

**MEASURING THE EFFECTIVENESS OF
TRANSPORTATION APPLICATIONS AMONG SAL
STUDENTS IN UMK PENKALAN CHEPA**

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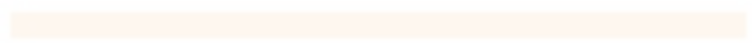
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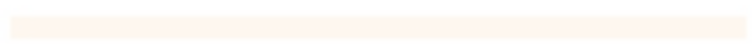
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Measuring The Effectiveness of Transportation Applications Among Sal Students in UMK Pengkalan Chepa

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A thesis submitted in fulfillment of the requirements for the degree of
Entrepreneurship (Logistics and Distributive Trade) with Honours

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2024

THESIS DECLARATION

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LIST OF ABBREVIATIONS

Abbreviations	List
UMK	Universiti Malaysia Kelantan
SAL	Bachelor of Entrepreneurship (Logistics and Distributive Trade) with Honours

ABSTRACT

Transportation application services are experiencing a growing popularity in Malaysia. Transportation applications have significantly enhanced the convenience and advantages for students by facilitating their everyday travel to various destinations. The aim of this study is to assess the satisfaction of SAL students at UMK Pengkalan Chepa with transport applications, analyse the connection between payment security and the effectiveness of these applications, evaluate the impact of accessibility on their effectiveness, and identify the relationship between time accuracy and their effectiveness. The scope of this study aligns with the research question and research aims. This study utilized a quantitative technique to determine the entire population of SAL students at UMK Pengkalan Chepa, which was found to be around 783 students. Therefore, a sample size of 260 respondents was necessary to complete the questionnaire. The researcher utilized the Google Form platform to administer the questionnaire and employed the WhatsApp application as a communication medium with the responders. The study employed quantitative research methods. The data was analyzed using SPSS software, employing descriptive analysis, reliability testing, Pearson correlation coefficient, and hypothesis testing. This study highlights the significant significance of addressing customer satisfaction, payment security, accessibility, and timeliness in transportation applications to enhance overall effectiveness. It emphasizes the need for customized improvements that align with the specific requirements of SAL students at UMK Pengkalan Chepa, aiming for a more gratifying and efficient transportation experience. The study suggests that future research should address the constraints, such as the limited sample size, by including a larger student population. Additionally, the study proposes enhancing the practical applications of the findings. The results emphasize the importance of customizing enhancements to address the unique requirements of students, so guaranteeing a more gratifying and streamlined transit experience. The recommendations encompass increasing the diversity of the student population, improving the implementation of practical skills, and optimizing the integration of university systems. This study presents the findings and evaluates the feasibility of achieving the study's objectives. This research includes references to enhance the investigation of elements that impact the efficacy of transport applications among students.

ABSTRAK

Perkhidmatan aplikasi pengangkutan mengalami populariti yang semakin meningkat di Malaysia. Aplikasi pengangkutan telah meningkatkan kemudahan dan kelebihan pelajar dengan ketara dengan memudahkan perjalanan harian mereka ke pelbagai destinasi. Matlamat kajian ini adalah untuk menilai kepuasan pelajar SAL di UMK Pengkalan Chepa dengan aplikasi pengangkutan, menganalisis hubungan antara keselamatan pembayaran dan keberkesanan aplikasi ini, menilai kesan kebolehpasaran terhadap keberkesananannya, dan mengenal pasti hubungan antara ketepatan masa dan keberkesananannya. Skop kajian ini selari dengan persoalan kajian dan matlamat kajian. Kajian ini menggunakan teknik kuantitatif untuk menentukan keseluruhan populasi pelajar SAL di UMK Pengkalan Chepa yang didapati sekitar 783 pelajar. Oleh itu, saiz sampel sebanyak 260 responden diperlukan untuk melengkapkan soal selidik. Pengkaji menggunakan platform Google Form untuk mentadbir soal selidik dan menggunakan aplikasi WhatsApp sebagai medium komunikasi dengan responden. Kajian ini menggunakan kaedah kajian kuantitatif. Data dianalisis menggunakan perisian SPSS, menggunakan analisis deskriptif, ujian kebolehppercayaan, pekali korelasi Pearson, dan ujian hipotesis. Kajian ini menyerlahkan kepentingan penting dalam menangani kepuasan pelanggan, keselamatan pembayaran, kebolehpasaran dan ketepatan masa dalam aplikasi pengangkutan untuk meningkatkan keberkesanan keseluruhan. Ia menekankan keperluan untuk penambahbaikan tersuai yang selaras dengan keperluan khusus pelajar SAL di UMK Pengkalan Chepa, bertujuan untuk pengalaman pengangkutan yang lebih memuaskan dan cekap. Kajian itu mencadangkan bahawa penyelidikan masa depan harus menangani kekangan, seperti saiz sampel yang terhad, dengan memasukkan populasi pelajar yang lebih besar. Di samping itu, kajian ini mencadangkan untuk meningkatkan aplikasi praktikal penemuan. Hasilnya menekankan kepentingan menyesuaikan peningkatan untuk menangani keperluan unik pelajar, jadi menjamin pengalaman transit yang lebih memuaskan dan diperkemas. Cadangan tersebut merangkumi peningkatan kepelbagaian populasi pelajar, menambah baik pelaksanaan kemahiran praktikal, dan mengoptimalkan integrasi sistem universiti. Kajian ini membentangkan dapatan dan menilai kebolehlaksanaan untuk mencapai objektif kajian. Penyelidikan ini termasuk rujukan untuk mempertingkatkan penyiasatan elemen yang memberi kesan kepada keberkesanan aplikasi pengangkutan dalam kalangan pelajar.

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Nowadays, most people have lived their daily life with new trends. The development of advanced technology already made an increase in the use of smartphones. The use of information and communication technology has brought many benefits in all areas of administration in a country (Thulasimani Munohsamy 2014). Most individuals possess personal mobile devices with built-in internet connectivity, enabling them to make use of a diverse range of mobile applications. The use of the internet, everything can be done faster and easier. Along with the progress, various smart applications have been created to meet the demand of customers to use their services. It also affects trend changes in public service. As in recent times, people usually only use taxis, buses, and electronic train services (ETS) to move from one destination to another. However, with the current sophisticated modernization there are now e-hailing transport services such as GrabCar, Maxim and Uber. It makes customers have various options according to their needs and wants. This smart application makes it easy for customers because they can download this software themselves through AppStore or Play Store without any charge.

Public transportation holds a crucial role for people, particularly those residing in suburban regions. The demand for such services is swiftly escalating in response to population growth in these areas. University students in Malaysia commonly rely on bus, taxi, and (ETS) for their transportation needs, including commuting to nearby places, visiting hometowns, and purchasing essentials like groceries and food. E-hailing or ridesharing applications services operate through online platforms and mobile applications, connecting passengers with private drivers through location-sharing networks. Numerous studies have indicated that transportation applications are particularly favored by younger demographics due to appealing features like shorter wait times, efficient route planning, and a reduced risk of driving under the influence. These services broaden transportation options for both urban and suburban residents. In the competitive landscape of the transportation industry, companies are compelled to prioritize crucial aspects of customer management, including nurturing long-term relationships between the organization, its staff, and its clientele. Amongst these, customer satisfaction emerges as a pivotal element. An understanding of these challenges is instrumental in enabling transportation applications of e-hailing service providers to enhance the quality of their offerings.

The evolution of transportation applications has ushered in a new era of mobility solutions, reshaping how individuals traverse urban landscapes. Among the diverse user base, university students in Malaysia have emerged as a prominent demographic, relying extensively on these digital platforms to meet their multifaceted transportation needs. In this dynamic context, it becomes imperative to critically assess the effectiveness of these applications tailored to the specific requirements of the student community. This study delves into the intricate interplay between various key variables, including customer satisfaction, safety and security, accessibility, and time efficiency, to comprehensively gauge the overall effectiveness of transportation applications among SAL which represent Logistic students in UMK Pengkalan Chepa. Through a rigorous examination of these components, this research seeks to unravel critical insights that can refine and optimize the transportation experiences of students.

1.2 Problem Statement

The effectiveness of transportation applications is becoming increasingly important among Malaysian university students. As technology advances, these apps have become indispensable tools for students navigating their daily commutes. In addition, there are some problem statements we found before we start with this topic. However, several factors may have an impact on the level of customer satisfaction and overall effectiveness of these transportation applications. The purpose of this study is to investigate the level of customer satisfaction, the interrelationship of payment safety, the impact of accessibility, and the relationship between time accuracy and the effectiveness of transportation apps among SAL students in UMK Pengkalan Chepa.

Customer satisfaction is critical in any service, including transportation applications. Understanding the levels of customer satisfaction among university students is critical for identifying areas for improvement. Customer satisfaction is positively influenced by the perceived usefulness and ease of use of transportation applications, according to a study conducted by Mokhlis et al. (2018). As a result, it is critical to investigate the levels of customer satisfaction with the effectiveness of transportation apps among SAL students in UMK Pengkalan Chepa to ensure that these apps meet their expectations.

Another important factor to consider is the relationship between payment safety and the effectiveness of transportation applications. Because these applications frequently require users to enter payment information, and the safety of users on the rides, it is critical that these transactions and trips be safe and secure. According to Islam et al. (2019), Safety and security

is an important factor influencing customer trust and satisfaction in transportation apps. As a result, analyzing the interrelationship between safety and security and the effectiveness of transportation apps among SAL students in UMK Pengkalan Chepa is critical for identifying any potential risks or concerns in this area.

One important aspect that appears to be affecting these platforms' is accessibility. Different student populations continue to have gaps in accessibility even with the broad adoption of mobility technologies. To assess the efficacy of student mobility applications, this study intends to investigate accessibility-related possibilities and difficulties. The research aims to offer practical insights for enhancing inclusivity and guaranteeing fair access to transportation services for all students by comprehending the obstacles that impede accessibility and examining the effects on students' transportation experiences."

Moreover, a critical component of transportation applications is time accuracy. These apps play a major role in helping students organize their daily commutes and get where they're going on time. According to a study by Chen et al. (2018), user satisfaction with transportation applications is highly influenced by time accuracy. To guarantee that these applications deliver accurate and timely information, it is crucial to comprehend the relationship between time accuracy and the usefulness of transportation applications among SAL students in UMK Pengkalan Chepa.

In conclusion, the study's problem statement centers on examining the degree of customer satisfaction, payment safety, time accuracy and accessibility factors, the significance of accessibility, and the connection between time accuracy and the efficiency of transportation apps among SAL students in UMK Pengkalan Chepa. This study attempts to address these factors to offer insights and suggestions for enhancing the usability and efficacy of transportation applications for SAL students in UMK Pengkalan Chepa.

