency is technical and technological processes. By improving them, this allows an economy to further explore the natural resources of an economy.

With the arrival of the Internet of Things (IoT), and more importantly, Industry 4.0, this has drastically improved the growth of technological usage. The digitization that is brought by the Internet has brought forth a new, digital era. By doing so, businesses had to adapt to the changes in their currently established business models. One of the bigger issues that manufacturers of traditional products had to deal with was how to stimulate the regrowth of demand (Roblek et al., 2016). Aside from that, Industry 4.0 has also caused economic and social activities to be globally interconnected, developing a "complexity cross", as both

activities are now directly commonly intertwined with one another.

The Malaysian government has deployed resources to develop a knowledge based economy and to enter the digital age in a more strategic way. This is because the government believes that ICT is a strategic driver that directly contributes to the growth of the Malaysian economy. Therefore, the government had put the 8th Malaysian plan in action, which was an initiative to build vital ICT infrastructures for public sector as well as private sectors (Jehangir, 2011). This has allowed e-commerce to gain a competitive advantage in the country, especially with the current pandemic situation. According to Statista (2020), the total revenue in Malaysia's e-commerce sector is projected to reach US$4.4 billion in 2020. It continues to grow, as the revenue is expected to show an annual growth rate of 16.7%, with a projected market volume of US$9.6 billion by 2025, which is effectively doubled in 5 years.

2.2 Perceived Usefulness

Knowledge, in layman's terms, is the process of understanding a concept. There are three general definitions that can be used to describe knowledge. In this particular context, this means an individual's understanding of what the e-Commerce is. It also encompasses how much an individual can utilize this particular knowledge. In Malaysia, e-Commerce is closely tied to Industry 4.0 and the Digital Economy. In it, there are five particular attributes that can be used to describe the Digital Economy; Digitization, Connection, Sharing, Personalization, and Directness (Bazzoun, 2019). These five attributes are able to give benefits in almost any part of a business process, which enhances the buying, selling and production process of a company's product. By utilizing newfound resources from the new digital channels brought by e-Commerce, many countries have greatly increased their nation's GDP. For example, China was able to progress towards becoming a leading global force in e-Commerce, due to the help of key movers and shakers such as BAT - Baidu, Alibaba, and Tencent (Yu, 2017). Therefore, countries should strive to utilize e-Commerce in order to continue to reap its benefits.

According to Bazzoun (2019), the digital economy today has brought up five major technology trends which are commonly utilized; Hyper-connectivity, supercomputing, cloud computing, cyber security, and smart products. These trends have blurred the boundaries of products vs service offerings, as both are now generally one and the same. Thus, companies need to adapt to the newfound methods which are generally found to be more efficient for their businesses.

In this study, Usefulness is defined as the degree of how much a business owner evaluates the benefits of using e-commerce, and how a businesses can use e-commerce, in order to improve their reach, traffic, and sales.

2.3 Perceived Ease-of-Use

The usage of e-Commerce has been well-integrated in today's society, even though some people might not realize they are already using it in their daily life. With the growth of e-Commerce, several countries are already moving towards a cashless economy, as most transactions are done digitally. Several countries, such as India, have also begun demonetising their currency notes, which causes a cash crunch and pushes consumers towards electronic payments and transfers (Goel, 2019). With the support of online purchasing, this has encouraged a country's government and its citizens to build more infrastructures in order to support e-Commerce.

Aside from that, living in a post-COVID era, people have generally realized how to mostly use e-Commerce in their daily lives. But even before that, people have been using e-Commerce in order to better their lives and businesses, which has been used differently over the decades. The e-Commerce has also been found to be very useful in personnel training. In fact, according to the Agency for strategic initiatives of Russia (ASI), the professions of the future are beginning to change in effect of the emergence and the rise of e-Commerce (Nezhmetdinova, 2020).

In this study, Ease of Use is defined as the degree of how much a business owner evaluates the difficulty of starting up and using e-commerce, alongside with its convenience,

how the online market has affected their day-to-day activities, and how businesses can strive to improve the user-friendliness of their e-commerce system.

2.4 Facilitating Conditions

Facilitating conditions refer to the technical infrastructure and associated resources of a company to complete online shopping (Venkatesh et. al., 2003). It is one of the basic requirements for a company to develop e-commerce. However, in a past research from China, they claim that facilitating conditions are the least important for Chinese consumers to adopt e-commerce (Teoh, 2013). Regardless, these conditions create an enabling environment that supports and encourages the adoption and growth of e-commerce. The presence and effectiveness of these facilitating conditions can vary by region and country, influencing the overall growth and maturity of e-commerce in different parts of the world. Governments, businesses, and other stakeholders often work together to improve these conditions, fostering the continued growth of the e-commerce industry. These conditions include, but are not limited to: Internet access, digital infrastructure, secure online transactions, mobile commerce support, digital marketing, logistic services, legal framework, cross-border e-commerce support, collaborative payment systems, and digital literacy.

In this study, facilitating conditions in the context of e-commerce refers to the factors and elements that make it easier and more convenient for individuals and businesses to engage in electronic commerce activities.

2.5 Subjective Norms

According to Ajzen (1975), subjective norms are defined as the “perceived social pressure to perform or not perform the behavior”. More commonly known as peer pressure, due to the surroundings and environment that can affect an individual, there is a tendency for an individual to be more inclined to perform an activity in order to fit with society’s standards. As e-commerce has been progressively and more commonly used, more individuals will consider using e-commerce as an alternative way of selling and purchasing, or even consider it as their main way. Subjective norms play a crucial role in shaping an individual's intentions and subsequent behavior. They are found to positively influence behavioral intention (Teng and Wang, 2015).

People are influenced by what they perceive others think about a certain behavior, and this influence can be either normative or informational. It's important to note that subjective norms are subjective by nature, meaning that they are based on an individual's perception of what others think, rather than an objective measurement of actual social norms. Therefore, an individual's behavior may be influenced not only by what others actually believe, but also by their own interpretation and understanding of those beliefs. In a previous study, subjective norms have also affected an individual’s intention to purchase products (Lutz, 1991). When it comes to e-commerce, it has also been proven that subjective norms have significance towards the intention of e-commerce usage. (Supanat, 2012).

In this study, Subjective norms are defined as how an individual’s perception of social pressure and the influence of others’ expectations on their behavior, and how it affects businesses into adopting e-commerce.

2.6 Perceived Risk

According to Bauer (1960), perceived risk is defined as the risk that consumers actively perceive due to the lack of understanding of the product information. Due to the possible lack of information and one-way communication that is being delivered by the business owners, it is more difficult for consumers to make educated purchases via the multiple online platforms that they commonly use. The purchasing experience can also differ depending on the various mobile devices that they can use to access the e-commerce service, in different times and contexts (Pernici and Krogstie, 2006). Taking the entrepreneurs' approach, entrepreneurs are often described as individuals who tend and dare to take risks (Angela, 2018). Business owners would also need to consider the risk of customers who are willing and able to refund the products that they have purchased. Online services generally reserve the right to make a decision whether to deliver the money to the owner, and will only do so if the customer has safely received the purchased goods (Shopee, 2023).

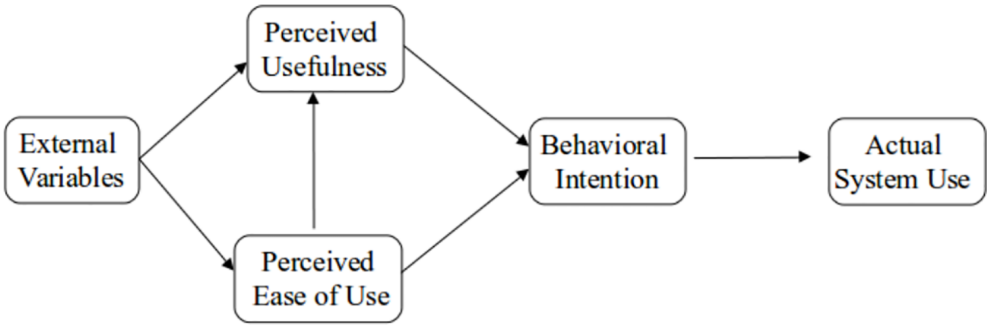
In this study, Perceived risk is defined to be the level of safety while conducting in e-commerce, and precautions that are mandatory in precedence of the growth of e-commerce.

2.7 Theoretical Framework and Research Framework

2.7.1 Past Theoretical Framework

2.7.1.1 Technology Acceptance Model (TAM)

Figure 2.1 TAM Model



Source: Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q. 319–340.

Adopted from the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM) is a theory that believes that there are two factors that affect an individual's behavioral intention: perceived usefulness and perceived ease of use (Davis, 1989).

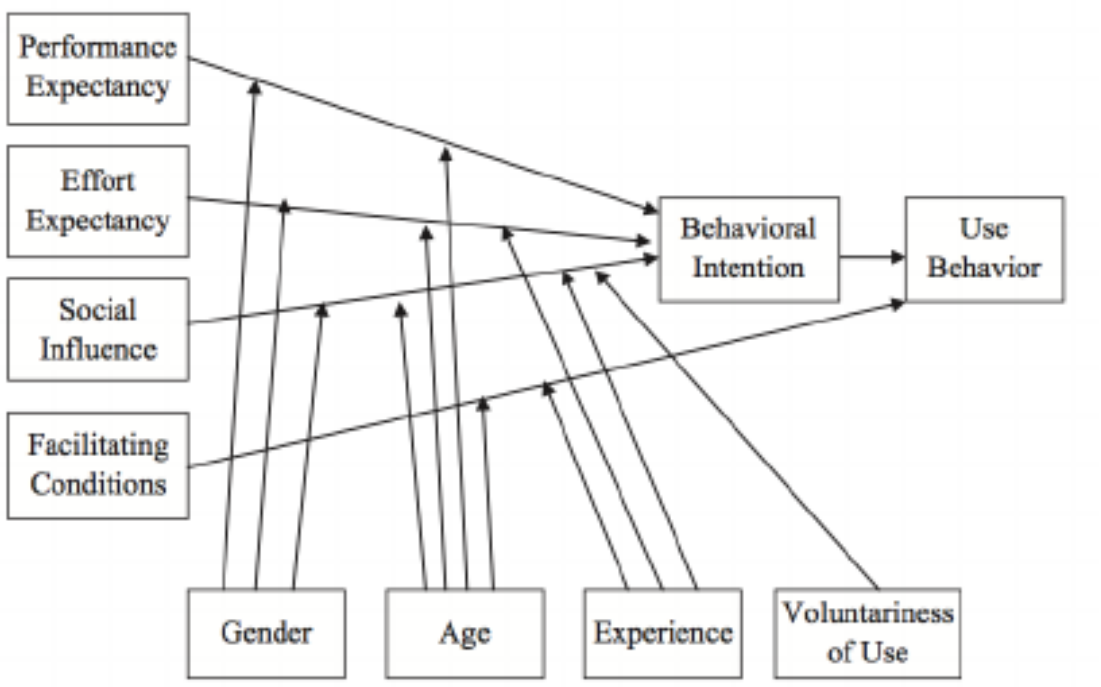
The perceived usefulness refers to the extent of how much an individual believes that using the technology will improve their job or life performance. As for the perceived ease of use, this refers to how much an individual believes that using the technology will be free of effort (Davis, 1989). The perceived ease of use is believed to have a positive effect on perceived usefulness. In an updated model (TAM2), Venkatesh and Davis (2000) further extended the TAM model to include an additional predictor in the case of mandatory settings: Subjective

norm. This is defined as the person's perception that most people who are important to him think he should or should not perform the behavior in question. (Ajzen, 1991).

On a relevant note, the TAM model has been used to identify the factors that affect mobile banking users' behavioral intention, which is fairly relevant to the adoption of e-commerce, being part of the Digital Economy (Luarn, 2005). In this particular study that they have made, they have added factors such as perceived credibility, self-efficacy, and perceived financial model into the TAM model.

2.7.1.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

Figure 2.2 UTAUT Model



Source: Venkatesh V., Morris M.G., Davis G.B., Davis F.D. (2003) User acceptance of information technology: Toward a unified view. MIS Quarterly 27: 425-478.

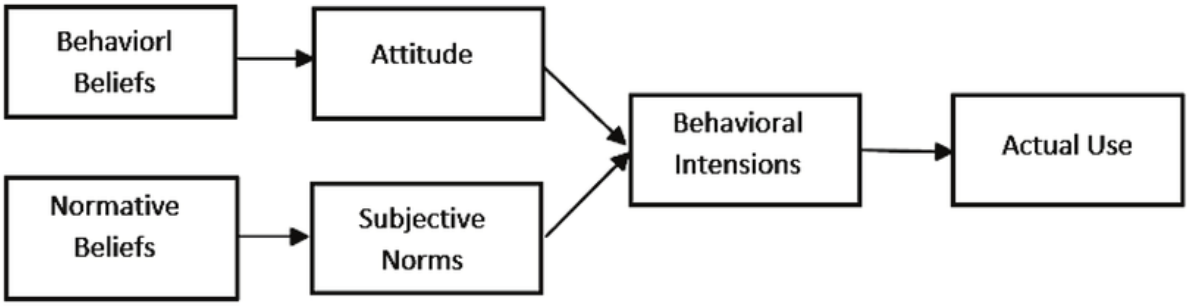
UTAUT framework is a unitary model made from combining eight theories of technology acceptance, that predicts an individual's behavioral intention for the adoption of new technology, and binds together alternative views on user and innovation acceptance (Venkatesh, Morris, Davis and Davis, 2003). According to Figure 2.2, the UTAUT model suggests that the determinants of behavioral intention are performance expectancy, effort expectancy, social influence, and facilitating conditions. These factors are moderated by gender, age, experience, and voluntariness of use (Venkatesh et al., 2003).