1.3 Research Question

- 1) What is the level of customer satisfaction between the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa?
- 2) What is the interrelation of payment safety between the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa?
- 3) How accessibility affects the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa?

- 4) What is the relationship between time accuracy and the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa?

1.4 Research Objectives

- 1) Examine the levels of customer satisfaction regarding the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.
- 2) Analyze the interrelation between payment safety and the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.
- 3) Determine accessibility that affects the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.
- 4) Identify the relationship between time accuracy and the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

1.5 Scope of the Study

The scope of this study is to measure the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. This scope of study is in line with the research question and research objectives. These research determinations review the effectiveness of transportation applications for SAL students in UMK Pengkalan Chepa by examining the relationship between customer satisfaction, payment safety, accessibility, and time accuracy. Among the users of these apps, university students represent a significant demographic in Campus Kota. One of the most noteworthy advancements is the proliferation of transportations applications which offer a convenient and efficient means of mobility. Also, the student can express their perceptions about the quality of the relationship between customer satisfaction, safety payment, accessibility, and time considerations in their transportation apps. The study will be done through the utilization of questionnaires to SAL students in UMK Pengkalan Chepa as a survey and reference. By examining this research, the researchers will be able to provide valuable insights into the improvement of the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

1.6 Significance of Study

A main significance of transportation application among university students is to provide better connectivity between people moving in and out of urban environments. Among these applications' extensive user base, SAL students in UMK Pengkalan Chepa constitute a

critical demographic. This study, which aims to measure the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa while examining the interplay of customer satisfaction, safety payment, accessibility, and time, holds significant importance. Furthermore, a university encompasses more than just the pursuit of academic knowledge. It can be defined as a multifaceted environment where students engage in multitude of daily activities beyond study itself.

Efforts to boost public transit occupancy and promote ridesharing have consistently faced formidable challenges over the past three decades. These initiatives, despite support from government and corporations worldwide, have seen limited success. The significance of this long-standing issue is particularly relevant when considering the transportation applications' impact on our university students. The investigation into the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa gains relevance as these applications present an opportunity to address some of the challenges faced by traditional public transit and ridesharing. In essence, the significance of this inquiry lies in its potential to offer a fresh perspective on how transportation applications could be harnessed to enhance the mobility of university students and, by extension, address long-standing challenges in the broader transportation landscape.

1.7 Definition of Term

a) Transportation

Transportation refers to the movement of people, goods, or animals from one place to another. It is an essential aspect of modern life and plays a crucial role in various aspects of society and the economy. According to Charles H. Cooley, in his book "The Theory of Transportation," posits that the most efficient form of transportation is one that achieves the movement of goods with minimal effort and in the shortest time.

b) University student

A university student is an individual engaged in higher education, dedicated to deepening their knowledge, developing valuable skills, and working towards earning a degree, with the aim of preparing for a fulfilling and successful future in their chosen field of study and career. Drawing from the valuable insights of a comprehensive 2011 study by Limanond and colleagues at the Suranaree University of Technology in North-Eastern Thailand, it is evident that university students can wield substantial influence over multiple facets of their lives.

1.8 Organization of the Proposal

The report is divided into three chapters. Chapter 1 of this report serves as the foundational framework for the study, setting the stage for a comprehensive examination of the effectiveness of transportation application among university students in Malaysia. First, we delve into the background of study, offering a thorough understanding of the evolving transportation landscape within the context of SAL students in UMK Pengkalan Chepa. Next, the problem statement is elucidated, emphasizing the pressing issues and challenges that necessitate an in-depth investigation. The research question and objectives are then outlined, demonstrating a clear intent to address these reports. The scope of this study is the exploration of transportation applications among SAL students in UMK Pengkalan Chepa. It allows us to understand the diverse experiences and challenges faced by students in different locations, ensuring that the findings are relevant and applicable. The significance of this study is profound, as it underscores the pivotal role that transportation applications play in the lives of university students. Furthermore, the precise definitions of key terms provided, ensuring a shared understanding of concepts that are central to our study. Lastly, the organizational structure of this thesis is detailed, offering a clear roadmap for readers as they navigate through subsequent chapters and relevance of transportation applications in the lives of university students.

While chapter 2 is about literature review of independent variables and dependent variables, it allows us to connect the dots between the underpinning theory, previous studies, and the specific research question that concerns the effectiveness of transportation applications among university students. In addition to the literature review, this chapter also explores the conceptual framework. It provides a bridge between theoretical concepts and practical applications, shedding light on how these variables are interconnected in the context of transportation applications for university students. Furthermore, the conclusion of Chapter 2 summarizes the main findings from the literature review and theoretical underpinnings. It offers insights into the existing body of knowledge related to the effectiveness of transportation applications and lays the foundation for the research in the question among SAL students in greater detail.

Chapter 3 will delve into intricacies of the research methodology employed in this study, establishing a crucial link between the research design and the assessment of transportation application effectiveness among SAL students in UMK Pengkalan Chepa. This

chapter aims to provide a comprehensive understanding of how the research is conducted and the various components of the methodology contribute to the study. Specifically, the chapter initiates with an exploration of the research methods used, elucidating the rationale behind the selection of these methods and their alignment with the research objectives. Following this, the research design is thoroughly examined, underlining the approach that shapes the study's structure. Moreover, the chapter discusses data collection methods, elaborating on the techniques employed to gather data from the target study population. The study population and sample size are also considered in detail, as they directly influence the study's ability to generalize and inferences. Sampling techniques are meticulously outlined to demonstrate how the sample is representative of the larger student population. Furthermore, the development of the research instrument is discussed in depth, illustrating how the survey questions or interview guidelines are tailored to elicit meaningful responses related to the transportation applications, their effectiveness, and the factors under examination. Measurement of the variables is a critical aspect of this research, as it facilitates the quantification and analysis of key factors such as customer satisfaction, safety and security, accessibility, and time. This chapter will expound on how these variables are defined, measured, and linked to the overarching research objectives. The procedure for data analysis is a vital component of the methodology, as it explains how the collected data will be processed and analyzed to discern relationships, trends, and insights pertaining to transportation application effectiveness among SAL students in UMK Pengkalan Chepa. In conclusion, Chapter 3 serves as the linchpin that connects the research methodology with the core objective of evaluating the effectiveness of transportation applications among university students. Through a comprehensive examination of research methods, design, data collection, sampling, instrument development, variable measurement, and data analysis, the chapter ensures that methodology is not only relevant but also sound, ultimately underpinning the study's capacity to explore and establish critical relationships.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Adoption and use of travel apps among Malaysian university students has ushered in a new era of mobility, drastically affecting how students navigate their academic and personal lives. With a rising number of students relying on these apps for daily commute, determining the efficacy of transport apps has become a must. This literature review seeks to provide a comprehensive overview of existing research as well as insights into measuring efficacy in transport applications as it relates to SAL students in UMK Pengkalan Chepa. This chapter mainly discusses customer satisfaction, safety and security, accessibility, and time as independent variables (IV) while the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa as dependent variables (DV).

2.2 Underpinning Theory

Consumer Behaviour Theory is a foundation for comprehending how customers make decisions and choices. This theory, when applied to the setting of transit apps among Malaysian students, might provide insights into the elements that influence their decisions and behaviors. Students' commute convenience can be greatly improved with transportation applications. According to Consumer Behaviour Theory, convenience is a significant driver of consumer choices. Convenience lowers the perceived effort and time necessary for commuting, which influences their decision. The role of user happiness in driving consumer choices is emphasized by Consumer Behaviour Theory. User satisfaction in the context of transportation apps is determined by aspects such as dependability, convenience of use, and overall commuting experience. Students are more inclined to use an app again if it consistently satisfies their expectations and provides a pleasant user experience. In conclusion, Consumer Behaviour Theory provides useful insights into Malaysian students' decision-making processes when it comes to using transit apps. App developers and transport providers can tailor their services to better meet the needs and preferences of students by considering factors such as cost savings, convenience, user satisfaction, psychological factors, social influences, information processing, and perceived risk.

2.3 Previous Studies

In this part, both Independent Variables (IV) and Dependent Variables (DV) are covered. The Dependent Variables (DV) is the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. The Independent Variables (IV) such as customer satisfaction, safety and security, accessibility, and time accuracy were influenced DV. Furthermore, based on the researcher framework which is the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa, the researcher will discuss independent variables and dependent variables in even more detail in this part.

2.3.1 Effectiveness of transportation application among SAL students in UMK Pengkalan Chepa

The introduction of mobile transportation apps has boosted demand for ride services like Grab and Maxim and have transformed the taxi industry, increasing competition between local taxi and public transportation industries. Customers can download the Ride-Hailing software from iTunes or the Play Store. All users must do when they have the application on their smartphone are registering themselves as an application user, requesting the services, and paying for the services. Public transport is always important to people, especially those in the suburban area. An e-hailing service or ridesharing service is a service that uses a location sharing network to connect passengers with private drivers through websites and smartphone apps. Demand for e-hailing services has recently increased in Malaysia based on daily travel demands with services available like MyCar, EzCab, Maxim, and Grab is one of the pioneers in this market. The competitive environment in the transportation industry forced companies to look at crucial factors in their customers' management, such as managing the relationship between an organization, its people and its customers over time (M.N, 2020). Concerned about these issues, this research aims to investigate the effects of customer satisfaction, safety and security, accessibility, and time accuracy on transportation applications satisfaction among SAL students in UMK Pengkalan Chepa.

2.3.2 Customer satisfaction

Customer satisfaction refers to a consumer's comprehensive assessment of performance based on experience with an organization. In the service industries, customer satisfaction is crucial as the means to measure service quality. Therefore, service quality is expected to have a certain extent of influence on customer's satisfaction. The study on

consumer satisfaction towards transportation services is also warranted to measure consumer satisfaction level towards the benefits provided by transportation services. Customers will be satisfied when their expectations meet or exceed the products or services purchased (M.N, 2020). Many previous studies have investigated the relationship between the service and system attributes and customers satisfaction with transport services. revealed that service quality had a positive effect on customer satisfaction and customer loyalty, while customer satisfaction had a positive effect on customer loyalty. Influence of quality of service on the satisfaction of customers should be paid more attention to. For a transport firm, behavior of the driver, frequency and reliability of service and wait time are the most important factors that affect customer satisfaction (Kedar Gokhale, 2021).

2.3.3 Payment safety

Customers who have positive evaluation of service attraction attributes such as safety, security and attractiveness also hold positive intentions to use these services in future. Safety, security, comfort, and vehicle cleanliness were described as the important attributes of customer satisfaction (Syed Arif Hussain Shah, 2022). Safety is one of the essential things that customers consider while taking a taxi. Security inspection is an essential factor that can attract customers to take up e-hailing services. Rules and legislation are all ready to ensure that e-hailing service is assured of security. Before the drivers were provided with the license, they would first receive permission to sit for the driving test. The most important thing is that there is no criminal record, so the driver must confirm liability insurance with the certificate. The type, model and condition of the vehicle, the actual point-to-point route followed by the car, the minimum fuel efficiency standard and data reporting, the car should not exceed five years. The monitoring and evaluation requirements were a few of the many conditions that the e-hailing registered vehicle must meet (Mohamad Niza Md Nor, 2021). Safety and security indicate a positive relationship with customer satisfaction. Safety is a big concern when using e-hailing services, and those e-hailing providers are expected to enforce security policies, rules and regulations. A safety inspection is one of the most crucial factors that can attract customers to choose an e-hailing service. Rules and regulations are all set to ensure the safety of e-hailing customers where e-hailing drivers must fulfill several conditions, which include the vehicle types, model, and condition, the actual point-to-point route that the car follows, the minimum fuel efficiency standard and data reporting, the car should not exceed five years as well as the requirements for monitoring and evaluation (Mohamad Niza Md Nor, 2021).

2.3.4 Accessibility

Accessibility refers to the ease of reaching goods, services, destinations, and activities called opportunities together, which is the goal of most transport activity, except for the limited portion of travel where mobility is an end in itself. Individual characteristics quickly determine the level of transportation access for a person in terms of their needs, skills, and opportunities. E-hailing service provides a wide variety of transport services and related payment methods through one mobile application. The e-hailing service conveys the current location of the requested e-hailing car. Customers can monitor the process from their mobile, avoiding potential confusion than waiting for a traditional taxi (Mohamad Niza Md Nor, 2021). If accessibility is to 'take its rightful place' as a central concept in transportation planning, we need to, first, firm up and standardize our theoretical concepts and operational methods, and, second, find much better ways to communicate the usefulness of these concepts and measures in clear, compelling and credible ways to the public and decision-makers (Eric J. Miller, 2018). Based on (Li, Hong, and Zhang, 2016), e-hailing services offer more evidence and may be able to help solve the issue of traffic congestion in urban areas. According to (Geradin, 2015), transportation applications have several benefits, including its user-friendliness, ability to send real-time information about the requested car's position, and the opportunity to monitor its progress using a smartphone.

2.3.5 Time accuracy

Because of its low investment costs, high operational flexibility, capability of transporting many passengers, and low fares, public bus transportation plays a very important role in transporting passengers, especially in large cities. Passengers using this mode of transportation are usually concerned about the waiting time, in-vehicle travel time, and even the time spent walking to the stops. There is evidence that suggests that passengers are more sensitive to waiting time than they are to in-vehicle travel times. (Caranza, Chow, Pham, Roswell and Sun, 2016) describes that time and money can be saved by using Grab's e-hailing services. According to (Rayle et al, 2014), the difference between the time it took to hail a cab and the time it took to wait for an e-hailing service because the former took longer. Based on (Huges and Mckenzie, 2015), the convenience of payment and wait time rank second and third, respectively, as the primary reasons why customers utilize e-hailing. Students can benefit from transport applications in e-hailing services by having easy access to a certain destination. Customers and dispatchers can access the designated site, and estimate the time

of arrival at the specified address. In a study conducted by (Circella et al. in 2018), it was found that shorter waiting times played a significant role in enticing passengers to opt for application-based ride-hailing services. Research conducted by (Tang et al. 2020; Tirachini and Gomez-Lobo, 2020) emphasize these aspects as crucial indicators that greatly impact how satisfied users are with transportation services. Factors such as the time spent waiting for transport, ease of access to transportation hubs, and the actual time spent traveling play pivotal roles in determining user satisfaction with transportation services.

2.4 Hypothesis Statement

Table 2.1: The hypothesis statements

H1: There is a positive relationship between customer satisfaction towards the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.
H2: There is a positive relationship between payment safety towards the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.
H3: There is a positive relationship between accessibility towards the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.
H4: There is a positive relationship between time towards the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

2.5 Conceptual Framework

The aim of this study is to measuring the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. Figure 2.1 illustrates the research framework for this study. For this research, there are four factors chosen such as customer satisfaction, payment safety, accessibility, and time. All these factors will be studied whether they are related to the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

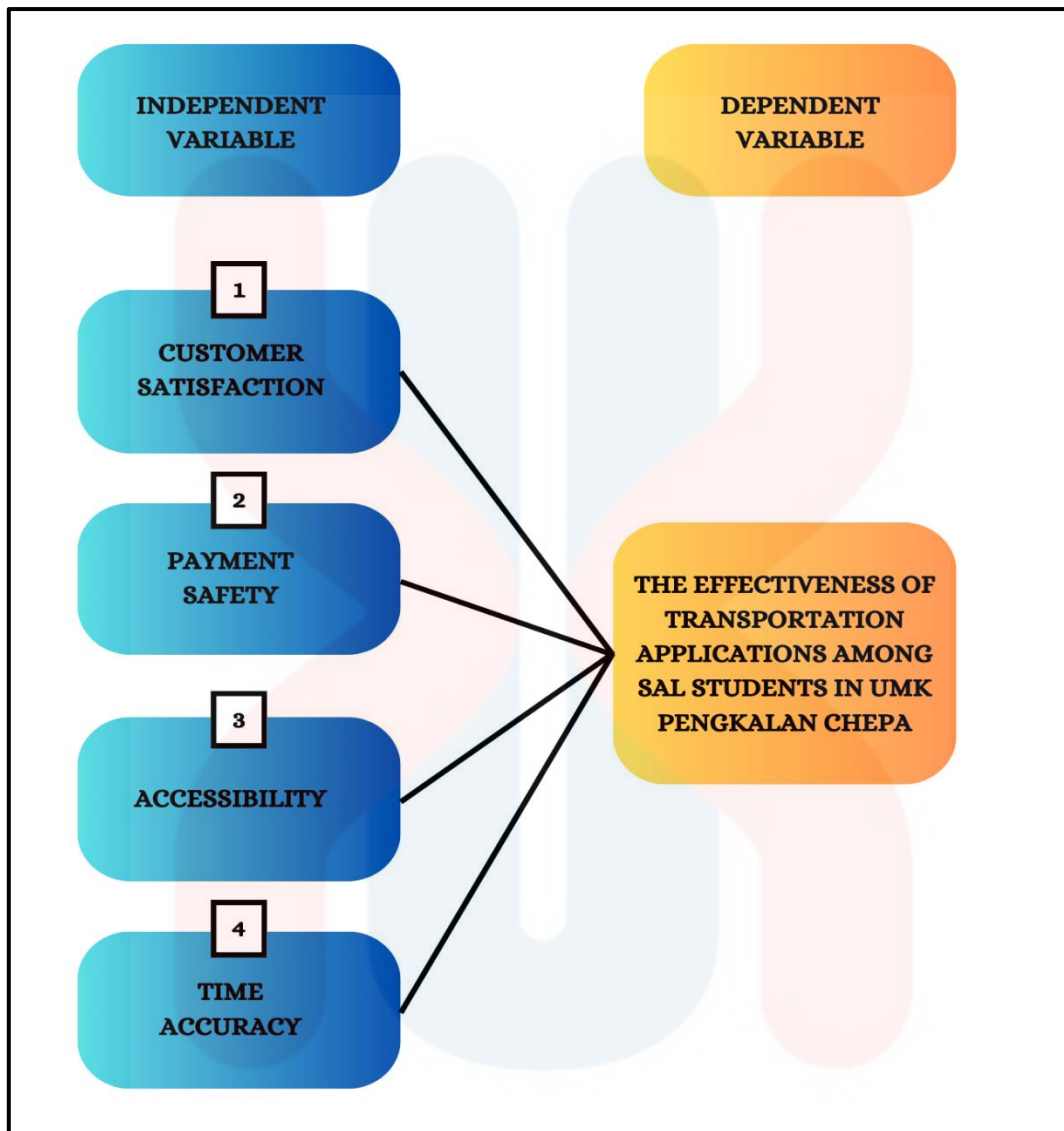


Figure 2.1: Conceptual Framework

2.6 Summary/ Conclusion

Based on these considerations, it is possible to infer that transport applications have had a good impact on the lives of SAL students in UMK Pengkalan Chepa. However, ongoing efforts are required to improve and expand services, handle specific issues, and assure the long-term viability of these applications in fulfilling students' changing transportation demands. Student happiness and user experience are crucial elements. Positive user experiences, dependability, and user-friendly interfaces are critical for transportation app success. Furthermore, user input and regulatory issues should be considered to improve the effectiveness and user experience of transit applications among SAL students in UMK Pengkalan Chepa.

CHAPTER 3: RESEARCH METHODS

3.1 Introduction

This chapter explains about the research methodology that refers to analytical processes that direct the execution of research. This part consisted of 10 parts which were the research design of the study, data collection methods, study population, sample size, sampling techniques, research instrument development, measurement of the variables, procedure for data analysis and summary of research methods. A quantitative approach has been used to recognize ‘Measuring the Effectiveness of Transportation Applications among SAL students in UMK Pengkalan Chepa.’ This research used a convenience sampling strategy while students assisted in distributing the online survey to their peers.

3.2 Research Design

In conducting this study, research design has been carried out to fulfill our research purpose. This part consists of the methods of data collection to help us as a researcher to solve the problems that occur in the study.

Based on our research topic ‘Measuring the Effectiveness of Transportation Application among SAL students in UMK Pengkalan Chepa,’ the approach that we use was quantitative to gain more information about the correlation between the independent variables (Customer satisfaction, Safety payments, Accessibility, Time) and dependent variables (Effectiveness of Transportation Application Among SAL students in UMK Pengkalan Chepa). We collect the data by using Google Forms that provides questionnaires to the respondents as our primary data. It is a type of correlation studies that is carried out by us.

3.3 Data Collection Methods

Data collection method could be categorized into 2 which was primary data and secondary data. For our research, we use primary data for our studies. The data is collected from questionnaires in which the respondents are SAL students in UMK Pengkalan Chepa. We will create a Google Form that provides questionnaires open for 5 days and post in social media for SAL students in UMK Pengkalan Chepa as our participants in this survey. After 5 days of data collection, we will move to the step which was to analyze the data from Google Form.