Performance expectancy refers to the degree which an individual believes that using the system will help their job performance. Effort expectancy is referring to the degree of ease associated with use of the system, which is taken from the perceived ease of use from the TAM model. According to Venkatesh and Morris (2000), women are more salient towards effort expectancy than men. Social influence is defined as the degree to how much an individual perceives that they are required to use the new system. In the TAM2 model, this factor is represented by “subjective norm”. Facilitating conditions are defined to the degree of which an individual believes that an organizational and technical infrastructure exists to support the usage of the system (Venkatesh et al, 2003).

On a relevant note, the UTAUT model has been used to identify the factors that affect students’ behavioral intention towards mobile learning (m-learning), which is fairly relevant to e-commerce (Chao, 2019). In this particular study that they have made, they have added factors such as perceived enjoyment, mobile self-efficacy, satisfaction, trust, and perceived risk moderators into the UTAUT model.

2.7.1.3 Theory of Reasoned Action (TRA)

Figure 2.3 TRA Model



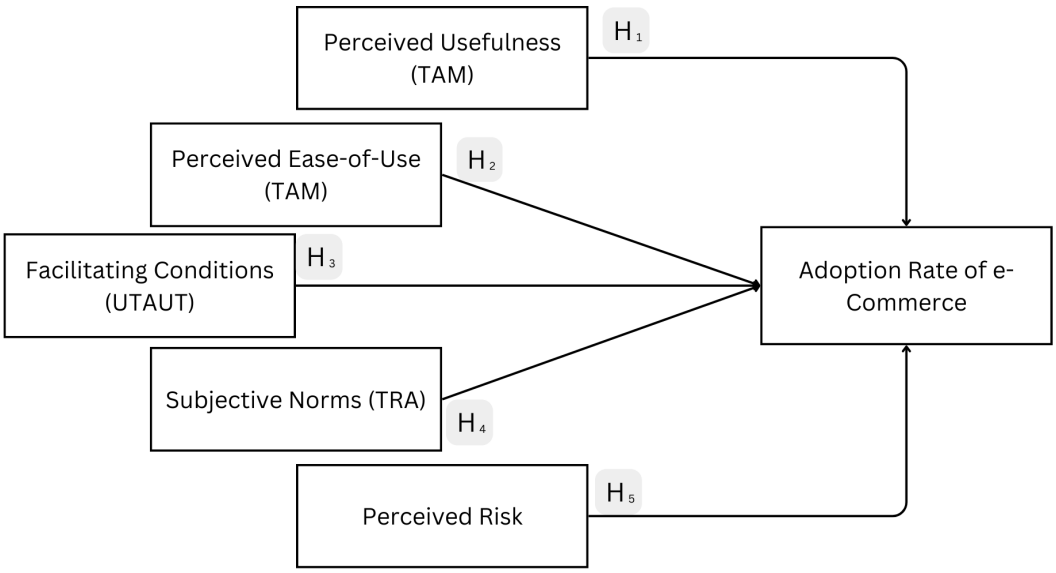
Source: Solangi et al., (2018). Social commerce in e-business of Pakistan: Opportunities, challenges and solutions. In International Conference on Information and Communication Technology for the Muslim World (ICT4M 2018), Kuala Lumpur, pp. 126–131.

The Theory of Reasoned Action (TRA) is a social psychology theory developed by Martin Fishbein and Icek Ajzen in the late 1960s and early 1970s as the first to be developed among the three classic models of persuasion in psychology and health behavior (Ajzen, 1969). TRA aims to explain and predict human behavior based on the influence of an individual's attitudes and subjective norms. The central idea of the Theory of Reasoned Action is that people are rational decision-makers who consider the consequences of their actions before engaging in a particular behavior. The theory suggests that a person's intention to perform a specific behavior is the key determinant of whether they will actually engage in that behavior. The TRA proposes that an individual's behavioral intention is influenced by their attitude toward the behavior and subjective norms. Intention, in turn, predicts the actual behavior (Glanz, 2015). In other words, the theory suggests that the stronger an individual's intention to perform a behavior, the more likely they are to actually perform that behavior. This model is interrelated with the TAM model, as there is a link between consumer

confidence in the usefulness of technology and the intention to use it. (Ramadiani et al., 2017)

2.7.2 Research Framework

Figure 2.4 Proposed Conceptual Framework



Source: Developed for research

Figure 2.4 shows the proposed conceptual framework for this study, that was made from the adoption of prior research. This framework serves as the foundation for this particular research project in order to examine the factors that affect e-commerce adoption. There are five independent variables, which are Perceived Ease-of-Use, Perceived Usefulness, Facilitating Conditions, Subjective Norms, and Perceived Risk; and a dependent variable, which is e-commerce adoption.

2.8 Hypothesis Development

Based on previous research results and literatures, the following hypothesis has been developed:

H_1: Perceived usefulness has a positive effect on the attitude towards e-commerce adoption.
H_2: Perceived ease-of-use has a positive effect on the attitude towards e-commerce adoption.

In terms of technological innovations, a research in Italy has also found that both PU and PEOU are a driver for the intention to adopt technological innovations for smart farming. (Caffaro, 2020). On a similar note, a study on smart tourism has also shown positive results towards PU and PEOU, which is another industry showing innovation at work. Other technologies that are more commonly found such as Information Systems (IS), have also been researched upon to find that the PU and PEOU of a technology plays a positive role in its adoption (Ndubisi, 2003). In Taiwan, research has been found that both PU and PEOU, alongside openness to experience, positively impacts online purchasing intention. (Moslehpour, 2018). E-commerce is one of the technological innovations that has been recently booming, especially after COVID, due to its handiness as a transaction that does not require physical interactions. Therefore, it is theorized that PU and PEOU would have a positive effect on the attitude towards e-commerce adoption in this study.

H_3: Facilitating conditions have a direct positive effect on the attitude towards e-commerce adoption.

By having a solid digital infrastructure, it is believed that a foundation for the adoption of e-commerce can be built. According to Ahmed et al. (2018), there is a positive relationship between perceived usefulness and perceived ease-of-use towards the adoption of mobile

banking in Yemen. Another research of the same category has also been done in Indonesia, where it has been proven that PU and PEOU have a positive effect in the adoption of mobile payment systems (Lisana, 2021). Mobile banking and payment systems are considered one of the facilitating conditions of e-commerce, and this infrastructure is believed to help businesses adopt e-commerce. Other conditions such as a strong technical backing is believed to lead to a more favorable perception of a technology's usefulness (Ndubisi, 2003). Alternatively, there is research done on other technological innovations that has been done, such as Mobile-Assisted Language Learning (MALL). The study has shown that facilitating conditions has a significant predictive power on the learners' perceived ease of use, which has an indirect effect towards the learners' tendency towards mobile technologies (Ebadi, 2023). Therefore, it is theorized in this study that facilitating conditions positively predict both perceived usefulness and perceived ease-of-use.

H_4: Subjective norms have a direct positive effect on the attitude towards e-commerce adoption.

On the behavioral intention to use technology, a study in Indonesia has found that subjective norms have a positive effect on both PU and PEOU of learning management systems (Usman, 2020). Aside from that, another research done in Indonesia has also shown that subjective norms have a significant effect towards the PU and PEOU of LinkAja, which is an electronic wallet used by the Indonesian people (Widodo, 2021). With the support of colleagues and society, subjective norms have also been found to be a driver for individuals to use social media, another digital technology that is commonly used today. The research done by Nasongkhia (2023), has proven that colleague support has a positive effect on perceived usefulness and ease-of-use of social media. Through the usage of the TAM model, Abdullah (2015) has also found that subjective norms have positively affected the PU and PEOU for e-learning. Therefore, it is theorized in this study that subjective norms positively predict both perceived usefulness and perceived ease-of-use.

H_5: Perceived risk has a direct negative effect on the attitude towards e-commerce adoption.

During online purchases, customers are unable to physically view the products that they are buying. Thus, there is a certain notion of risk that the product delivered might not be accurate to its use effect. A study in China has shown that perceived risk will affect the consumers' trust in online platforms (Zhang, 2020). In Sarawak, research proves that perceived risk has a significant impact on the perceived usefulness of the adoption of Sarawak Pay, an e-wallet used in Sarawak. (Tang, 2022). In 2001, Lee conducted a study that showed that perceived risk has a negative relation with perceived usefulness and also negatively affects the purchasing behavior of online consumers. In e-commerce, internet banking is required to do payments for e-commerce. A study has shown that the initial adoption of internet banking is negatively influenced by the level of perceived risk of internet banking (Kim, 2000). Recently, a similar study that has been done in Malaysia has also shown that risk-taking propensity significantly affects rural micro-entrepreneurs' perception of e-commerce's usefulness and ease-of-use (Yusoff, 2021). Therefore, it is theorized in this study that perceived risk negatively predicts both perceived usefulness, and also has a direct negative effect on the attitude towards e-commerce adoption.

2.9 Conclusion

This chapter gives an overview of the independent variables which are Perceived Usefulness, Perceived Ease-of-Use, Facilitating Conditions, Subjective Norms, and Perceived Risk, and the dependent variable, which is the adoption rate of e-Commerce. In order to test the relationship between the independent and dependent variables, multiple hypotheses and a conceptual framework was developed.

CHAPTER 3: METHODOLOGY

3.0 Introduction

Methods of research are discussed in this chapter in order to collect relevant data and information. This particular chapter includes research design, data collection method, sampling design, research instrument, construct measurement, data processing, and data analysis.

3.1 Research Design

According to Akhtar (2016), research design is considered as the structure of the research, the "glue" that holds all of the elements in a research project together. It is also known as the plan of the proposed research work. It is imperative to have solid research design in order to assure that the research project proceeds in a manner that is in line with the objective of the research. A good research design has characteristics of being flexible, appropriate, efficient, and economical.

There are 4 main types of research designs:

1. Exploratory / Formulative Research
2. Descriptive / Statistical Research
3. Explanatory Research
4. Experimental / Analytical Research

In this research, both descriptive research and explanatory research will be used. Descriptive research focuses on accurately portraying the characteristics such as gender and age of a particular group or situation (Akhtar, 2016). Explanatory research will also be used via the SPSS program. This research mainly concerns the attitude, or views of people towards the adoption of e-commerce.

3.2 Data Collection Method

3.2.1 Primary Data

Primary data mainly refers to data that has been collected from first-hand experience (Kabir, 2016). This data is more reliable, authentic, and more objective than secondary data as it is fresh data that has not been altered, and also has not been published. Therefore, it has not been changed or altered by other people, which makes it more valid than secondary data. In this study, the primary data will be collected through survey questionnaires. The survey questionnaires will be distributed online in order to collect the related research data.

3.2.2 Secondary Data

Secondary data refers to data that has been collected from sources of information that has already been published in any form. Any literature review of any research is based on secondary data. It is data that has been collected for various purposes, but utilized differently depending on the purpose of their own research (Kabir, 2016). Therefore, the data will not be as valid as primary data, as the parameters of each research can vary differently. Although it might not be as accurate, secondary data is important in order to improve the validity of the primary data, as research done in the past already has a pre-established degree of validity and reliability that does not need to be re-examined. Aside from that, secondary data can also be used as a scale of comparison with the primary data. The secondary data of this research is mainly collected through the Internet, specifically through online journals and articles that are collected from various proper databases, such as the UTAR Library OPAC, ResearchGate, Mendeley, Google Scholars and many others.

3.3 Sampling Design

3.3.1 Target Respondent

The target respondents for the survey are business owners who use e-commerce as one of their business methods in Malaysia. These particular respondents are suitable for this survey as they have experience in using e-commerce, and determining whether the factors listed in this research influence the adoption rate of e-commerce.

3.3.2 Sampling Frame and Sampling Location

According to Taherdoost (2016), a sampling frame is a list of actual cases from which the sample will be drawn. The frame has to represent the majority of the population. Therefore, the sampling frame in this research would need to refer to the criteria of e-commerce users who use this business method on a regular basis to varying degrees, from either business owners who use it as an alternative, up to the main business method. The data of this research will be collected through an online survey via Google Docs, and sent to respondents, which are online business owners, through the internet, as people who use the internet are generally more proficient in technology and may have used technological conveniences such as e-commerce.

3.3.3 Sampling Elements

In this study, 150 questionnaires were distributed to Malaysian business owners through the Internet. The main target respondents are individuals who use e-commerce platforms as their business platforms such as Shopee and Lazada, who are more tech-savvy and are comfortable selling their products online.

3.3.4 Sampling Techniques

Sampling technique can be categorized into 2 different types, probability sampling and non-probability sampling. This study chooses to use Non-probability sampling. Non-probability sampling can be divided into four types; convenience sampling, quota sampling, snowball sampling, and judgmental sampling. (Sekaran & Bougie, 2010). For this study, convenience sampling has been chosen as it is the most suitable technique for this study, due to time and budget restrictions, along with a suitably large sample size. The main purpose of the sampling is to collect information from respondents that are fairly accessible to the researcher (Etikan, Musa, & Alkassim, 2016).

3.3.5 Sampling Size

Sampling size is the total sample amount of research. According to Etikan et al. (2016), the sample is just a portion of the target population. According to Hair, Black and Babin (2010), a research project that contains not more than five constructs, and each with more than three items with high item communalities (0.6 or higher) is suggested to have a minimum sample size of 100 respondents; while sample size within 100 to 200 respondents are sufficient. Therefore, there are a total of 150 questionnaires distributed online to online business owners throughout Malaysia through the Internet.

The target population of this study is business owners with an online platform. Based on the statistical power formula, the minimum sample size required is 120 for the proposed structural model. The significance level of 0.05, the statistical power of 0.80 and the medium effect size of 0.25 were set in the sample size computation using G*Power 3.1.9.4 statistical calculator.

The raw data were converted into a compatible format, and tables and graphs were generated for the descriptive analysis using Pivot Table in Microsoft Excel. As

for the explanatory analysis assessing the relationship between factors of the digital economy and the adoption of e-commerce, the partial least squares structural equation modeling (PLS-SEM), the second-generation statistical analysis method, is applied.