3.3.1 Primary Data

According to Ajayi (2017), primary data are first-hand records that the researcher has gathered from sources like questionnaires, interviews, observations, and surveys. We use google forms to collect questionnaires from respondents. We focus on UMK Pengkalan Chepa students that are specific on SAL (Logistic) students to fulfill our requirements in our studies.

3.4 Study Population

Based on our effort in sharing the post through social media, approximately 260 SAL students will participate in our survey. Study population is a category of a group that is suitable for completing our survey. A sample is a subset of the population, whereas a population is the entire set of individuals with certain characteristics (Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D. G., & Newman, T. B. 2013). The study population would be only focused on SAL students in UMK Pengkalan Chepa. It consists of approximately 800 students.

3.5 Sample size

The sample size is an important factor in research and statistical analysis because it directly affects how accurate the study's conclusions are. There will be a 260 sample size in completing the survey. Since sample size influences estimate precision and the reliability of inferences drawn about the population from which the sample was collected, sample size is an essential part of statistical analysis. The table below shows Krejcie and Morgan (1970) in determining our sample size.

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
 "S" is sample size.

Source: Krejcie and Morgan (1970)

Figure 3.1: Table of Krejcie and Morgan (1970)

3.6 Sampling Techniques

3.6.1 Convenience Sampling

Convenience sampling has been carried out to fulfill our requirements in this study. Convenience sampling is a research method that gathers data from study participants who are willing to participate, approachable, or otherwise easily accessible to the researcher (Wienclaw, 2019). Besides that, convenience sampling is frequently selected due to its affordability and speed.

It is a technique to collect data easily due to the accessibility of surroundings. Not to mention that, it was a free budget that would not cost us a penny. It's a suitable method for us to conduct the research. 260 UMK students will be our participants in ensuring our survey to fulfill our requirement due to our N whose population size is 783 which was nearly 800 based on the table of Krejcie and Morgan (1970).

3.7 Research Instrument Development

The purpose of research instrument development is to develop and improve equipment or techniques that let researchers get reliable data for our study. The questionnaire is separated into 5 parts and every part has 4 questions. The first part of the questionnaire relates to the demographic of the respondents which was their year of study, race, age, university. Part A would be our dependent variable which was the effectiveness of transportation application among university students. The questionnaire for Part B consisted of questions about customer satisfaction. Part C would contain questions about safety payment. Questions about accessibility are in Part D. Meanwhile, a questionnaire for Part E which is time.

3.7.1 Survey Questionnaire

Survey questionnaire is an organized tool or equipment for gathering information and data from people individually or in groups. In order to guarantee the reliability and significance of the data gathered and the accomplishment of the study's goals, the questionnaire's design is vital. It was carried out to university students to collect data and achieve our objectives. We as a researcher would share the survey questionnaire through social media such as Instagram, Facebook, WhatsApp groups etc. Independent variables and dependent variables were related in the google form.

3.8 Measurement of the Variables

Scale of measurement is a tool that is used to analyze the variables from a data collection. Types of the data used in this study were quantitative. There are four different types of scale which are nominal, ordinal, interval and ratio. Based on our survey, there are three scales to let the respondent choose from. We use nominal scale, ordinal scale, interval scale and Likert scale that ranges from 1 to 5 in our research.

3.8.1 Nominal Scale

Nominal scale is a measurement system that divides data into separate groups or categories without the need for an internal ranking or order. There is no valid way to rank or order nominal data, which is made up of categories or labels that are mutually exclusive. Each data point can only belong to one category. Examples that could be given relate with nominal scale was color. Red, blue, and green are nominal data. These categories classify various colors, although there isn't a set structure or order for them. In our study, socio-demographic factors questionnaire has been added such as year of study, race, age, university for our nominal data.

3.8.2 Ordinal Scale

Ordinal scale is a measurement system that arranges and classifies data into distinct groups or categories. We use ordinal scale to handle subjective viewpoints that lack equal, measurable intervals but can be ranked or sorted. By using ordinal scale, it categorizes data and introduces a rating or order in our research. Based on our research, the ordinal scale that would be collected by us was the age of respondents.

3.8.3 Interval Scale

Interval scale is a measurement scale that classifies data into levels or categories and provides a meaningful, consistent interval or difference between each level or category. In contrast to nominal and ordinal scales, interval scales provide equal intervals between categories and allow for meaningful and consistent measurement in addition to offering a clear rank order among categories. The questionnaire categorizes into 5 parts from Part A to Part E, each of which relates to an individual interval scale question. We determine and illustrate the respondent's level of agreement or disagreement with the statement using a five-point Likert scale. It is a five-point rating system.

3.8.4 Likert Scale

Table 3.1: Likert Scale

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

Based on the table, scale 1-5 represents how respondents agree or disagree with the statement about our questionnaire. Likert scale frequently used to monitor changes over time or to compare answers. Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, Strongly Agree=5 was the scale that was provided to respondents in the questionnaire.

3.9 Procedure for Data Analysis

In our research, we use descriptive statistics as our method. Generally, descriptive, and inferential statistics are separated. We can just describe what the data is or what it indicates when using descriptive statistics. Our goal when using inferential statistics is to draw inferences that go beyond the available data. Alternatively, we assess the likelihood that an observed difference between groups in this study is reliable or if it could have occurred by chance using inferential statistics.

MALAYSIA

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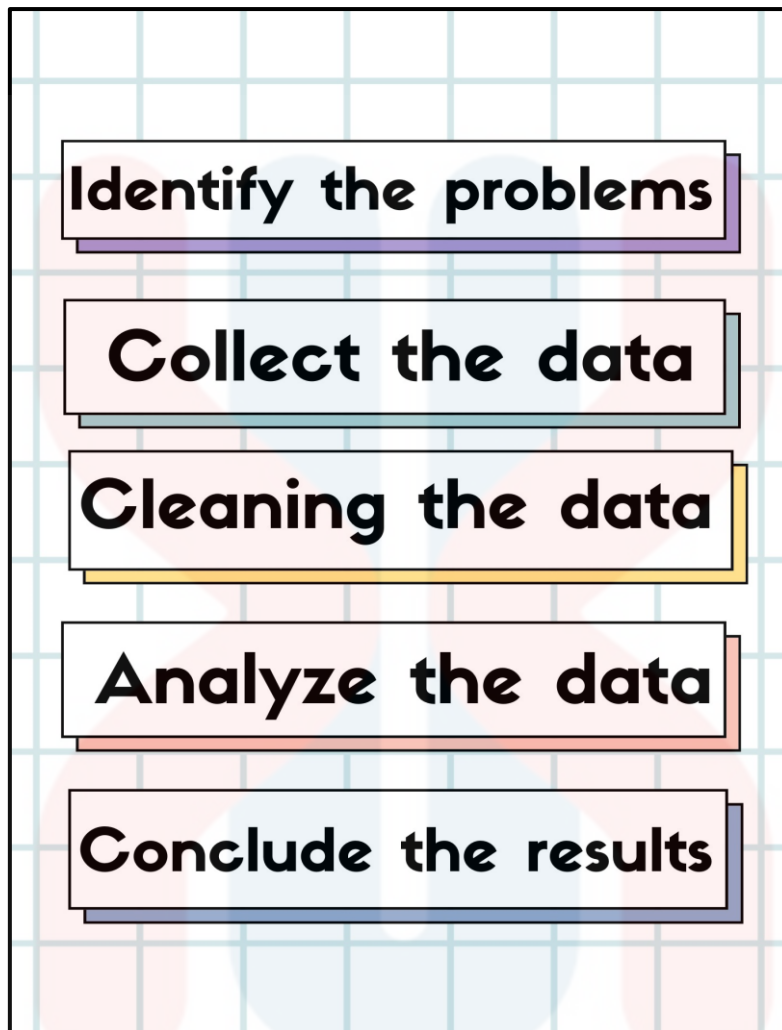


Figure 3.2: Procedure of data analysis

3.9.1 Pilot Study (Reliability Analysis)

Table 3.2: The size of correlation and interpretation

Size of correlation	Interpretation
0.90 to 1.00/ -0.90 to -1.00	Very high positive / negative correlation
0.70 to 0.90/ -0.70 to -0.90	High positive / negative correlation
0.50 to 0.70/ -0.50 to -0.70	Moderate positive / negative correlation
0.30 to 0.50/ -0.30 to -0.50	Low positive/ negative correlation
0.00 to 0.30/ 0.00 to- 0.30	Little any correlation

A small-scale, preliminary research study carried out as a prelude to a bigger, more thorough research effort is referred to as a pilot research or pilot test. After conducting pilot testing, we need to have worked out every detail and be prepared to begin a legitimate and trustworthy study. The items' consistency and validity will be verified using Cronbach Alpha. Based on the table that stated above, it shows the size of correlation and interpretation in detail.

3.9.2 Frequency Distribution

Frequency distribution is a data representation, either statistical or graphical, that indicates the frequency of each value or category in a dataset. Data is arranged into distinct intervals or categories, and the number or frequency of data points that fall into each period or category is shown. In descriptive statistics and data analysis, frequency distributions are an essential tool since they offer a systematic and comprehensible manner to summarize and present data.

Frequency distribution is also very helpful for handling big datasets since they reduce the amount of information into a more digestible shape. We as researchers need to use frequency distribution to have a better understanding about our data.

3.9.3 Descriptive Statistics

Descriptive statistics is a collection of statistical approaches and procedures used to clearly summarize and characterize data. When using descriptive statistics, no judgements or conclusions are drawn from the data itself. Besides that, descriptive statistics are used to condense complex quantitative findings from a huge data set into manageable summaries. In order to facilitate the process of extracting significant conclusions and understandings from the available data, we as researchers employ various strategies to simplify and express the most important components of their data.

3.9.4 Correlation Analysis

Correlation analysis is a statistical technique for determining how strongly and in which direction two or more variables are related to one another. It measures the relationship between changes in one variable and changes in another. The correlation coefficient, which is the product of a correlation analysis, offers information on the kind and strength of the relationship between the variables.

Pearson Correlation Coefficient also considered as ‘r’. The Pearson correlation coefficient has a range of -1 to 1, with each value having a particular meaning. It consists of three correlation results which were positive, negative and no correlation at all. Positive correlation happens when r is closer to 1. Negative correlation happens when r is closer to -1 meanwhile no correlation coefficient happens is close to 0.

Table 3.3: Value of Correlation Coefficient

Value of Correlation Coefficient	1 Perfect
	0.7 - 0.9 Strong
	0.4 - 0.6 Moderate
	0.1 - 0.3 Weak

3.10 Summary/ Conclusion

Research methodology was about collecting data and analyzing the data to help with our study. In performing data collection, we use Google Forms for respondents to fill up the questionnaire. Sample size was 260 respondents that will fill up the questionnaire. We use convenience sampling to fulfill our requirements for this study. Besides that, three scales to let the respondents choose from. It would be convenient for us as a researcher to continue these steps ensuring data collection runs smoothly.



CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter would demonstrate the analyzed results from Google Forms with our targeted number of respondents. Likert scale has been used to let the respondents rate their decision in the questionnaire. Besides that, this chapter also consists of Preliminary Analysis of the study, Demographic Profile of respondents, Descriptive Analysis, Reliability Test, Normality Test, Pearson Correlation and Hypothesis Testing.

4.2 Preliminary Analysis (Pilot Test)

Table 4.1: Rule of thumb Coefficient Alpha Range Cronbach, L.J (1951)

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

Table 4.2: Pilot Reliability Test of Dependent variables, independent variables, and all variables (Mean Score)

Variables	N of Items	N	Cronbach's Alpha
Effectiveness of Transportation Applications	4	30	0.715
Customer Satisfaction	4	30	0.593
Safety Payment	4	30	0.761
Accessibility	4	30	0.771
Time Accuracy	4	30	0.872
All Variables (Mean Score)	5	30	0.936

Based on table 4.2, it demonstrates 30 respondents filling out our pilot test survey to proceed further research for targeted respondents. The dependent variables (Effectiveness of Transportation Application), with 4 items, shows the outcome of Cronbach's Alpha values for reliability is greater than 0.7 and it was in the range of acceptable. It means that the tests are reliable and could proceed. Next, the first independent variable which was (Customer Satisfaction) with 4 items, shows the result of Cronbach's Alpha values for reliability is greater than 0.5 and it was in the range of poor. The test could proceed because it is still considered acceptable. The second independent variable (Safety Payment) with 4 items, shows the outcome of Cronbach's Alpha values for reliability is greater than 0.7 and it was in the range of acceptable. The third independent variable (Accessibility) with 4 items, shows the result of Cronbach's Alpha values for reliability is greater than 0.7 and it was in range good. The fourth independent variable (Time accuracy) with 4 items, explains that the result of Cronbach's Alpha values for reliability is greater than 0.8 and it was in the range of good. The test also computes and analyzes all 4 variables and becomes a mean score. The items will become 5 due to 1 dependent variable and 4 independent variables. The outcome of Cronbach's Alpha values for reliability is greater than 0.9 and it was in the range of excellent. It concludes that this research could proceed and be reliable for further research.

4.3 Demographic Profile of Respondents

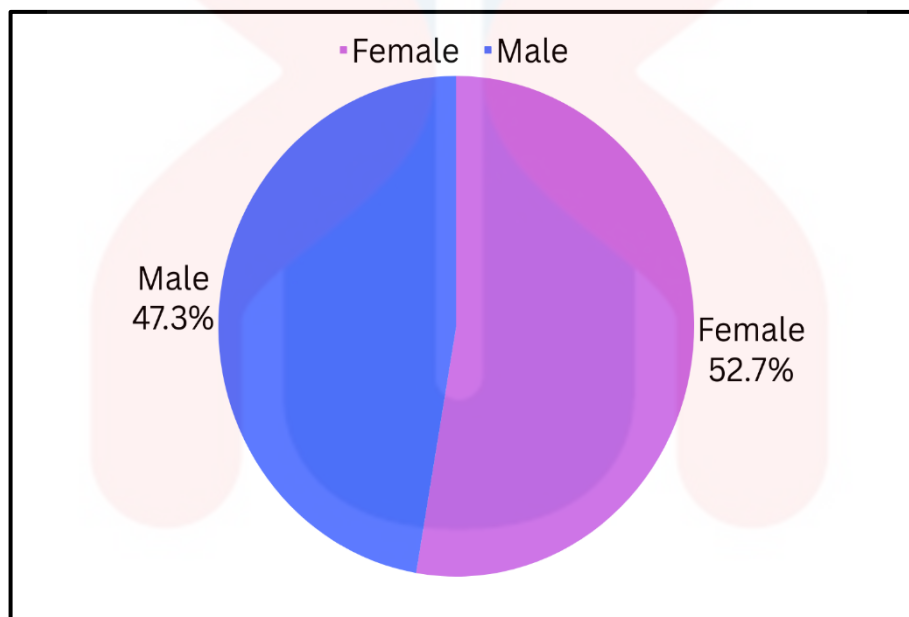
This part will explain about 260 respondents that fill out our google form which are SAL students in UMK Pengkalan Chepa. It contains the gender of the respondent, race, year of study, age, frequency of transportation application and type of transportation application. Pie charts and tables will be used for further detailed explanation.

4.3.1 Gender

Table 4.3: Demographic Profile of Respondents Gender

Gender					
Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	137	52.7	52.7	52.7
	Male	123	47.3	47.3	100.0
	Total	260	100.0	100.0	

Figure 4.1: Percentage of Gender



Based on the table of 4., the frequency of females was 137 out of 260 respondents. Next, the frequency of male was 123 out of 260 respondents. According to figure 4., it shows that 52.7% respondents are female while 47.3% are male. Out of 260 respondents, it could be stated that female respondents have the highest frequency and percentage of filling out our survey.

4.3.2 Race

Table 4.4: Demographic Profile of Respondents Race

Race					
Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chinese	72	27.7	27.7	27.7
	Indian	38	14.6	14.6	42.3
	Malay	147	56.5	56.5	98.8
	Others	3	1.2	1.2	100.0
	Total	260	100.0	100.0	

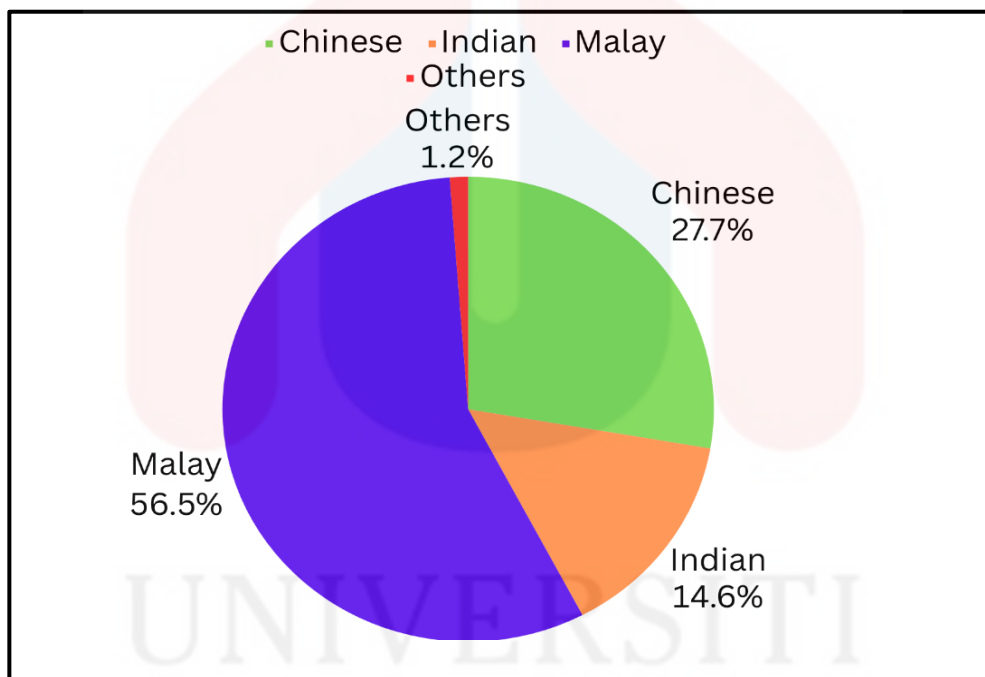


Figure 4.2: Percentage of Race

Based on table 4.2, the frequency of Chinese was 72 out of 260 respondents. Frequency of Indians was 38 out of 260 respondents. 147 out of 260 respondents stand for Malay while 3 out of 260 respondents stand for Others. Table 4. shows 27.7% of respondents are Chinese. Next, Indian stands for 14.6% of respondents. Malay stands for 56.5% of respondents meanwhile another 1.2% out of 100% was Others. Figure 4.2 shows that Malay has the highest frequency and percentage in filling out our survey while Others have the lowest frequency and percentage of respondents completing our survey.

4.3.3 Year of Study

Table 4.5: Demographic Profile of Respondents Year of Study.

Year of Study					
Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Year 1	40	15.4	15.4	15.4
	Year 2	51	19.6	19.6	35.0
	Year 3	92	35.4	35.4	70.4
	Year 4	77	29.6	29.6	100.0
	Total	260	100.0	100.0	

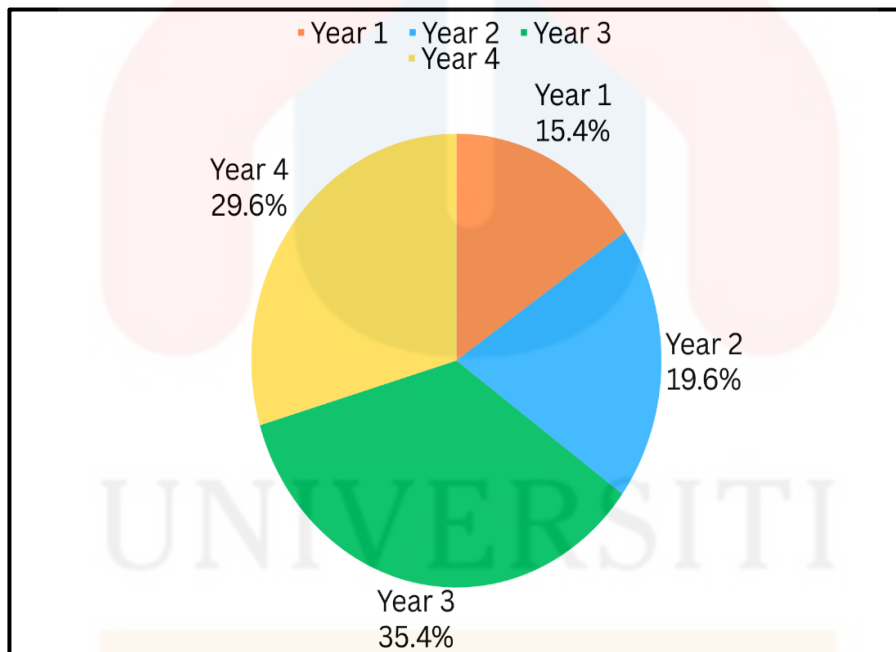


Figure 4.3: Percentage about Year of Study

The table of 4.3 shows that the frequency of Year 1 in completing our survey was 40 out of 260 respondents. Year 2 has the amount of 51 out of 260 respondents while Year 3 has the number of 92 out of 260 respondents in completing our survey. Lastly, Year 4 consists of 77 out of 260 respondents in completing our survey. Besides that, the table also shows that Year 1 respondents have 15.4% out of 100% of respondents. Year 2 has the percentage of 19.6 while Year 3 has the percentage of 35.4. Lastly, Year 4 stands for 29.6% in completing our survey. It demonstrates that Year 3 respondents have the highest frequency and percentage in

completing our survey while Year 1 respondents have the lowest frequency and percentage in filling out our survey.