3.4 Research Instrument

3.4.1 Questionnaire Design

Each set of questionnaires will consist of 36 questions in total and the survey questionnaire will be separated into two main sections. In section A, the questions are mainly related to demographic information which includes gender, age, location of each respondent, along with their relevant questions regarding the respondents usage of e-commerce. Section B includes 28 questions, 4 questions which will be tested for the dependent variable, which is the adoption rate of e-commerce, and the other 24 questions for the four independent variables. The five independent variables are Perceived Usefulness, Perceived Ease-of-Use, Facilitating Conditions, Subjective Norms, and Perceived Risk (refer to appendix).

3.5 Constructs Measurement

3.5.1 Measurement Scales

3.5.1.1 Nominal Scale

A nominal scale is the scale that is most often used for variables without quantitative values. According to Sekaran (2003), the variables of the nominal scale will be categorized into mutually exclusive (non-overlapping) and collectively exhaustive groups to generate results from the calculation of percentage or frequency. In Section A, a nominal scale will be used to label variables without any quantitative value, to measure the target respondents' demographic profile (gender, location, etc.).

3.5.1.2 Ordinal Scale

An ordinal scale categorizes variables in such a way to denote differences among the various categories. Although the scale would be ranked or numbered, it does not give any indication of the magnitude of the differences between the ranks (Sekaran, 2003). In this study, an ordinal scale has been also used for question 1 in section A (demographic profile) of the questionnaire, which is the respondents' age.

3.5.1.3 Interval Scale

An interval scale is measured in the quantitative attributes. There is zero point in the scale and the differences between the numbers are meaningful. The scale measures the magnitude differences in the preferences among the respondents (Sekaran, 2003). In the interval scale, mean, median, mode and standard deviation is used to measure the central tendency. In research, the likert scale is one of the common scales that had been used for section B. The 5-point Likert scale ranges from strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5) is designed to examine how strongly the statements agree or disagree. Hence, the Likert scale also had been applied in this questionnaire to evaluate the item in each question for section B. Refer to the appendix for the source of questions for each variable.

3.5.1.4 Ratio Scale

A ratio scale includes an absolute zero point which is a total absence of the variable of interest. With a true zero, the ratio of values can be calculated. Using a ratio scale is the most precise method of measure during data collection. This is because of its unique zero origin and subsumes all the properties of the other three scales (Sekaran, 2003). In this study, the ratio scale will not be used

3.5.2 Origin and Measurement of Construct

Table 3.1: Origin of Constructs

Construct	Measurement Item	Sources
Adoption Rate of e-Commerce Or Adoption?	1. I use e-commerce on a regular basis. 2. I use-commerce only on specific occasions. 3. I intend to use e-commerce more in the future. 4. I do not intend to stop using e-commerce in the future.	Amofah, D. O., & Chai, J. (2022).
Perceived Usefulness	1. I believe e-commerce is an effective method of sale. 2. I believe e-commerce may increase my business productivity. 3. I believe e-commerce is beneficial for my business. 4. I believe e-commerce saves me time. 5. I believe that e-commerce was a useful payment system during the COVID-19 pandemic.	Aji, H. M., Berakon, I., & Md Husin, M. (2020). Davis, Balaji, & Gurusamy (2017). Aparicio, M., Costa, C. J., & Moises, R. (2021).
Perceived Ease-of-Use	1. I find e-commerce as an easier method of business. 2. E-commerce payment systems help me be flexible in transactions. 3. I can proficiently use the e-commerce system. 4. I find e-commerce transactions to be time-saving. 5. I can interact with the e-commerce system clearly.	Siagian, H., Tarigan, Z. J. H., Basana, S. R., & Basuki, R. (2022). Aparicio, M., Costa, C. J., & Moises, R. (2021).
Facilitating Conditions	1. I always have access to internet services to support my online business. 2. I can access the platform on different devices. 3. The platform provides walk-through support for new business owners. 4. The platform helps me provide after-sale	Amofah, D. O., & Chai, J. (2022).

	support.	
Subjective Norms	1. Important people that I know (family/relatives/friends) are using e-commerce. 2. Important people that I know (family/relatives/ friends) help me use e-commerce when I meet difficulties. 3. Communities which I take part in are using e-commerce. 4. Using e-commerce is considered a status symbol among my friends. 5. I have received support and guidance from the business platforms on issues related to the use of e-commerce.	Aji, H. M., Berakon, I., & Md Husin, M. (2020). Lu, Yao, & Yu (2005).
Perceived Risk	1. E-commerce payment system ensures to keep my information intact. 2. I believe that my personal information is safe when using e-commerce. 3. I believe that my transactions will stay private and protected when using e-commerce. 4. I believe that my personal information is protected via the e-commerce database. 5. I believe that the e-commerce payment system always has a plan to prepare to deal with risks and ensure data security.	Phan, T. N., Ho, T. V., & Le-hoang, P. V. (2020).

Source: Developed for the research

3.6 Data Processing

Data processing was carried out, as there is a significance for the researcher to carry out preliminary screening of the questionnaire, followed by data editing and coding (Shukla, 2018). A total of 150 sets of questionnaires were distributed to responses via the Internet, and all the data was compiled and entered into the SPSS program for analyzing purposes. Among the 150 respondents, the data collected was varying from different ages, businesses, and location. The largest majority of data collected was from online business owners.

3.6.1 Data Checking

Data checking is conducted multiple times on the questions in the questionnaires. Data checking ensures the quality of the collected data, to prevent any issues such as incomplete questionnaires and unqualified respondents. For example, the data collected has a requirement of respondents that only stay in Malaysia. Any occurrence of errors such as incomplete and misplaced questionnaires will be removed before analyzing the data. There are multiple ways to conduct data checking; solo read aloud, partner read aloud, visual checking, and double entry (with one or two people). Double entry has been done for this research as it has been shown to be the most accurate method (Barchard, K. A., & Pace, L. A., 2011).

3.6.2 Data Editing

Data editing is a process to detect and amend any non sampling errors or bias that may occur within the data in the questionnaires distributed. Before the collected primary data is presented as useful relevant information, the gathered data is edited to ensure that the information provided by the respondents is complete, accurate, consistent, and free from bias (Shukla, 2018). This ensures that the data sources are accurate, in order to lead to proper research outcomes.

3.6.3 Data Coding

Data coding and transcribing is a systematic way of condensing massive data sets into "mutually exclusive and collectively exhaustive categories to make it amenable for analysis" (Shukla,2018). By categorizing verbal data into variables using a number system, the data can be entered into Excel files or spreadsheets for further interpretation (Bourque, 2004).

For this research, each of the answer of section A in the questionnaire is coded as below:

Table 3.2: Data Coding for questions in Section A

Q1	Gender (Nominal)	● "Male" is coded as 1 ● "Female" is coded as 2
Q2	Age (Ordinal)	● "1-19" is coded as 1 ● "20-29" is coded as 2 ● "30-39" is coded as 3 ● "40-49" is coded as 4 ● "50+" is coded as 5
Q3	Education Level (Ordinal)	● "SPM" is coded as 1 ● "Diploma" is coded as 2 ● "Undergraduate" is coded as 3 ● "Postgraduate" is coded as 4 ● "PhD" is coded as 5
Q4	Location (Nominal)	● "Kuala Lumpur" is coded as 1 ● "Others" is coded as 2
Q5	Do you use more than one e-commerce site? (Nominal)	● "Multiple" is coded as 1 ● "Single" is coded as 2
Q6	E-Commerce usage frequency (Ordinal)	● "Never" is coded as 1 ● "Rarely (Monthly)" is coded as 2 ● "Occasionally (Weekly)" is coded as 3 ● "Frequently (Daily)" is coded as 4
Q7	E-Commerce usage purpose (Nominal)	

Q7.1	Sell products	● "Yes" is coded as 1 ● "No" is coded as 2
Q7.2	Purchase products/materials	● "Yes" is coded as 1 ● "No" is coded as 2
Q7.3	Promote business	● "Yes" is coded as 1 ● "No" is coded as 2
Q7.4	Main or alternative method	● "Main" is coded as 1 ● "Alternative" is coded as 2
Q8	Types of e-commerce used (Nominal)	
Q8.1	Shopee	● "Yes" is coded as 1 ● "No" is coded as 2
Q8.2	Lazada	● "Yes" is coded as 1 ● "No" is coded as 2
Q8.3	Lelong	● "Yes" is coded as 1 ● "No" is coded as 2
Q8.4	Facebook	● "Yes" is coded as 1 ● "No" is coded as 2
Q8.5	Instagram	● "Yes" is coded as 1 ● "No" is coded as 2
Q8.6	eBay	● "Yes" is coded as 1 ● "No" is coded as 2
Q8.7	Carousell	● "Yes" is coded as 1 ● "No" is coded as 2
Q8.8	Others	● "Yes" is coded as 1 ● "No" is coded as 2

Source: Developed for the research

The answer for each question in Section B of the questionnaire is coded as below:

- "Strongly Disagree" is coded as 1
- "Disagree" is coded as 2
- "Neutral" is coded as 3
- "Agree" is coded as 4
- "Strongly Agree" is coded as 5

3.6.4 Data Transcribing

Both qualitative and quantitative research are often collected in multiple formats, such as audio, video, and written data. These data are usually transcribed into written form for closer study (Bailey, 2008). Using the trial edition SPSS software made by International Business Machine (IBM), the written form of the data collected in this research will be inputted for further analysis. The data collected online via Google Docs will be transcribed to the SPSS program in order to conduct analysis.

3.6.5 Data Cleaning

Data cleaning is a process that is similar to data editing, which involves detecting, and removing errors or inconsistencies from the data collected. This allows the quality of the data collected to be improved upon. (Gill & Lee, 2015). Data cleaning copes with sampling uncertainties and accommodates structural breaks and outliers. (Greenwood-Nimmo & Shields, 2017).

3.7 Data Analysis

By using the SPSS program (trial edition) made by IBM, the collected data is investigated in this research. Descriptive analysis, Reliability Analysis, and Pearson Correlation Coefficient were carried out in order to analyze the data collected from the 150 questionnaires that were distributed through the Internet.

3.7.1 Descriptive Analysis

Descriptive analysis is used by researchers in order to summarize data and make statements regarding the population sample that they collected the data from (Toby Mordkoff, 2000). By summarizing this data, descriptive analysis has the ability to identify and describe the collected data that includes individual dynamics and interaction between people with a clearer picture (Wasserman & Faust, 1994).

In this research, the data collected from the questionnaires are organized into tables and graphs. The basis of the essential quantitative analysis of data will be formed through simple graphics analysis. The results are described clearly through the tables in chapter 4.

3.7.2 Reliability Analysis

Reliability analysis cares for the consistency and stability of the results that come out from the measurement method (Taherdoost, 2016). There are several methods to determine reliability, and the most common method is Cronbach's alpha (Heale & Twycross, 2015).

According to Rosaroso (2015), reliability is a crucial measurement used to test standardization. The preconditions to validity are internal consistency measures. Internal consistency depicts the degree to which every one of the questions in a test measures a similar idea or development and is consequently associated with one another inside the test. Cronbach's alpha provides an internal consistency

measurement of a test or scale with a number between 0 and 1. The value of the alpha will rise when the items are more strongly correlated. The value of the alpha may be influenced with issues such as lack of questions, or the poor relation between each question.

Table 3.3: Scale of Cronbach's Alpha

Cronbach's Alpha	**Internal consistency**
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source: Sharma, B. (2016). A focus on reliability in developmental research through Cronbach's Alpha among medical, dental and paramedical professionals. Asian Pacific Journal of Health Sciences, 3(4), 271-278

The table above shows that scale for Cronbach's alpha by Sharma (2016). The value of alpha that is more than 0.9 indicates excellent. The range between 0.8 and 0.9 is considered good. When the value falls between 0.7 and 0.8, it is considered as acceptable. The values between 0.6 and 0.7 are considered as questionable. When the value of the alpha is between 0.5 and 0.6, it is considered poor. Last but not least, a value of alpha that is less than 0.5 is considered as unacceptable.

3.7.3 Pearson Correlation Coefficient

In order to measure the strength of association and examine the direction of the relationships among the variables (adoption rate of e-commerce, perceived usefulness, perceived ease-of-use, facilitating conditions, subjective norms, perceived risk), the Pearson Correlation Coefficient has been used. This method of measurement ranges the value from a perfect negative linear relationship to a perfect linear relationship (-1.00 to +1.00) (Williams, 1996). This value will determine the correlation between the independent variable and each of the dependent variables, whether it may be positive or negative (Hair, Money, Samouel & Page, 2007). The closer the outcome is to -1 or +1, the greater the effect that the independent variable (perceived usefulness, perceived ease-of-use, subjective norms, facilitating conditions, perceived risk) has on the dependent variable (adoption rate of e-commerce). As a rule of thumb, the method of interpreting the size of the Pearson Correlation Coefficient has been shown in the table below:

Table 3.4: Rule of Thumb for the interpretation of the size of Pearson Correlation Coefficient

Size of Correlation	Interpretation
± 0.91 to ± 1.00	Very High Positive / Negative Correlation
± 0.71 to ± 0.90	High Positive / Negative Correlation
± 0.41 to ± 0.70	Moderate Positive / Negative Correlation
± 0.21 to ± 0.40	Low Positive / Negative Correlation
± 0.00 to ± 0.20	Negligible Correlation

Source: Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007). Research methods for business.

3.7.4 Multiple Linear Regression

Regression analysis is a statistical technique that is used to determine the relationship among each variable (Kaya Uyanık & Güler, 2013). Using the multiple linear regression analysis, this allows researchers to analyze whether the independent variables are able to significantly predict the changes in the dependent variable, based on the ANOVA statistics. The formula for multiple linear regression analysis is stated below:

$$\gamma = \alpha + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \dots +$$

Where:

"γ" is the dependent variable

"α" is the regression constant term

"χ" is the independent variable

"β" is the beta coefficient

The significance level is set at 0.05. Therefore, if the value is less than 0.05 ($p > 0.05$), accept H_1 and reject H_0. Otherwise, reject H_1 and accept H_0if P-value is greater than 0.05.

In this research, the Multiple Linear Regressions uses four independent variables (Perceived Usefulness, Perceived Ease-of-Use, Subjective Norms, Facilitating Conditions, and Perceived Risk) to test the relationship with the dependent variable (Adoption Rate of e-Commerce). The results of this study will show to what extent these 5 factors can change the adoption rate of e-commerce.

3.8 Conclusion

In this chapter, the methods about how this research is carried out in terms of research design, data collection methods, sampling design, research instrument, construct measurement, data processing, and method of data analysis is discussed. The result will be discussed in the next chapter, after the data has been analyzed.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

From the 150 questionnaires that were distributed via the Internet, the data that has been collected is analyzed and interpreted in this chapter. For this research, the SPSS software (trial edition) has been used to generate the outcomes, followed by analytical inference. All outcomes will be illustrated graphically in figures, pie charts, bar graphs and tables for an easier understanding. In this research, various analyses have been conducted in accordance with the analysis methods discussed in chapter 3.

4.1 Descriptive Analysis

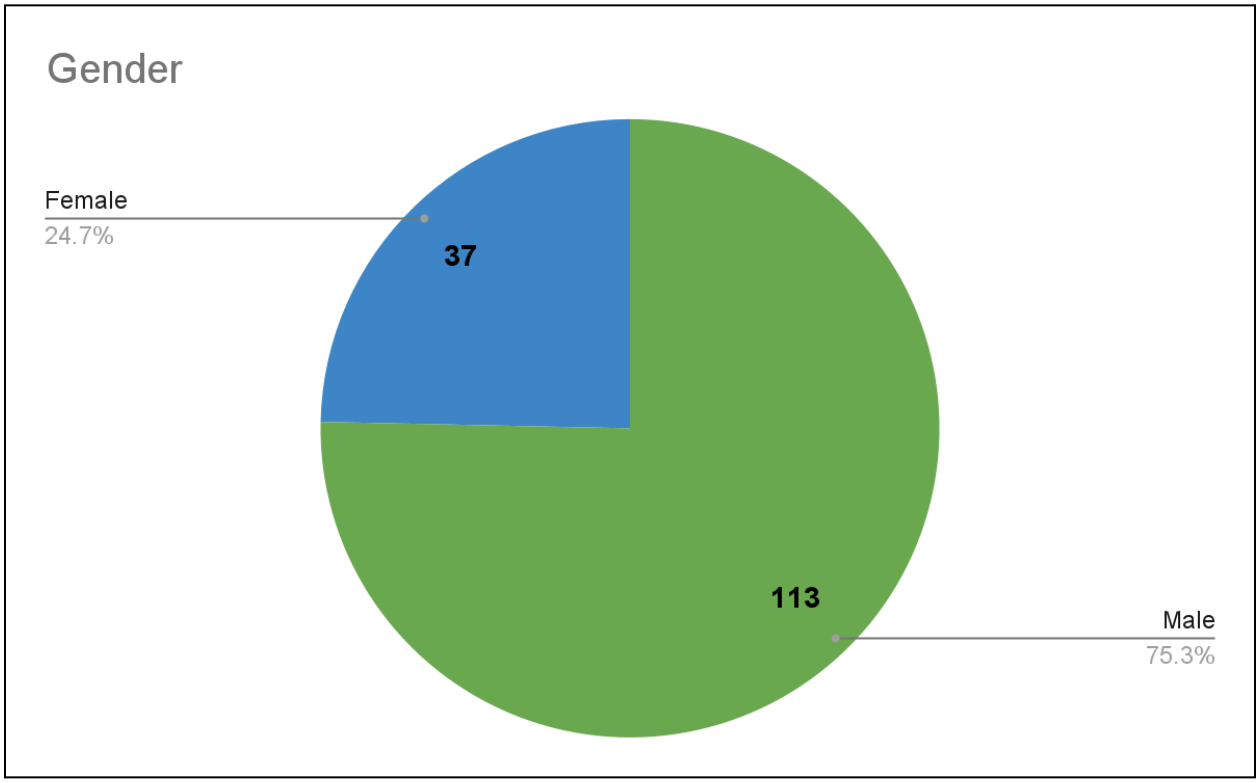
Descriptive analysis analyzes the characteristics and reactions of the respondents to the particular topic. The analysis will allow the data collected from the survey to be presented in a summarized fashion. There are several questions in this survey that ask for the demographic profile of the respondents, and their awareness and usage of e-commerce.

4.1.1 Respondents' Demographic Profile

In section A, the first 5 questions of the distributed questionnaire mainly collect the demographic information of the respondents through 4 questions. In order to collect demographic data from the 150 respondents, 4 questions are asked in section A, which are the respondents' gender, age, education level, and location.

4.1.1.1 Gender

Figure 4.1 Gender



Source: Developed for the research

Table 4.1 Gender

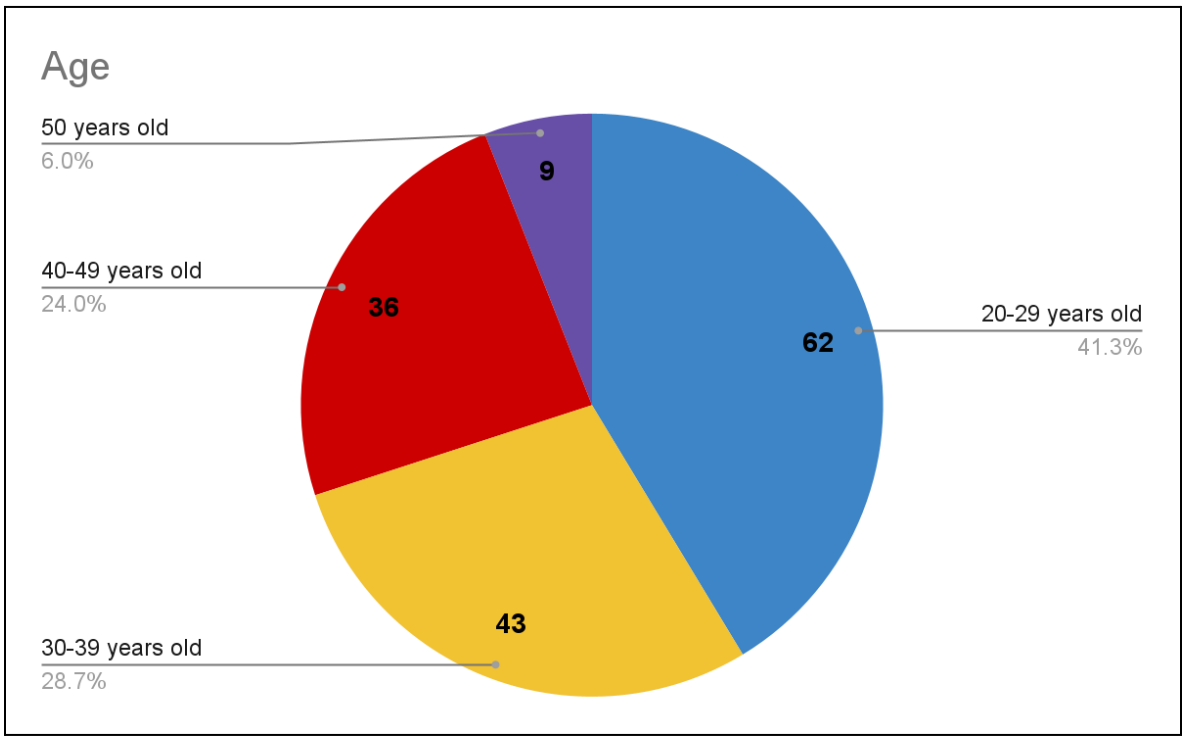
Gender	Frequency	Percent (%)
Male	113	75.3
Female	37	24.6
Total	150	99.9

Source: Developed for the research

From Figure 4.1 and Table 4.1, the respondents are separated by gender, which is male and female. 113 of the total respondents (75.3%) are male, whereas 37 of the total respondents (24.6%) are female.

4.1.1.2 Age

Figure 4.2 Age



Source: Developed for the research

Table 4.2 Age

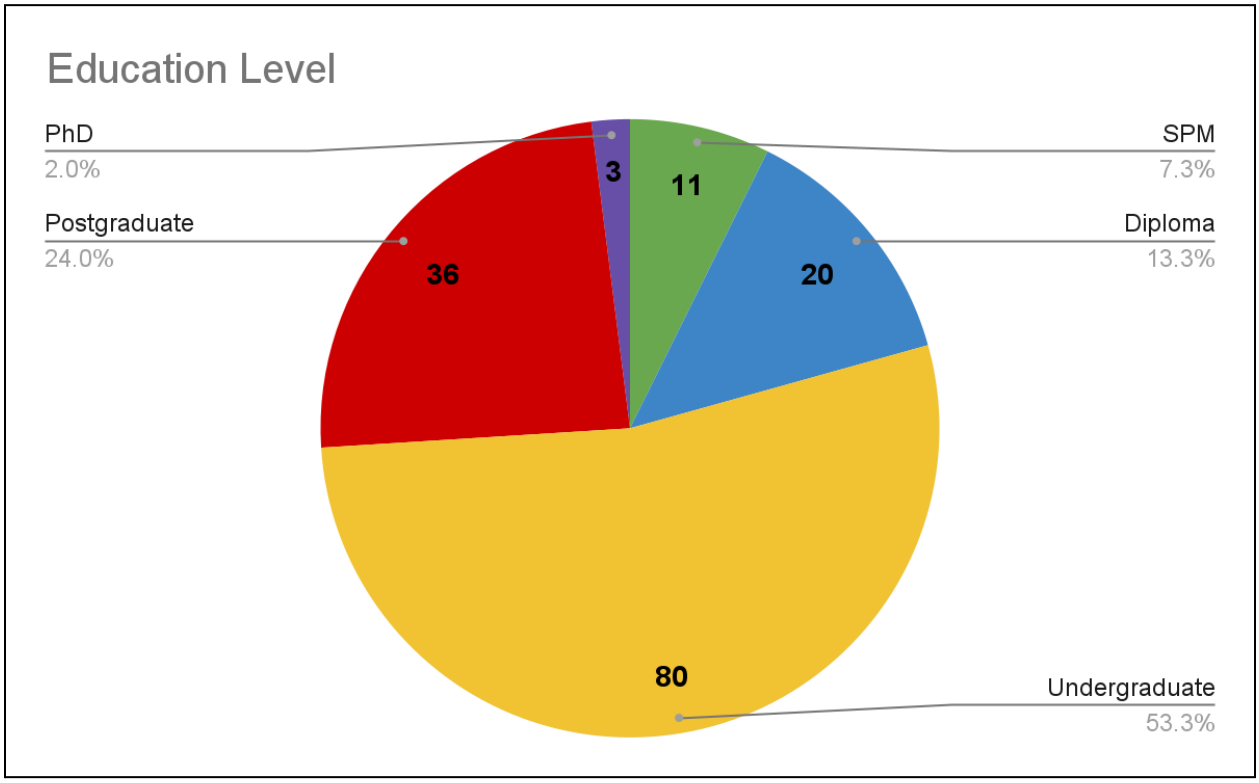
Age	Frequency	Percent (%)
1-19 years old	0	0.0
20-29 years old	62	41.3
30-39 years old	43	28.6
40-49 years old	36	24.0
50+ years old	9	6.0
Total	150	99.9

Source: Developed for the research

From Figure 4.2 and Table 4.2, there are a total of five age groups. The first group is from 1 to 19 years old, with 0 respondents (0.0%) of the total respondents. The next category is between 20 to 29 years old, with 62 respondents (41.3%) of the total respondents. Following that, the third age group is from 30 to 39 years old, with 43 respondents (28.6%) of the total respondents. Next, the group after that is from the age of 40 to 49 years old, with 36 respondents (24.0%) of the total respondents. Last but not least, the last group is from the age of 50 years old and above, with 9 respondents (6.0%) of the total respondents.

4.1.1.3 Education Level

Figure 4.3 Education Level



Source: Developed for the research

Table 4.3 Education Level

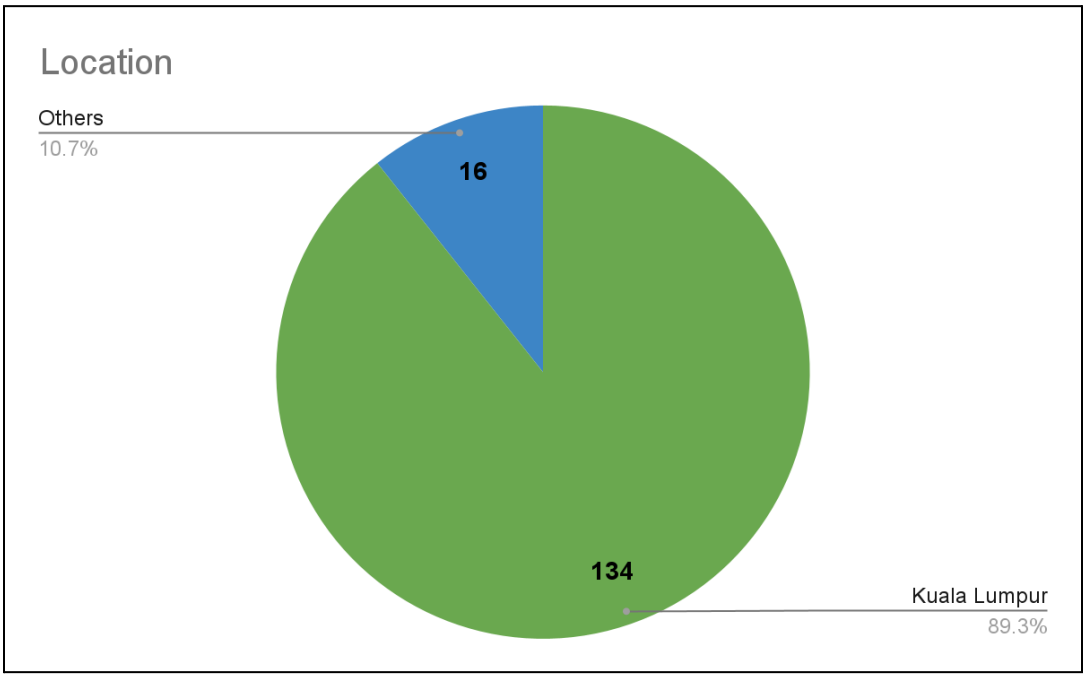
Education Level	Frequency	Percent (%)
SPM	11	7.3
Diploma	20	13.3
Undergraduate	80	53.3
Postgraduate	36	24.0
PhD	3	2.0
Total	150	99.9

Source: Developed for the research

From Figure 4.3 and Table 4.3, there are a total of five education levels. The first group are from SPM graduates, with 11 respondents (7.3%) of the total respondents. The next category are diploma graduates, with 20 respondents (13.3%) of the total respondents. Following that, the third education level are undergraduates, with 80 respondents (53.3%) of the total respondents. Next, the group after that are postgraduates, with 36 respondents (24.0%) of the total respondents. Last but not least, the last group are PhD graduates, with 3 respondents (2.0%) of the total respondents.