4.3.4 Age

Table 4.6: Demographic Profile of Respondents Age

Age					
Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-22 years old	86	33.1	33.1	33.1
	23-25 years old	174	66.9	66.9	100.0
	Total	260	100.0	100.0	

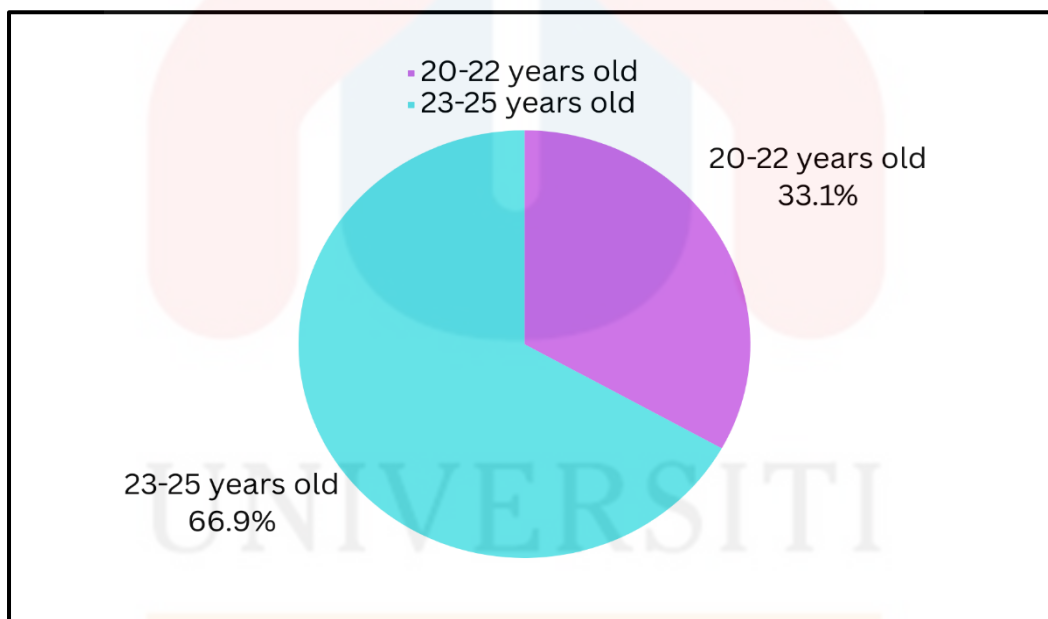


Figure 4.4: Percentage of Age

Based on table 4.6, the frequency of 20 - 22 years old respondents stand for 86 respondents out of 260 while the frequency of 23-25 years old stands for 174 respondents out of 260. Respondents that are between 20-22 years old have the amount of 33.1% while 23-25 years old respondents have the percentage of 66.9. The table and figure of 4.4 shows that respondents that age 23-25 have the highest frequency and percentage in completing our survey.

4.3.5 Frequency of using transportation application

Table 4.7: Table showing the Frequency of using transportation application

Frequency of using transportation application					
Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Everyday	28	10.8	10.8	10.8
	Monthly	67	25.8	25.8	36.5
	Weekly	165	63.5	63.5	100.0
	Total	260	100.0	100.0	

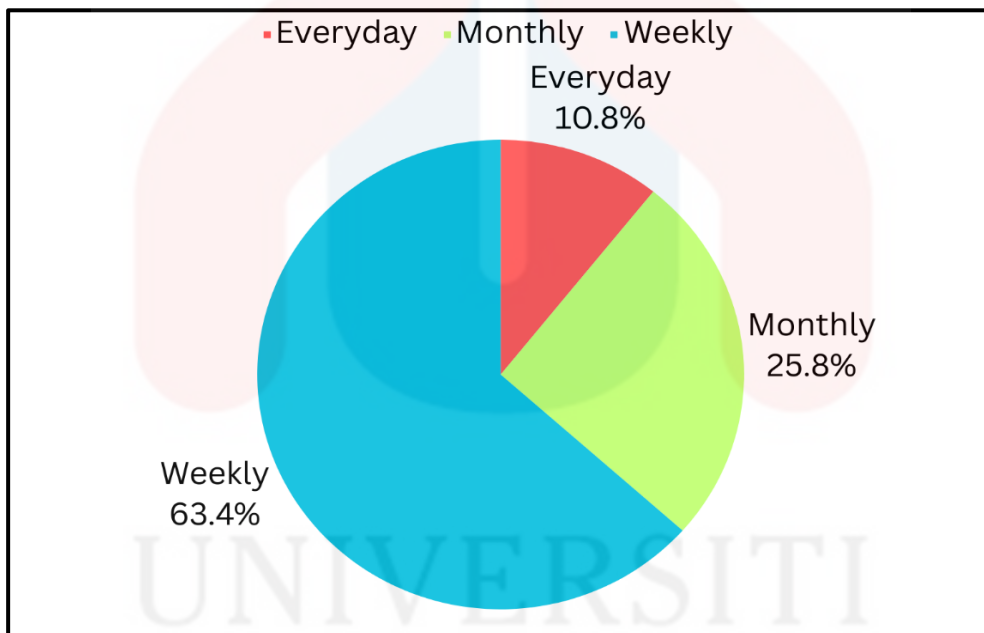


Figure 4.5: Percentage about Frequency of using transportation application

Based on table 4.7, it shows that the frequency of respondents using transportation applications everyday was 28 out of 260 respondents. The frequency of monthly using transport applications was 67 out of 260 respondents while for weekly the amount was 165 out of 260 respondents. Figure 4. shows 10.8% of respondents using transportation applications everyday while 25.8% of the respondents were using transportation applications in the period of monthly. Table 4. also stated that 63.5% out of 100% were using transportation applications weekly in their routine. The table of 4.7 And figure 4.5 show the highest frequency and percentage was weekly that respondents using transportation applications.

4.3.6 Type of transportation application

Table 4.8: Table showing type of transportation application

Type of transportation application					
Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	AirAsia Ride	26	10.0	10.0	10.0
	Grab	138	53.1	53.1	63.1
	Maxim	96	36.9	36.9	100.0
	Total	260	100.0	100.0	

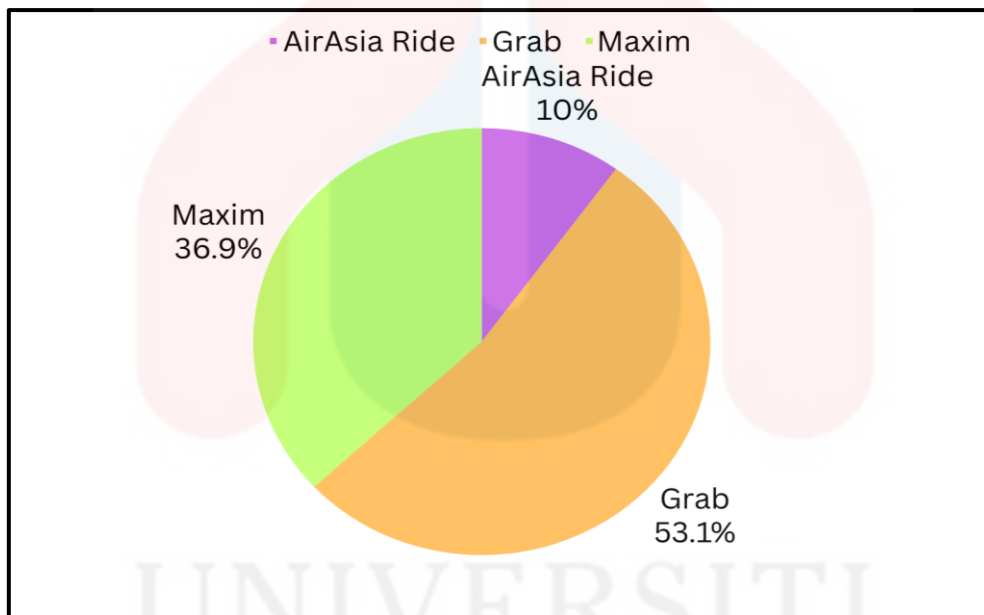


Figure 4.6: Percentage showing type of transportation application

Based on table 4.6, the frequency of respondents using the AirAsia Ride platform was 26 out of 260 respondents. Next, the frequency of using Grab was 138 out of 260 respondents while the frequency of using Maxim was 96 out of 260 respondents. To demonstrate the percentage type of transportation application, Figure 4. shows AirAsia Ride has the percentage of 10 out of 100%. Grab stands for 53.1% while Maxim stands for 36.9% in the figure. Table 4.8 And Figure 4.6 Shows Grab have the highest frequency and percentage of respondents using this platform to book their rides.

4.4 Descriptive Analysis

This part will explain a descriptive analysis of the study which was dependent variable (Effectiveness of Transportation Applications), independent variables (Customer Satisfaction, Safety Payment, Accessibility and Time Accuracy) and all variables (Mean score). It starts on Part A to Part E of the questionnaire showing the mean and standard deviation of each variable. Likert scale was given to rate the questionnaire from the scale of 1 (Strongly disagree), 2 (Disagree), 3 (Average), 4 (Agree) and 5 (Strongly Agree).