4.1.1.4 Location

Figure 4.4 Location



Source: Developed for the research

Table 4.4 Location

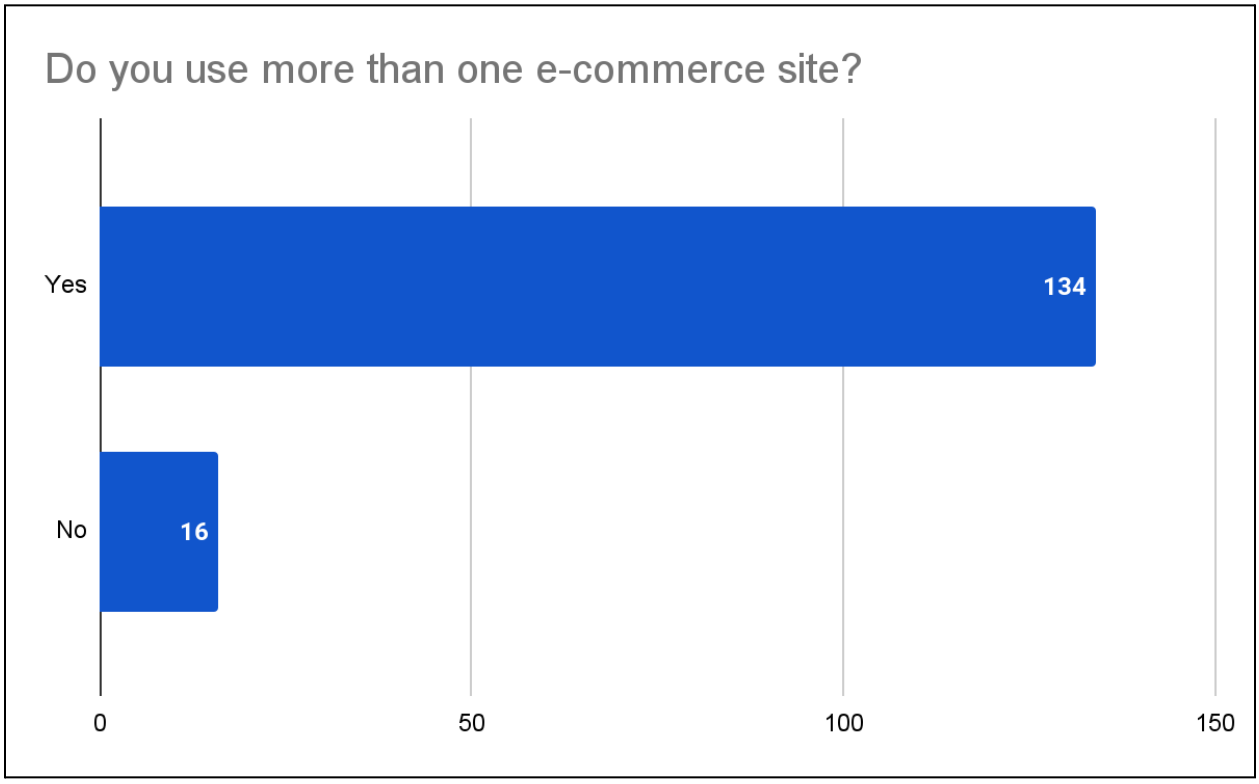
Location	Frequency	Percent (%)
Kuala Lumpur	134	89.3
Others	16	10.7
Total	150	100.0

Source: Developed for the research

From Figure 4.5 and Table 4.5, the locations of the respondents are generally categorized into 2 groups. The first group are individuals from Kuala Lumpur, with 134 respondents (89.3%) of the total respondents. The second group are from other varying locations in Malaysia, with 16 respondents (10.7%) of the total respondents. There was no clear majority in the “Others” group to justify a creation of another group.

4.1.1.5 Do you use more than one e-commerce site?

Figure 4.5 Do you use more than one e-commerce site?



Source: Developed for the research

Table 4.5 Do you use more than one e-commerce site?

Do you use more than one e-commerce site?	Frequency	Percent (%)
Yes	134	89.3
No	16	10.6
Total	150	99.9

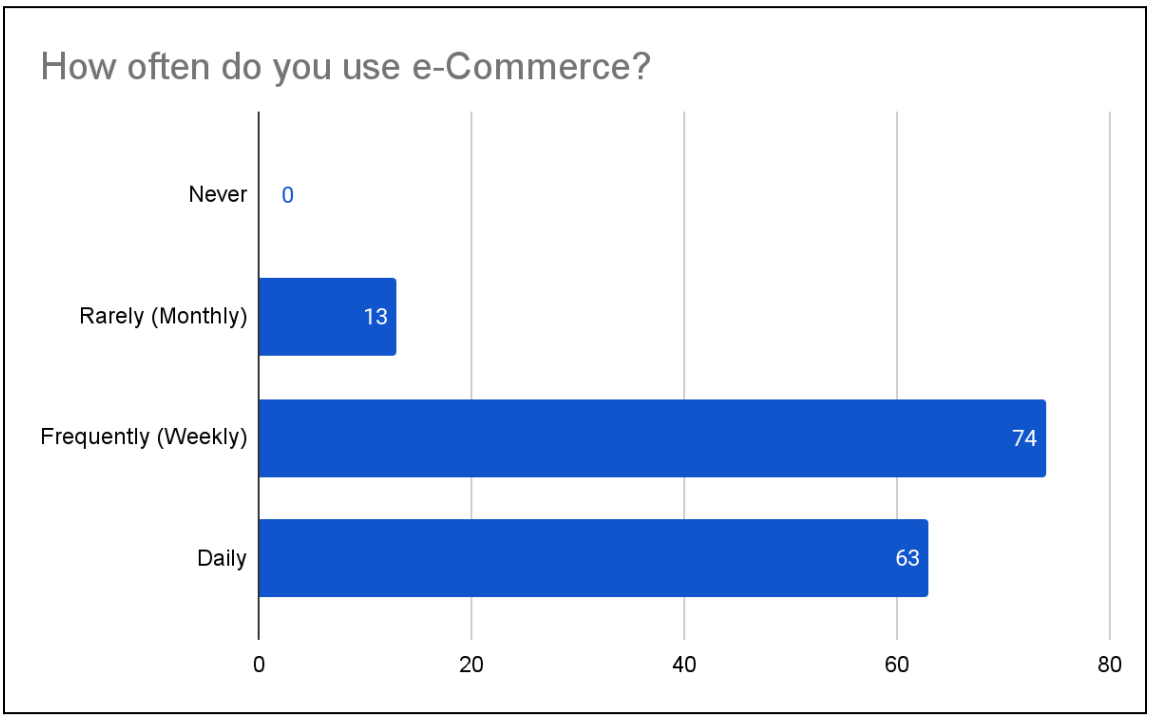
Source: Developed for the research

From Figure 4.5 and Table 4.5, there are 134 respondents (89.3%) amongst the total respondents who currently use more than one site of e-commerce (Shopee, Lazada, Lelong,

Facebook, Instagram, Carousell, etc.), and there are 16 respondents (10.6%) amongst the total respondents who mainly only use one site for e-commerce.

4.1.1.6 How often do you use e-commerce?

Figure 4.6 How often do you use e-commerce?



Source: Developed for the research

Table 4.6 How often do you use e-Commerce?

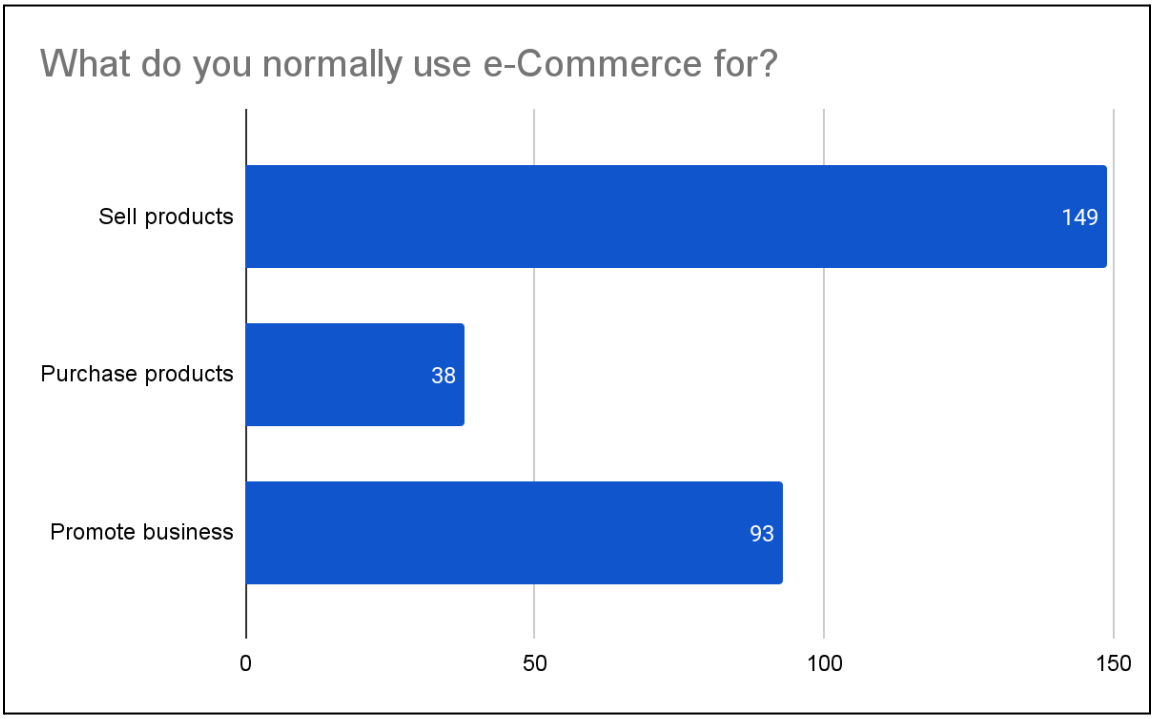
How often do you use e-Commerce?	Frequency	Percent (%)
Never	0	0.0
Rarely (Monthly)	13	8.6
Frequently (Weekly)	74	49.3
Daily	63	42.0
Total	150	99.9

Source: Developed for the research

From Figure 4.6 and Table 4.6, there are 0 respondents (0.0%) amongst the total respondents who have never used e-commerce before. 13 respondents (8.6%) amongst the total respondents rarely use e-commerce on a monthly basis. 574 respondents (49.3%) amongst the total respondents frequently use e-commerce on a weekly basis. Last but not least, 63 respondents (42.0%) amongst the total respondents use e-commerce on a daily basis.

4.1.1.7 What do you normally use e-commerce for?

Figure 4.7 What do you normally use e-commerce for?



Source: Developed for the research

Table 4.7 What do you normally use e-Commerce for?

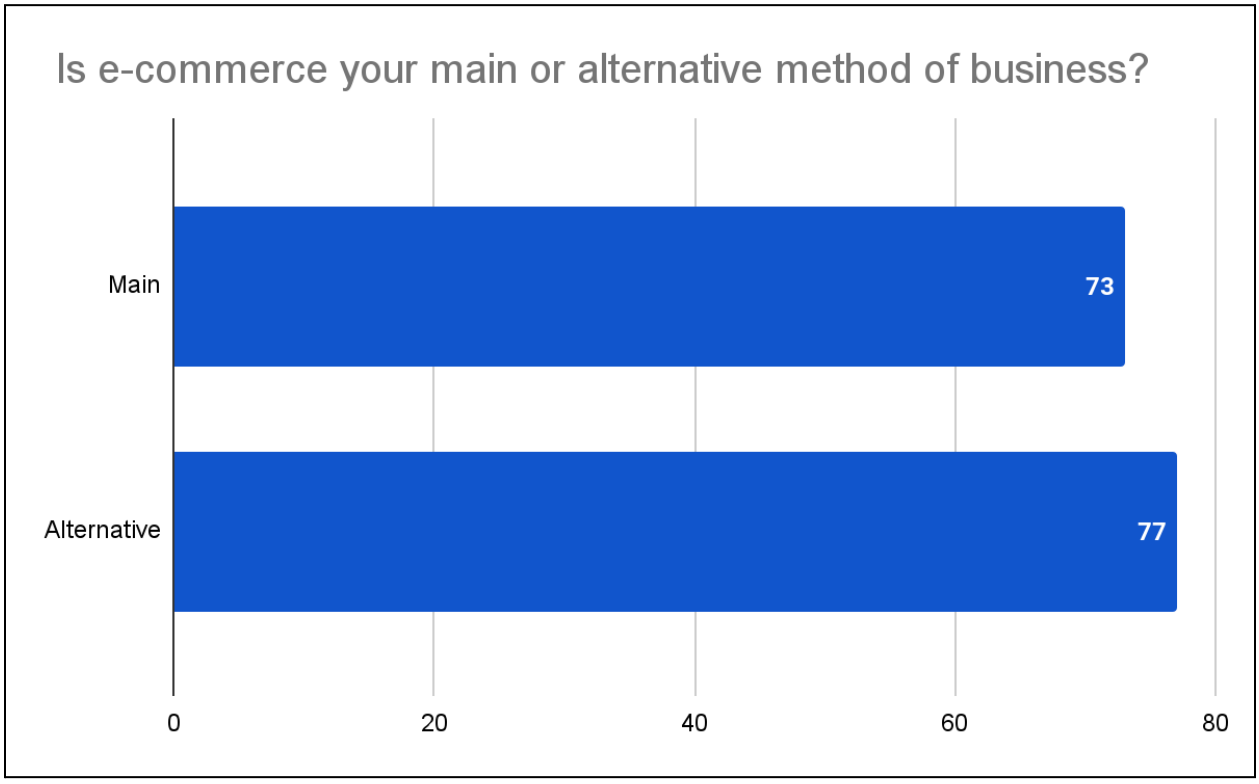
What do you normally use e-Commerce for?	Frequency	Percent (%)
Sell products	149	99.3
Purchase products	38	25.3
Promote business	93	62.0
Total	280	100.0

Source: Developed for the research

From Figure 4.7 and Table 4.7, there are 149 respondents (99.3%) who use e-commerce to sell their products. 38 respondents (25.3%) use e-commerce for purchasing products. Last but not least, 93 respondents (62.0%) use e-commerce to promote their businesses.

4.1.1.8 Is e-commerce your main or alternative method of business?

Figure 4.8 Is e-commerce your main or alternative method of business?



Source: Developed for the research

Table 4.8 Is e-commerce your main or alternative method of business?

Is e-commerce your main or alternative method of business?	Frequency	Percent (%)
Main	73	48.6
Alternative	77	51.3
Total	150	99.9

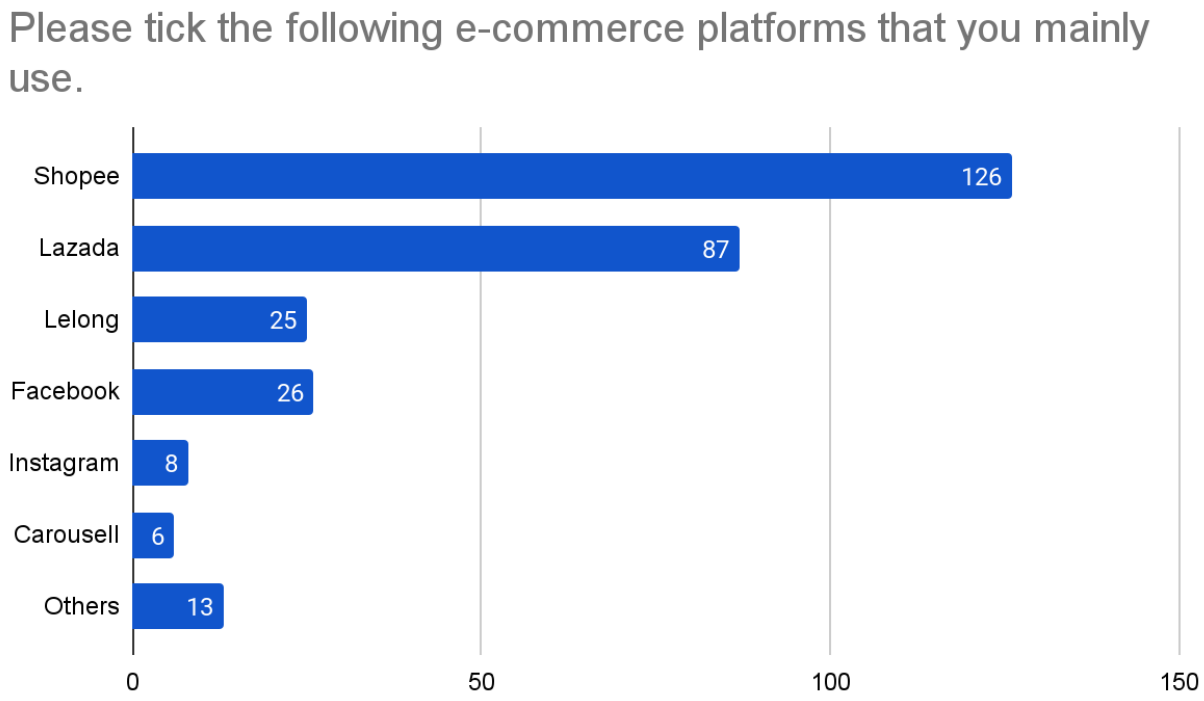
Source: Developed for the research

From Figure 4.8 and Table 4.8, there are 73 respondents (96.7%) amongst the total respondents who use e-commerce as their main method of business, and there are 77

respondents (51.3%) amongst the total respondents who use e-commerce as their alternative method of business for supplementation.

4.1.1.9 Please tick the following e-commerce platforms that you mainly use

Figure 4.9 Please tick the following e-commerce platforms that you mainly use



Source: Developed for the research

Table 4.9 Please tick the following e-commerce platforms that you mainly use

Please tick the following e-commerce platforms that you mainly use	Frequency	Percent (%)
Shopee	126	84.0
Lazada	87	58.0
Lelong	25	16.6
Facebook	26	17.3
Instagram	8	5.3
Carousell	6	4.0
Others	13	8.6
Total	291	100.0

Source: Developed for the research

From Figure 4.9 and Table 4.9, there are 16 respondents (84.0%) who use the Shopee platform. 87 respondents (58.0%) use the Lazada platform. 25 respondents (40.9%) use the Lelong platform. 26 respondents (17.3%) use the Facebook Marketplace platform. 8 respondents (2.5%) use the Instagram platform. 6 respondents (9.7%) use the Carousell platform. Last but not least, 13 respondents (1.7%) use other platforms not listed above.

4.1.2 Central Tendencies Measurement of Construct

Table 4.10 Descriptive Statistics on Variables

Variable	N	Min	Max	Mean	Std. Dev.
Perceived Usefulness (A)	5	1.40	5.00	4.0800	.72723
Perceived Ease-of-Use (B)	5	1.00	5.00	4.1107	.86932
Facilitating Conditions (C)	4	2.00	5.00	3.8033	.57169
Subjective Norms (D)	5	1.20	5.00	3.3187	.85956
Perceived Risk (E)	5	1.00	5.00	3.5187	.96129
Adoption Rate of e-Commerce (DV)	4	2.00	5.00	4.3117	.70111

Source: Developed for the research

Table 4.10 shows the descriptive statistics on perceived usefulness, perceived ease-of-use, subjective norms, facilitating conditions, perceived risk, and the adoption rate of e-commerce. From the obtained outcome, the mean of each variable ranges from 3.31 to 4.31. The adoption rate of e-commerce variables has the highest mean of 4.3117, followed by perceived ease-of-use, perceived usefulness, facilitating conditions, perceived risk, and subjective norms, which are 4.1107, 4.0800, 3.8033, 3.5187 and 3.3187 respectively. Most of the respondents agree that the most least important factor on the adoption rate of e-commerce are the subjective norms, which has the lowest mean of 3.3187 among the 5 independent variables.

As for the standard deviation, facilitating conditions have the lowest standard deviation of 0.57169, followed by adoption rate (0.70111), perceived usefulness (0.72723), facilitating conditions (0.85956), and perceived ease-of-use (0.86932). The perceived risk variable has the highest standard deviation of 0.96129.

4.2 Reliability Analysis

Table 4.11 Reliability Statistics for Actual Research

Construct	Cronbach's Alpha	Number of items	Level of Reliability
Perceived Usefulness	.810	5	Good
Perceived Ease-of-Use	.907	5	Excellent
Facilitating Conditions	.803	4	Good
Subjective Norms	.929	5	Excellent
Perceived Risk	.792	5	Acceptable
Adoption Rate of e-Commerce	.931	4	Excellent

Source: Developed for the research

Based on table 4.11, all the variables (dependent and independent) had Cronbach's Alphas of more than 0.7, which means that all of the variables are acceptable. According to the table, the perceived risk variable has a Cronbach's Alpha of 0.792, having an acceptable level of reliability, but at a value which makes it nearly close to the range of having a good level of reliability. Besides that, facilitating conditions has a Cronbach's Alpha of 0.803, falling under the good range of reliability. Last but not least, the other variables, perceived ease-of-use, subjective norms, adoption rate, have a Cronbach's Alpha of 0.907, 0.929 and 0.931 respectively, falling under the excellent range of reliability.

4.3 Pearson Correlation Analysis

Table 4.12 Correlations

		A	B	C	D	E	DV
Perceived Usefulness	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	150					
Perceived Ease-of-Use	Pearson Correlation	.750**	1				
	Sig. (2-tailed)	<.001					
	N	150	150				
Facilitating Conditions	Pearson Correlation	.608**	.567**	1			
	Sig. (2-tailed)	<.001	<.001				
	N	150	150	150			
Subjective Norms	Pearson Correlation	.596**	.559*	.415**	1		
	Sig. (2-tailed)	<.001	<.001	<.001			
	N	150	150	150	150		
Perceived Risk	Pearson Correlation	.414**	.382**	.392**	.402**	1	
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		
	N	150	150	150	150	150	
Adoption Rate of e-Commerce	Pearson Correlation	.688**	.776**	.606**	.544**	.398**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	
	N	150	150	150	150	150	150

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

Source: Developed for the research

Table 4.12 shows the results of the Pearson Correlation Analysis between the independent variables (perceived usefulness, perceived ease-of-use, facilitating conditions, subjective norms, and perceived risk) and the dependent variable (adoption rate of e-commerce). The Pearson correlation is between 0.382 and 0.776, while the significant level of all of the variables above are below 0.001. All of the variables are positively correlated as well.

Based on the table above, the variable with the greatest correlation to the adoption rate of e-commerce is perceived ease-of-use (0.776). This value indicates that there is a high positive relationship between the perceived ease-of-use variable and the adoption rate of e-commerce. The second strongest relationship is followed by perceived usefulness, with a coefficient value of 0.688. Following suit, facilitating conditions, subjective norms, and perceived risk has a coefficient value of 0.606, 0.544, and 0.398 respectively. This shows that they have a moderate positive relationship between these 3 variables and the adoption rate of e-commerce.

4.4 Multiple Linear Regressions

Table 4.13 Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	$.800^a$	.641	.628	.42748

a. Predictors: (Constant), Perceived Usefulness, Perceived Ease-of-Use, Facilitating Conditions, Subjective Norms, Perceived Risk

b. Dependent Variable: Adoption Rate of e-Commerce

Source: Developed for the research

Based on Table 4.13, *R* value is 0.800; R^2 is 0.641; and Adjusted R^2 is 0.628. Based on the outcome of the R^2, 64.1% of the variation in the dependent variable (adoption rate of

e-commerce) is influenced by the independent variables (perceived usefulness, perceived ease-of-use, facilitating conditions, subjective norms, perceived risk). Despite the 64.1% explained, there is a remaining 35.9% that remains uninfluenced. However, it is clear that the variables in this study will affect the dependent variable, which is the adoption rate of e-commerce.

Table 4.14 ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.928	5	9.386	51.361	<.001[b]
	Residual	26.314	144	.183		
	Total	73.242	149			

a. Dependent Variable: Adoption Rate of e-Commerce

b. Predictors: (Constant), Perceived Usefulness, Perceived Ease-of-Use, Facilitating Conditions, Subjective Norms, Perceived Risk

Source: Developed for the research

Table 4.14 shows the ANOVA statistics of the research. As seen in the table above, the F value is 51.361 at <0.001 significance level, so suitability for the model is confirmed, which means that the independent variables are significant in explaining the dependent variable in this research.

Table 4.15 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.483	.311		4.770	<.001
	Perceived Usefulness	.178	.078	.184	2.287	.024
	Perceived Ease-of-Use	.446	.063	.553	7.091	<.001
	Facilitating Conditions	.134	.060	.155	2.239	.027
	Subjective Norms	.080	.053	.098	1.511	.133
	Perceived Risk	.054	.041	.074	1.306	.193

a. Dependent Variable: Adoption Rate of e-Commerce

Source: Developed for the research

Table 4.15 shows the coefficients of the research. The standardized coefficient is used to determine which of the variables is the most important independent variable that will affect the adoption rate of e-commerce. The unstandardized coefficient is used to determine what effect one unit change in the independent variable will have on the dependent variables.

Based on the unstandardized coefficients, 0.178 changes on perceived usefulness when there is a unit change in adoption rate of e-commerce. 0.446 changes on perceived ease-of-use when there is a unit change in adoption rate of e-commerce. 0.134 changes on facilitating conditions when there is a unit change in adoption rate of e-commerce. 0.080 changes in

subjective norms when there is a unit change in the adoption rate of e-commerce. 0.054 changes in perceived risk when there is a unit change in adoption rate of e-commerce.

The multiple regression equation can be formed as below:

$$\gamma = \alpha + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \beta_4\chi_4 + \beta_5\chi_5$$

Whereas:

γ= Adoption Rate of e-Commerce

α= Constant term, Value of $\gamma$when χ becomes zero

χ_1= Dimension of adoption rate of e-commerce

β_1= Perceived Usefulness

β_2= Perceived Ease-of-Use

β_3= Facilitating Conditions

β_4= Subjective Norms

β_5= Perceived Risk

Therefore, the equation for multiple linear regression is stated as below:

Adoption Rate of e-Commerce = (1.483) + (0.178)(Perceived Usefulness) + (0.446)(Perceived Ease-of-Use) + (0.134)(Facilitating Conditions) + (0.080)(Subjective Norms) + (0.054)(Perceived Risk)

The standardized coefficient shows perceived ease-of-use with a beta of 0.553 is the most significant factor that influences the adoption rate of e-commerce; followed by perceived usefulness with a beta of 0.184; followed by facilitating conditions with the beta of 0.155;

followed by subjective norms with the beta of 0.098. Perceived risk is the least important factor with a beta of 0.074.