4.4.1 Dependent Variable

I. Effectiveness of Transportation Application

Table 4.9: Descriptive Analysis about Effectiveness of Transportation Application

Descriptive Analysis			
	N	Mean	Std.Deviation
Transportation applications significantly contribute to the efficiency of my daily commuting experience.	260	4.30	0.784
The features offered by transportation applications meet the specific needs of SAL students effectively.	260	4.35	0.849
Using transportation applications is a convenient and time-saving way for students to plan their journeys.	260	4.33	0.808
The information provided by transportation applications, such as schedules and routes, is accurate and reliable.	260	4.32	0.889
Valid N (listwise)	260		

Table 4.9 shows descriptive analysis of the dependent variables of our study which was Effectiveness of Transport Application. It consists of 4 questions in this part with the highest mean is 4.35 and standard deviation of 0.849 that leads to the question “The features offered by transportation applications meet the specific needs of SAL students effectively.” It explains that SAL students mostly agreed with this question. Meanwhile, the lowest mean is 4.30 and lowest standard deviation of 0.784 was the question of “Transportation applications significantly contribute to the efficiency of my daily commuting experience.”

4.4.2 Independent Variable

I. Customer Satisfaction

Table 4.10: Descriptive Analysis about Customer Satisfaction

Descriptive Analysis			
	N	Mean	Std.Deviation
I am satisfied with the service offered by transportations application.	260	4.25	0.762
The transportation application provides accurate and up-to-date information about routes, schedules, and fares.	260	4.25	0.720
The customer support provided by the transportation application is helpful and responsive.	260	4.22	0.853
The transportation application lacks of features that enhance my overall transportation experienced.	260	3.61	1.309
Valid N (listwise)	260		

Table 4.10 shows the first independent variable of our study which was customer satisfaction. This part consists of 4 questions related to the independent variable. It could show that 2 questions of mean have the same amount which was 4.25 which leads to questions “I am satisfied with the service offered by transportations application.” and question “The transportation application provides accurate and up-to-date information about routes, schedules and fares.” SAL students agree that these two questions are related to our study. The lowest

mean was in question “The transportation application lacks of features that enhance my overall transportation experienced.” with the number of 3.61. The highest standard deviation among 4 questions was “The transportation application lacks of features that enhance my overall transportation experienced.” with the amount of 1.309. Lowest standard deviation leads to this question “The transportation application provides accurate and up-to-date information about routes, schedules and fares.” with the amount of 0.720.

II. Safety Payment

Table 4.11: Descriptive Analysis about Safety Payment

Descriptive Analysis			
	N	Mean	Std.Deviation
Transportation applications maintain a secure network to process online payments.	260	4.19	0.888
Transportation applications using updated software and spyware to protect against known software vulnerabilities.	260	4.19	0.767
Transportation applications used 3D Secure to maintain payment security in e-commerce by verifying a customer’s identity.	260	4.11	0.874
Transportation applications always improve security of payment by verifying the transaction of user.	260	4.16	0.894
Valid N (listwise)	260		

Table 4.11 Shows the second independent variable of our study which was safety payment. This part also consisted of 4 questions for respondents filling out our survey. It could see that the highest mean also has 2 questions which are “Transportation applications maintain a secure network to process online payments.” and question “Transportation applications using updated software and spyware to protect against known software vulnerabilities.” with the mean of 4.19. The lowest mean goes to the question “Transportation applications used 3D Secure to maintain payment security in e-commerce by verifying a customer’s identity.” with the amount of 4.11. In explaining the highest standard deviation, it goes to the question “Transportation

applications always improve security of payment by verifying the transaction of user.” with the amount of 0.894. Next, lowest standard deviation goes to question “Transportation applications using updated software and spyware to protect against known software vulnerabilities.” with the amount of 0.767.

III. Accessibility

Table 4.12: Descriptive Analysis about Accessibility

Descriptive Analysis			
	N	Mean	Std.Deviation
Transportation applications offers information in different forms such as text-to-speech capabilities and audio announcements.	260	4.17	0.890
Transport applications ensure notifications that are significant like updates or delays in service are delivered in a way that students easy to understand.	260	4.20	0.815
Transport applications upgrades its features frequently to take into account new accessibility rules and requirements.	260	4.17	0.805
Transportation application provides clear instructions and feedback to assist users in navigating through its features.	260	4.19	0.908
Valid N (listwise)	260		

Table 4.12 shows the third independent variable of our study which was accessibility. This part also consists of 4 questions also considered as items. Based on the table, the highest mean goes to the question “Transport applications ensure notifications that are significant like updates or delays in service are delivered in a way that students easy to understand.” with the number of 4.20. The lowest mean goes to 2 questions which was “Transportation applications offers information in different forms such as text-to-speech capabilities and audio announcements.” and question “Transportation applications upgrades its features frequently to take into account new accessibility rules and requirements.” with the mean of 4.17. Highest standard deviation goes to the question “Transportation application provides clear instructions

and feedback to assist users in navigating through its features” with the amount of 0.908. The lowest standard deviation goes to the question “Transportation applications upgrades its features frequently to take into account new accessibility rules and requirements.” with the number of 0.805.

IV. Time Accuracy

Table 4.13: Descriptive Analysis about Time Accuracy

Descriptive Analysis			
	N	Mean	Std. Deviation
The accuracy of transportation application timings significantly impacts my ability to manage my daily schedule.	260	4.16	0.985
I find that the estimated time of arrival provided by transportation applications aligns well with the actual arrival times.	260	4.03	1.001
The transportation applications are crucial for ensuring timely attendance to classes and other university-related activities.	260	4.18	0.923
I trust the time accuracy of transportation applications when planning my journeys to and from the university.	260	4.07	0.990
Valid N (listwise)	260		

Table 4.13 shows the fourth independent variable which was time accuracy in our study. This part consists of 4 questions to let respondents fill out our survey. Based on table 4, the highest mean goes to the question “The transportation applications are crucial for ensuring timely attendance to classes and other university-related activities.” with the number of 4.18. Next, the lowest mean goes to the question “I find that the estimated time of arrival provided by transportation applications aligns well with the actual arrival times.” with the mean of 4.03. In terms of explaining the highest standard deviation, the question “I find that the estimated time of arrival provided by transportation applications aligns well with the actual arrival times.” has the highest standard deviation with the amount of 1.001. The lowest standard deviation

goes to the question “The transportation applications are crucial for ensuring timely attendance to classes and other university-related activities.” with the amount of 0.923.

4.4.3 All Variables (MEAN SCORE)

Table 4.14: Descriptive Analysis of all variables (Mean Score)

Descriptive Analysis			
	N	Mean	Std. Deviation
MEAN_Dependent Variable	260	4.3250	0.67078
MEAN_IV1	260	4.0798	0.65401
MEAN_IV2	260	4.1644	0.67113
MEAN_IV3	260	4.1827	0.68194
MEAN_IV4	260	4.1096	0.76482
Valid N (listwise)	260		

Table 4.14 shows the descriptive analysis of the whole variable mean score in our study. It consists of 1 dependent variable and 4 independent variables. Based on the table shown, the highest mean goes to the MEAN Dependent variable which resulted in 4.3250. The lowest mean goes to MEAN_IV1 which is 4.0798. The highest standard deviation goes to MEAN_IV4 with the amount of 0.76482 while the lowest goes to MEAN_IV1 with the number of 0.65401.



4.5 Validity and Reliability Test

Alpha reliability of the independent and dependent variables was used to calculate their internal consistency and variable sizes. This test occurs when pilot tests are reliable and acceptable to proceed further research. Cronbach's Alpha range can be divided into 6 different rates. Range ($\alpha \geq 0.9$) is considered as excellent, range ($0.9 > \alpha \geq 0.8$) is considered as good, range ($0.8 > \alpha \geq 0.7$) is considered as acceptable, range ($0.7 > \alpha \geq 0.6$) is considered as questionable, range ($0.6 > \alpha \geq 0.5$) is considered as poor and lastly range ($0.5 > \alpha$) is considered as unacceptable.

Table 4.15: Coefficient Alpha Range Cronbach, L.J (1951)

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

Table 4.16: Actual Reliability Test of Dependent variables, independent variables, and all variables (Mean Score)

Variables	N of Items	N	Cronbach's Alpha
Effectiveness of Transportation Applications	4	260	0.819
Customer Satisfaction	4	260	0.644
Safety Payment	4	260	0.789
Accessibility	4	260	0.808
Time Accuracy	4	260	0.791
All Variables (Mean Score)	5	260	0.876

Based on table 4.16, the dependent variables (Effectiveness of Transportation Application), with 4 items, shows the outcome of Cronbach's Alpha values for reliability is greater than 0.8 and it was in the range of good. It means that the tests are reliable and could proceed. Next, the first independent variable which was (Customer Satisfaction) with 4 items, shows the result of Cronbach's Alpha values for reliability is greater than 0.6 and it was in the range of questionable. The test could proceed because it is still considered acceptable. The second independent variable (Safety Payment) with 4 items, shows the outcome of Cronbach's Alpha values for reliability is greater than 0.7 and it was in the range of acceptable. The third independent variable (Accessibility) with 4 items, shows the result of Cronbach's Alpha values for reliability is greater than 0.8 and it was in range good. The fourth independent variable (Time accuracy) with 4 items, explains that the result of Cronbach's Alpha values for reliability is greater than 0.7 and it was in the range of acceptable. The test also computes and analyzes all 4 variables and becomes a mean score. The items will become 5 due to 1 dependent variable and 4 independent variables. The outcome of Cronbach's Alpha values for reliability is greater than 0.8 and it was in the range of good. It concludes that this research could proceed and be reliable to research.

4.6 Normality Test

Table 4.17: Test of Normality

Test of Normality						
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Effectiveness of Transportation Applications	.191	260	.000	.837	260	.000
Customer Satisfaction	.178	260	.000	.898	260	.000
Safety Payment	.180	260	.000	.881	260	.000
Accessibility	.183	260	.000	.876	260	.000
Time Accuracy	.205	260	.000	.857	260	.000

Table 4.17 presents the results of the normality tests conducted in our study using the SPSS system. Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were employed to assess the normal distribution of the data. A significance level (p-value) less than 0.05 was used as the threshold for determining non-normality. The results of both tests revealed highly significant p-values ($p < 0.001$), leading to the rejection of the null hypothesis of normality. Therefore, the data is considered significantly non-normally distributed.