4.5 Test of Significance

Hypothesis 1

H_1: Perceived usefulness has a positive effect on the attitude towards e-commerce adoption.

Table 4.15 shows the p-value of perceived usefulness (p = 0.024) is less than significance level of 0.05, so H_{1a} is supported. Thus, there is a significant relationship between perceived usefulness and the adoption rate of e-commerce.

Hypothesis 2

H_2: Perceived ease-of-use has a positive effect on the attitude towards e-commerce adoption.

Table 4.15 shows the p-value of perceived ease-of-use (p = 0.001) is less than significance level of 0.05, so H_{1b} is supported. Thus, there is a significant relationship between perceived ease-of-use and the adoption rate of e-commerce.

Hypothesis 3

H_3: Facilitating conditions have a direct positive effect on the attitude towards e-commerce adoption.

Table 4.15 shows the p-value of facilitating conditions (p = 0.027) is less than significance level of 0.05, so H_2 is supported. Thus, there is a significant relationship between facilitating conditions and the adoption rate of e-commerce.

Hypothesis 4

H_4: Subjective norms have a direct positive effect on the attitude towards e-commerce adoption.

Table 4.15 shows the p-value of subjective norms ($p = 0.133$) is more than significance level of 0.05, so H_4 is not supported. Thus, there is no significant relationship between subjective norms and the adoption rate of e-commerce.

Hypothesis 5

H_5: Perceived risk has a direct negative effect on the attitude towards e-commerce adoption.

Table 4.15 shows the p-value of subjective norms ($p = 0.193$) is more than significance level of 0.05, so H_5 is not supported. Thus, there is no significant relationship between perceived risk and the adoption rate of e-commerce.

4.6 Conclusion

In conclusion, the descriptive analysis described the respondents' demographic profile in Chapter 4. In addition, the data collected has been measured in the central tendencies measurement constructs for the dependent variable and independent variables. Multiple linear regression has been used between all constructs. Lastly, further discussion and findings will be carried out in Chapter 5.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

In this chapter, the data that has been collected and assessed in the previous chapter will be discussed further. This section will provide an in-depth discussion on the research results on the relationship between the independent variables and the dependent variable. This topic will cover a summary of the statistical findings, discussion, implications, and limitations of the study. Last but not least, a conclusion will be derived from this research project.

5.1 Summary of Statistical Analyses

5.1.1 Descriptive Analysis

Table 5.1 Summary of Demographic Profile

Demographic Profile	Categories	Frequency	Percentage (%)
Age	1-19 years old	0	0.0
	20-29 years old	62	41.3
	30-39 years old	43	28.6
	40-49 years old	36	24.0
	50+ years old	9	6.0
Gender	Male	113	75.3
	Female	37	24.6
Education Level	SPM	11	7.3
	Diploma	20	13.3
	Undergraduate	80	53.3
	Postgraduate	36	24.0
	PhD	3	2.0
Location	Kuala Lumpur	134	89.3
	Others	16	10.7

Source: Developed for research

Throughout this research, a total amount of 150 sets of responses have been collected with questionnaires that have been distributed through the internet. All of the questionnaires have been checked and proven to be valid and usable.

Table 5.1 is a summary of the demographic profile of the collected respondents. The largest age group of respondents are from the age in between 20 to 29 years old, which consists of 62 respondents (41.3%), which is a clear majority. As for the

smallest age group, the research was only able to collect 0 respondents (0.0%), which are from the youngest age group of 1-19 years old.

Furthermore, the gender of the respondents is mostly male, as we have a total of 113 male respondents (75.3%) and 37 female respondents (24.6%).

Last but not least, the collected respondents' locations are mainly located in Kuala Lumpur, having the amount of 134 respondents (89.3%).

Table 5.2 Summary of General Information

General Information	Categories	Frequency	Percentage (%)
Do you use more than one e-commerce site?	Yes	134	89.3
	No	16	10.6
How often do you use e-commerce?	Never	0	0.0
	Rarely (Monthly)	13	8.6
	Frequently (Weekly)	74	49.3
	Daily	63	42.0
What do you normally use e-commerce for?	Sell products	149	99.3
	Purchase products	38	25.3
	Promote business	93	62.0
Is e-commerce your main or alternative method of business?	Main	73	48.6
	Alternative	77	51.3
Please tick the following e-commerce platforms that you mainly use.	Shopee	126	84.0
	Lazada	87	58.0
	Lelong	25	16.6
	Facebook	26	17.3
	Instagram	8	5.3
	Carousell	6	4.0
	Others	13	8.6

Source: Developed for research

Table 5.2 shows the summary of the respondents' general information that has been collected in regards to the e-commerce system. The information shows that a majority of the respondents does use more than one e-commerce site, as the amount collected is 134 respondents (89.3%). Only 16 respondents (10.6%) have stated that they only use one e-commerce site.

Besides that, in regards to their usage frequency, the largest group of respondents would be users that use e-commerce on a frequent or weekly basis, with an amount of 74 respondents (49.3%). This ranking is followed by users that use e-commerce on a daily basis, with an amount of 63 respondents (42.0%). Lastly, only 13 respondents (8.6%) have stated that they use e-commerce on a rare, monthly basis..

As for the purpose for them using e-commerce, 149 respondents (99.3%) mainly use e-commerce to sell their products. On a less frequent basis, 93 respondents (62.0%) would use e-commerce to promote their business. This order is followed by 38 respondents (25.3%) , who use e-commerce to purchase products online.

Furthermore, in terms of popularity, the most commonly used e-commerce in Malaysia, based on the data collected, is Shopee, with a total of 126 respondents (84.0%). The second most popular e-commerce would be Lazada, with an amount of 87 respondents (58.0%). Lelong and Facebook have similar numbers of 25 (16.6%) and 26 (17.3%) respondents respectively. There is a minority of respondents that also use Instagram and Carousell, which were 8 (5.3%) and 6 (4.0%) respondents respectively. Last but not least, 13 respondents (8.6%) uses an e-commerce that is not stated above, but there is no clear majority to justify an additional input.

5.1.2 Reliability Analysis

Table 5.3 Summary of Reliability Statistic

Construct	Cronbach's Alpha Coefficients
Perceived Usefulness	.810
Perceived Ease-of-Use	.907
Facilitating Conditions	.803
Subjective Norms	.929
Perceived Risk	.792
Adoption Rate of e-Commerce	.931

Source: Developed for research

According to Table 5.3, which is a summary of the correlations after testing it with the cronbach's alpha analysis. All of the variables have a coefficient greater than 0.7, which means that they are all acceptable results. Three of the variables, which are perceived ease-of-use (0.907) subjective norms (0.929), and adoption rate of e-commerce (0.931), have an excellent level of reliability. Next, both perceived usefulness (0.810) and facilitating conditions (0.803) have a good level of reliability. Last but not least, perceived risk (0.792) has an acceptable level of reliability. Note that the value for perceived risk is closer to being a good level of reliability.

5.1.3 Pearson Correlation Analysis

Table 5.4 Summary of Pearson Correlation Analysis

		Perceived Usefulness	Perceived Ease-of-Use	Facilitating Conditions	Subjective Norms	Perceived Risk
Adoption Rate of e-Commerce	Pearson Correlation	0.688	0.776	0.606	0.544	0.398
	P-Value	<0.001	<0.001	<0.001	<0.001	<0.001
	Strength of Association	Moderate Positive Correlation	High Positive Correlation	Moderate Positive Correlation	Moderate Positive Correlation	Moderate Positive Correlation

Source: Developed for research

Table 5.4 summarizes the correlation between the adoption rate of e-commerce and the 5 independent variables accordingly, with perceived usefulness (0.688), perceived ease-of-use (0.776), facilitating conditions (0.606), subjective norms (0.544), and perceived risk (0.398).

5.1.4 Multiple Linear Regression

Table 4.13 shows that the 4 independent variables can explain 64.1% of the variation in the dependent variable, which is the adoption rate of e-commerce. Aside from that, the F value is 51.361 at <0.001 significance level based on table 4.14, so suitability for the model is confirmed. Unfortunately, table 4.15 shows that only 3 out of 5 (perceived usefulness, perceived ease-of-use, and facilitating conditions) variables are significant, whereas the 2 other independent variables have been deemed insignificant in affecting the adoption rate of e-commerce.

5.2 Discussion of Major Findings

Table 5.5 Major Findings on Hypothesis Testing

No.	Hypothesis	Significance Level	Conclusion
H_1	Perceived usefulness has a positive effect on the attitude towards e-commerce adoption.	$\beta = 0.178$ $\rho = 0.024 < 0.05$	Supported
H_2	Perceived ease-of-use has a positive effect on the attitude towards e-commerce adoption.	$\beta = 0.446$ $\rho = 0.001 < 0.05$	Supported
H_3	Facilitating conditions have a direct positive effect on the attitude towards e-commerce adoption.	$\beta = 0.134$ $\rho = 0.027 < 0.05$	Supported
H_4	Subjective norms have a direct positive effect on the attitude towards e-commerce adoption.	$\beta = 0.080$ $\rho = 0.133 > 0.05$	Not Supported
H_5	Perceived risk has a direct negative effect on the attitude towards e-commerce adoption.	$\beta = 0.054$ $\rho = 0.193 > 0.05$	Not Supported

Source: Developed for research

The result shows the important determinants in influencing the adoption rate of e-commerce are perceived usefulness, perceived ease-of-use, facilitating conditions, subjective norms, and perceived risk.

5.2.1 Relationship between perceived usefulness and adoption rate of e-commerce

Table 5.5 shows that the p-value of perceived usefulness ($p = 0.024$) is less than the significance level of 0.05 with a positive β- value of 0.178. Thus, it is shown that there is a significant relationship between usefulness and the adoption rate of e-commerce.

This result is consistent with several past studies. According to Kabir et al. (2017), their study shows that perceived usefulness is a key factor in their research. According to their research, usefulness is one of the top dominant independent variables prior research constantly used to adopt electronic payment systems, which are closely tied with e-commerce.

Furthermore, there is a positive significant relationship between usefulness and the adoption rate of e-commerce for males. According to Chen & Nath (2008), male users are more likely to adopt e-commerce, compared to females. Males place a greater emphasis on "usefulness" while women place a greater emphasis on "ease of use" when determining the intentions to adopt (Venkatesh & Morris, 2000).

5.2.2 Relationship between perceived ease-of-use and adoption rate of e-commerce

Table 5.5 shows that the p-value of perceived ease-of-use ($p = 0.001$) is less than the significance level of 0.05 with a positive β- value of 0.446. Thus, it is shown that there is a positive significant relationship between perceived ease-of-use and the adoption rate of e-commerce.

This result is similar to past studies. According to Goel (2019), one of the advantages that e-commerce has is ease-of-use. This allows the economy to grow at an improved rate as transactions are done in a faster and easier fashion around the country. Bezovski (2016) specifically mentions that the adoption of e-commerce will depend on various factors, such as convenience, as it influences the consumers' preference and willingness to adopt the usage of the newly introduced technology to be integrated into daily use.

The study by Kalra & Batra (2016) also shows a gradual growth in the era of digital commerce in India. According to the study, the Indian community prefers having e-commerce as it is time saving, easy to use, and has a high degree of accessibility. In the long run, Malaysia will experience a similar cause and effect as well, provided that the infrastructures required to use e-commerce, continues to be built and improved upon.

5.2.3 Relationship between facilitating conditions and adoption rate of e-commerce

Table 5.5 shows that the p-value of perceived ease-of-use ($p = 0.027$) is less than the significance level of 0.05 with a positive β- value of 0.134. Thus, it is shown that there is a positive significant relationship between facilitating conditions and the adoption rate of e-commerce.

In similar studies, Algamash (2022) states that facilitating conditions has a positive influence on actual use behavior. Provided that the system has adequate resources and capabilities, consumers will use e-commerce extensively. The infrastructure also requires access to government resources, and good support from web-store specialized instructors.

Furthermore, facilitating conditions have been imperative in the implementation of other similar systems related to the digital economy, such as m-commerce, mobile payment, and e-transactions (Mustafa, 2022). These functionalities come hand in hand with e-commerce as it provides an alternative method of payment for e-commerce as well.

5.2.4 Relationship between subjective norms and adoption rate of e-commerce

Table 5.5 shows that the p-value of subjective norms ($p = 0.133$) is higher than the significance level of 0.05. Thus, it is shown that there is no significant relationship between subjective norms and the adoption rate of e-commerce.

Aydin (2016) has also found in his study that social influence brings a small impact on the use intentions of mobile wallets. He credits this reasoning to the low number of users in this new product category. Fortunately, consumers' attitudes are influenced by individual factors or perceptions. Perceptions specifically, can be influenced by direct marketing activities.

The results of this study are inconsistent with prior studies. Yang et al. (2012) states that social influence has a strong direct influence during the initial phases of the adoption of a new technology. Therefore, the opinions of friends, colleagues and relatives would greatly impact the decision to adopt the usage of e-commerce.

5.2.5 Relationship between perceived risk and adoption rate of e-commerce

Table 5.5 shows that the p-value of perceived risk (p = 0.193) is higher than the significance level of 0.05. Thus, it is shown that there is no significant relationship between perceived risk and the adoption rate of e-commerce.

According to Teoh et al. (2013), security and trust is found to be insignificant in affecting the perception towards e-commerce in Malaysia as well. This is because they are increasingly acknowledging the steps taken by many banking institutions and online transaction facility providers to address the challenges associated with security. However, adequate attention has yet to be paid in regards to security issues.

The results of this study are inconsistent with prior studies, such as Laforet and Li (2005). Their study shows that security issues were the most important factor that motivated the consumer adoption of online banking in China. Therefore, it is possible that the results may differ depending on the country itself, as they have different opinions and priorities in terms of the usage of e-commerce.

5.3 Implications of the Study

5.3.1 Managerial Implication

The results of this study would generally contribute some insight on the topic to several parties in today's society. One of the parties that can benefit from this study are e-commerce platform providers and future entrepreneurs who are interested in entering the market by providing more online shops in the future. The data collected from this particular study, would allow them to gauge the priorities of the Malaysian citizens, when it comes to the most significant aspects of e-commerce that they particularly like to use. The data in this study states that Malaysian citizens put a greater emphasis on ease-of-use, whereas they do not consider risk to be an issue for e-commerce. Furthermore, by using this data, it will allow the government to analyze the public opinion, and may serve as proof in order to incentivize the building of more technological infrastructures that will be used to support the usage of e-commerce.

5.3.1.1 Perceived Usefulness

In this study, it shows that there is a significant relationship between perceived usefulness and the adoption rate of e-commerce. Thus, perceived usefulness is one of the main considerations for users for people when deciding to use the e-commerce platform. Therefore, e-commerce platform providers should focus on improving other aspects of their services, mainly the aspect of usefulness.

5.3.1.2 Perceived Ease-of-Use

According to this study, it shows that there is a significant positive relationship between perceived ease-of-use and the adoption rate of e-commerce. A greater emphasis on ease-of-use will likely increase transaction volumes via e-commerce. In fact, ease-of-use can be utilized as a prominent selling point for e-commerce platforms.

5.3.1.3 Facilitating Conditions

In this study, there is a significant relationship between facilitating conditions and the adoption rate of e-commerce. This is because a proper infrastructure is required in order to be able to use e-commerce, and improves upon the accessibility of the platform. Having proper facilitating conditions would be a quality of life improvement for both users and merchants alike. In areas where the infrastructure is not properly built, the community tends to disregard e-commerce as a proper main or alternative choice.

5.3.1.4 Subjective Norms

This study shows that there is no significant relationship between subjective norms and the adoption rate of e-commerce. This is probably because subjective norms are a dominant factor in affecting the intentions of use at the early stages of a new product development. Therefore, it is not as dominant as e-commerce is becoming a common norm in today's society. However, e-commerce platform providers should capitalize on the fact that the perceptions of their services can now be influenced by direct marketing.

5.3.1.5 Perceived Risk

Based on this study, there is no significant relationship between perceived risk and the adoption rate of e-commerce. Unlike other countries, Malaysia is less concerned with the security issues of online merchanting. However, this does not mean that e-commerce platform providers should stop prioritizing security altogether. Malaysian users are known to believe in acknowledging the steps taken by many banking institutions and online transaction facility providers to address the challenges associated with security. Moving forward, e-commerce in general should maintain an adequate level of security for their services, as the digital economy continues to grow.

5.4 Limitations of the Study

5.4.1 Limited Geographical Coverage

For this particular research, the study mainly covers Kuala Lumpur. The data collected from Kuala Lumpur is not enough to represent the entire country. Furthermore, Kuala Lumpur is well known for being technological hubs, whereas there are several locations in the country which do not have access to similar technological infrastructures.

5.4.2 Small Sampling Size

Having a small number of respondents is a considerable limitation in this study. The 150 respondents collected is considered as a small sampling size as it is not enough to represent Malaysia in its entirety. The results of the study may change depending on the amount of respondents collected.

5.4.3 Lack of Data from Quantitative Method

The data collected from this study mainly stems from close-ended questions, which does not cover the opinions of the respondents entirely. There are more variables to be considered when it comes to the adoption rate of e-commerce, and many more to come in the near future. Therefore, doing research based solely on quantitative data may prevent certain variables from being collected and analyzed.

5.5 Recommendations for Future Research

5.5.1 Larger Geographical Coverage

Due to its severe geographical limitation, this study was only able to mainly collect data from Kuala Lumpur, which is one of the technological hubs in the country. The data collected is not adequate to represent the more rural states in the country, and therefore cannot represent the data in Malaysia entirely. As a recommendation, future studies should include locations from all around the country in a balanced fashion in order to ensure that the data is well represented. As an alternative, future studies could also consider targeting only specific locations that have an equal level of technological infrastructures.

5.5.2 Larger Sampling Size

In the long run, having a larger sampling size will allow the data collected to better represent the targeted respondents better. As a recommendation, future researchers should increase the sample size, including respondents from multiple locations, at a fair ratio. This will allow the data to be more precise and have more dependable outcomes collected from the larger sample size.

5.5.3 Additional Qualitative Data

As a controversial field of study, a society may have very differing opinions based on their locations on the adoption rate of e-commerce. In order to cover more possibilities, future studies should use both quantitative and qualitative methods of data collection in order to ensure that the data used is not strictly limited to the questions provided in the questionnaire. The additional data collected will allow the

study's credibility and accuracy to be more enhanced, and allow further discussions in regards to any topics related to this study.

5.6 Conclusion

In conclusion, this study has successfully achieved its research objective, which is to measure the relationship between the factors of the Digital Economy and the adoption rate of e-commerce. However, not all the independent variables of this study have proven to be a significant relationship with the dependent variable. Only three out of five of the independent variables are proven to have a significant relationship with the dependent variable, which is perceived usefulness, perceived ease-of-use, and facilitating conditions.

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UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF ACCOUNTANCY AND MANAGEMENT

MASTER OF BUSINESS ADMINISTRATION (MBA)

QUESTIONNAIRE SURVEY

Determinants of E-Commerce Adoption in Kuala Lumpur: Testing the Mediation Effects of Perceived Ease of Use and Perceived Usefulness

Dear respondents,

My name is Ciputra Tanaka, an undergraduate student from Universiti Tunku Abdul Rahman (UTAR), Faculty of Accountancy and Management (FAM), majoring in the Master of Business Administration (MBA). I am currently conducting a research study on the topic, "**Determinants of E-Commerce Adoption in Kuala Lumpur: Testing the Mediation Effects of Perceived Ease of Use and Perceived Usefulness**". The objective of this study is to understand the relationship between the **factors of the Digital Economy** (Perceived Usefulness, Perceived Ease-of-Use, Subjective Norms, Facilitating Conditions, and Perceived Risk) and the **adoption rate of e-Commerce.**

This questionnaire consists of three parts and will take roughly 10 minutes to complete. Please be informed that all the information collected will be kept confidentially.

I appreciate your cooperation and time to complete the questionnaires. Your effort would assist me in achieving a more comprehensive analysis for my research project.

Thank you for your participation.

Part One: General Information of Target Respondents

Please tick (√) your answer for each question below to assist in the research.

Target respondents: e-Commerce business owners (refer to Part Two) that use an e-commerce platform (Lazada, Shopee, Facebook, etc.) as their main/alternative method of business channel.

1. What is your gender?

   ☐ Male ☐ Female

2. What is your age range?

   ☐ 1 - 19 ☐ 40 - 49

   ☐ 20 - 29 ☐ 50+

   ☐ 30 - 39

3. What is your highest education level?

   ☐ SPM ☐ Postgraduate

   ☐ Diploma ☐ PhD

   ☐ Undergraduate

4. Where is your business located?

   ☐ Kuala Lumpur ☐ Others

5. How many months of experience do you have with e-Commerce?

- ☐ 0 - 3 months
- ☐ 4 - 12 months
- ☐ 13 months+

6. Do you use more than one e-Commerce site?

- ☐ Yes
- ☐ No

7. How often do you use e-Commerce?

- ☐ Never
- ☐ Rarely (Monthly)
- ☐ Occasionally (Weekly)
- ☐ Frequently (Daily)

8. What do you normally use your e-Commerce for?

- ☐ Sell products
- ☐ Purchase products/materials
- ☐ Promote business
- ☐ Main method of business
- ☐ Alternative method of business

9. Please tick the following e-Commerce platforms that you mainly use.

- ☐ Shopee
- ☐ Lazada
- ☐ Lelong
- ☐ Facebook
- ☐ Instagram
- ☐ eBay
- ☐ Carousell
- ☐ Others

Part Two: Variables that may influence Adoption Rate of e-Commerce

In this part, there are five variables (based on the Digital Economy) that may influence the adoption rate of e-Commerce. The variables include Perceived Usefulness, Perceived Ease-of-Use, Subjective Norms, Facilitating Conditions, and Perceived Risk.

Please indicate how strongly you agree or disagree with the following statements by circling the number from 1 to 5, where:

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

	Statements	SD	D	N	A	SA
	Adoption Rate of e-Commerce:					
IV1	I use e-commerce on a regular basis.	1	2	3	4	5
IV2	I use-commerce only on specific occasions.	1	2	3	4	5
IV3	I intend to use e-commerce more in the future.	1	2	3	4	5
IV4	I do not intend to stop using e-commerce in the future.	1	2	3	4	5
	Perceived Usefulness:					
A1	I believe e-commerce is an effective method of sale.	1	2	3	4	5
A2	I believe e-commerce may increase my business productivity.	1	2	3	4	5
A3	I believe e-commerce is beneficial for my business.	1	2	3	4	5

A4	I believe e-commerce saves me time.	1	2	3	4	5
A5	I believe that e-commerce was a useful payment system during the COVID-19 pandemic.	1	2	3	4	5
	Perceived Ease-of-Use:					
B1	I find e-commerce as an easier method of business.	1	2	3	4	5
B2	E-commerce payment systems help me be flexible in transactions.	1	2	3	4	5
B3	I can proficiently use the e-commerce system.	1	2	3	4	5
B4	I find e-commerce transactions to be time-saving.	1	2	3	4	5
B5	I can interact with the e-commerce system clearly.	1	2	3	4	5
	Facilitating Conditions:					
C1	I always have access to internet services to support my online business.	1	2	3	4	5

C2	I can access the platform on different devices.	1	2	3	4	5
C3	The platform provides walk-through support for new business owners.	1	2	3	4	5
C4	The platform helps me provide after-sale support.	1	2	3	4	5
	Subjective Norms:					
D1	Important people that I know (family/relatives/friends) are using e-commerce.	1	2	3	4	5
D2	Important people that I know (family/relatives/ friends) help me use e-commerce when I meet difficulties.	1	2	3	4	5
D3	Communities which I take part in are using e-commerce.	1	2	3	4	5
D4	Using e-commerce is considered a status symbol among my friends.	1	2	3	4	5

D5	I have received support and guidance from the business platforms on issues related to the use of e-commerce.	1	2	3	4	5
	Perceived Risk:					
E1	E-commerce payment system ensures to keep my information intact.	1	2	3	4	5
E2	I believe that my personal information is safe when using e-commerce.	1	2	3	4	5
E3	I believe that my transactions will stay private and protected when using e-commerce.	1	2	3	4	5
E4	I believe that my personal information is protected via the e-commerce database.	1	2	3	4	5
E5	I believe that the e-commerce payment system always has a plan to prepare to deal with risks and ensure data security.	1	2	3	4	5

Your assistance has made it possible for me to do this research. Once again, thank you for participating in this questionnaire.

Sincerely,

Ciputra Tanaka

Appendix B: SPSS Output

Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
MEAN_DV	150	2.00	5.00	4.3117	.70111
MEAN_A	150	1.40	5.00	4.0800	.72723
MEAN_B	150	1.00	5.00	4.1107	.86932
MEAN_C	150	2.00	5.00	3.8033	.57169
MEAN_D	150	1.20	5.00	3.3187	.85956
MEAN_E	150	1.00	5.00	3.5187	.96129
Valid N (listwise)	150				

Reliability Analysis

Adoption Rate of e-Commerce

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.827	.833	4

Perceived Usefulness

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.810	.822	5

Perceived Ease-of-Use

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.907	.907	5

Facilitating Conditions

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.799	.803	4

Subjective Norms

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.792	.796	5

Perceived Risk

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.931	.931	5

Pearson Correlation Analysis

Correlations

		MEAN_DV	MEAN_A	MEAN_B	MEAN_C	MEAN_D	MEAN_E
MEAN_DV	Pearson Correlation	1	.688**	.776**	.606**	.544**	.398**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001	<.001
	N	150	150	150	150	150	150
MEAN_A	Pearson Correlation	.688**	1	.750**	.608**	.596**	.414**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001	<.001
	N	150	150	150	150	150	150
MEAN_B	Pearson Correlation	.776**	.750**	1	.567**	.559**	.382**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001	<.001
	N	150	150	150	150	150	150
MEAN_C	Pearson Correlation	-.053	.007	-.048	1	.069	.064
	Sig. (2-tailed)	<.001	<.001	<.001		<.001	<.001
	N	150	150	150	150	150	150
MEAN_D	Pearson Correlation	.544**	.596**	.559**	.415**	1	.402**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001
	N	150	150	150	150	150	150
MEAN_E	Pearson Correlation	.398**	.414**	.382**	.392**	.402**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	
	N	150	150	150	150	150	150

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

Multiple Linear Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Selection Criteria: Akaike Information Criterion	Amemiya Prediction Criterion	Mallows' Prediction Criterion	Schwarz Bayesian Criterion
1	.800[a]	.641	.628	.42748	-249.079	.389	6.000	-231.015

a. Predictors: (Constant), MEAN_E, MEAN_C, MEAN_B, MEAN_D, MEAN_A

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.928	5	9.386	51.361	<.001[b]
	Residual	26.314	144	.183		
	Total	73.242	149			

a. Dependent Variable: MEAN_DV

b. Predictors: (Constant), MEAN_E, MEAN_C, MEAN_B, MEAN_D, MEAN_A

Coefficients[a]

Model		Unstandardized Coefficients: B	Unstandardized Coefficients: Std. Error	Standardized Coefficients: Beta	t	Sig.
1	(Constant)	1.483	.311		4.770	<.001
	MEAN_A	.178	.078	.184	2.287	.024
	MEAN_B	.446	.063	.553	7.091	<.001
	MEAN_C	.134	.060	.155	1.274	.027
	MEAN_D	.080	.053	.098	1.511	.133
	MEAN_E	.054	.041	.074	1.306	.193

a. Dependent Variable: MEAN_DV