4.7 Hypotheses Testing

Table 4.18: Table of Correlation Coefficient

R value	Strength
0-0.19	Very Weak
0.2-0.39	Weak
0.40-0.59	Moderate
0.6-0.79	Strong
0.8-1	Very Strong

4.7.1 Customer Satisfaction (Hypothesis 1)

Ho: There is no significant relationship between customer satisfaction that influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

H1: There is a significant relationship between customer satisfaction that influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

Table 4.19: Pearson Correlation between Customer Satisfaction and Effectiveness of Transportation Application

		Effectiveness of Transportation Application	Customer Satisfaction
Effectiveness of Transportation Application	Pearson Correlation	1	.495**
	Sig.(2-tailed)		.000
	N	260	260
Customer Satisfaction	Pearson Correlation	.495**	1
	Sig.(2-tailed)	.000	
	N	260	260
**.Correlation is significant at the 0.01 level(2-tailed)			

Table 4.19 presents the results of the Pearson Correlation test, examining the relationship between the dependent variable, Effectiveness of the transportation application, and the first independent variable, Customer satisfaction. The analysis revealed a moderate positive correlation, with Pearson's $r = 0.495$, indicating that as customer satisfaction increases, the effectiveness of the transportation application tends to increase. The correlation is statistically significant ($p < 0.01$), providing evidence to support the relationship. Consequently, Hypothesis 1, proposing a positive association between customer satisfaction and the effectiveness of the transportation application, is accepted.

4.7.2 Safety Payment (Hypothesis 2)

Ho: There is no significant relationship between safety payment that influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

H₁: There is a significant relationship between safety payment that influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

Table 4.20: Pearson Correlation between Safety Payment and Effectiveness of Transportation Application

		Effectiveness of Transportation Application	Safety Payment
Effectiveness of Transportation Application	Pearson Correlation	1	.570**
	Sig.(2-tailed)		.000
	N	260	260
Safety Payment	Pearson Correlation	.570**	1
	Sig.(2-tailed)	.000	
	N	260	260
**.Correlation is significant at the 0.01 level(2-tailed)			

Table 4.20 displays the results of the Pearson Correlation test conducted to explore the relationship between the dependent variable, the Effectiveness of the transportation application, and the second independent variable, Safety Payment. The analysis reveals a moderate positive correlation with a Pearson correlation coefficient (r) of 0.570. This positive correlation suggests that as the effectiveness of the transportation application increases, there is a tendency for safety payment to increase as well. The observed correlation is statistically significant at $p < 0.01$, providing evidence to support the relationship. Consequently, Hypothesis 2, which posited a positive relationship between the effectiveness of the transportation application and safety payment, is accepted.

4.7.3 Accessibility (Hypothesis 3)

Ho: There is no significant relationship between accessibility that influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

H1: There is a significant relationship between accessibility that influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

Table 4.21: Pearson Correlation between Accessibility and Effectiveness of Transportation Application

		Effectiveness of Transportation Application	Accessibility
Effectiveness of Transportation Application	Pearson Correlation	1	.467**
	Sig.(2-tailed)		.000
	N	260	260
Accessibility	Pearson Correlation	.467**	1
	Sig.(2-tailed)	.000	
	N	260	260
**.Correlation is significant at the 0.01 level(2-tailed)			

Based on Table 4.21, we utilized the Pearson Correlation test to examine the relationship between the dependent variable, Effectiveness of the transportation application, and the third independent variable, Accessibility. The analysis revealed a moderate positive correlation with a Pearson correlation coefficient (r) of 0.467. The correlation is statistically significant at the $p < 0.01$ level. Consequently, we accept hypothesis 3, which posited a relationship between effectiveness and accessibility in the context of the transportation application.

4.7.4 Time Accuracy (Hypothesis 4)

Ho: There is no significant relationship between time accuracy influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

H1: There is a significant relationship between time accuracy influences the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa.

Table 4.22: Pearson Correlation between Time Accuracy and Effectiveness of Transportation Application

		Effectiveness of Transportation Application	Time Accuracy
Effectiveness of Transportation Application	Pearson Correlation	1	.456**
	Sig.(2-tailed)		.000
	N	260	260
Time Accuracy	Pearson Correlation	.456**	1
	Sig.(2-tailed)	.000	
	N	260	260
**.Correlation is significant at the 0.01 level(2-tailed)			

Table 4.22 displays the results of the Pearson Correlation test, investigating the association between the dependent variable, Effectiveness of transportation application, and the fourth independent variable, time accuracy. The analysis reveals a moderate positive relationship with a Pearson correlation coefficient (r) of 0.456. Importantly, the correlation is found to be statistically significant at the $p < 0.01$ level. Consequently, we accept hypothesis 4, indicating a significant positive relationship between time accuracy and the effectiveness of the transportation application.

4.8 Summary / Conclusion

The purpose of this study is to determine the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. The results of this study show that all variables including dependent variables and independent variables significantly affect the effectiveness of transportation applications according to the test result of Descriptive Analysis, Reliability Analysis, Normality Test and Hypothesis Testing.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.1 Introduction

This chapter will discuss the previous chapter's findings. The chapter in question is positioned to elucidate the findings derived from the data generated and scrutinized in the preceding chapter 4. The primary aim is to present a comprehensive discussion rooted in the analysis conducted by the researcher. This involves a meticulous examination of data to discern patterns, correlations, or trends, particularly with a focus on establishing a relationship between an independent variable and a dependent variable. In essence, the core of this investigation centers around gauging the efficacy of transportation applications among SAL students at UMK Pengkalan Chepa. Within the chapter, a deliberate effort is made to highlight and accentuate results that directly align with the overarching objective of the research, uncovering and understanding the dynamics of the relationship between the independent and dependent variables. Moreover, beyond the mere presentation of findings, the chapter serves a dual purpose by advocating for a practical application of the research outcomes. In this regard, it encourages SAL students to actively incorporate and utilize transportation applications in their daily routines, particularly concerning their accommodation needs related to UMK Pengkalan Chepa.

5.2 Key Findings

Table 5.1: Relationship between customer satisfaction and transportation applications among SAL students in UMK Pengkalan Chepa

Research Question 1: What is the relationship between transportation applications and customer satisfaction among SAL students in UMK Pengkalan Chepa?

Research Objective 1: To identify the relationship between transportation applications and customer satisfaction among SAL students in UMK Pengkalan Chepa.

According to table 5.1, the reliability analysis findings indicate that the customer satisfaction has a consistent Cronbach Alpha of 0.644. The Pearson Correlation findings in the table indicate that there is a link between customer satisfaction and transportation applications among SAL students in UMK Pengkalan Chepa, as the Pearson Correlation value, r achieved in this test is 0.495. It also shows the effectiveness of customer satisfaction on customer loyalty.

As a result, the research targets were achieved. As the research goal and question have been met, we may infer that there is a strong correlation between customer satisfaction among SAL students in UMK Pengkalan Chepa.

Table 5.2: Relationship between payment safety and transportation applications among SAL students in UMK Pengkalan Chepa

Research Question 2: What is the relationship between transportation applications and payment safety among SAL students in UMK Pengkalan Chepa?

Research Objective 2: To identify the relationship between transportation applications and payment safety among SAL students in UMK Pengkalan Chepa.

According to table 5.2, the reliability analysis findings indicate that the payment safety has a consistent Cronbach Alpha of 0.789. The Pearson Correlation findings in the table indicate that there is a link between payment safety and transportation applications among SAL students in UMK Pengkalan Chepa, as the Pearson Correlation value, p achieved in this test is 0.570. It also shows the effectiveness of payment safety on customer trust. As a result, the research targets were achieved. As the research goal and question have been met, we may infer that there is a strong correlation between payment safety among SAL students in UMK Pengkalan Chepa.

Table 5.3: Relationship between accessibility and transportation applications among SAL students in UMK Pengkalan Chepa

Research Question 3: What is the relationship between transportation applications and accessibility among SAL students in UMK Pengkalan Chepa?

Research Objective 3: To identify the relationship between transportation applications and accessibility among SAL students in UMK Pengkalan Chepa.

According to table 5.3, the reliability analysis findings indicate that the accessibility has a consistent Cronbach Alpha of 0.808. The Pearson Correlation findings in the table indicate that there is a link between accessibility and transportation applications among SAL students in UMK Pengkalan Chepa, as the Pearson Correlation value, p achieved in this test is 0.467. It also shows the effectiveness of accessibility on customer needs. As a result, the research targets were achieved. As the research goal and question have been met, we may infer

that there is a strong significance between accessibility among SAL students in UMK Pengkalan Chepa.

Table 5.4: Relationship between time accuracy and transportation applications among SAL students in UMK Pengkalan Chepa

Research Question 4: What is the relationship between transportation applications and time accuracy among SAL students in UMK Pengkalan Chepa?

Research Objective 4: To identify the relationship between transportation applications and time accuracy among SAL students in UMK Pengkalan Chepa.

According to table 5.4, the reliability analysis findings indicate that the time accuracy has a consistent Cronbach Alpha of 0.791. The Pearson Correlation findings in the table indicate that there is a link between time accuracy and transportation applications among SAL students in UMK Pengkalan Chepa, as the Pearson Correlation value, p achieved in this test is 0.456. It also shows the effectiveness of time accuracy on customer satisfaction towards their time. As a result, the research targets were achieved. As the research goal and question have been met, we may infer that there is a strong significance between time accuracy among SAL students in UMK Pengkalan Chepa.

Table 5.5: Summary of Hypothesis Testing Result

Research Question and Research Objective	Hypothesis Result	Finding
RQ1: What is the relationship between transportation applications and customer satisfaction among SAL students in UMK Pengkalan Chepa?	$p=0.00$ ($p<0.001$) $r= 0.495$	There is a significant relationship between transportation applications and customer satisfaction among SAL students in UMK Pengkalan Chepa.
RO1: To identify the relationship between transportation applications and customer satisfaction among SAL students		

<p>in UMK Pengkalan Chepa.</p>		
<p>RQ2: What is the relationship between transportation applications and payment safety among SAL students in UMK Pengkalan Chepa?</p> <p>RO2: To identify the relationship between transportation applications and payment safety among SAL students in UMK Pengkalan Chepa.</p>	<p>$p=0.00$ ($p<0.01$)</p> <p>$r=0.570$</p>	<p>There is a significant relationship between transportation applications and payment safety among SAL students in UMK Pengkalan Chepa.</p>
<p>RQ3: What is the relationship between transportation applications and accessibility among SAL students in UMK Pengkalan Chepa?</p> <p>RO3: To identify the relationship between transportation applications and accessibility among SAL students in UMK Pengkalan Chepa.</p>	<p>$p=0.00$ ($p<0.01$)</p> <p>$r=0.467$</p>	<p>There is a significant relationship between transportation applications and accessibility among SAL students in UMK Pengkalan Chepa.</p>
<p>RQ4: What is the relationship between transportation applications and time accuracy among SAL students in UMK Pengkalan Chepa?</p> <p>RO4: To identify the relationship between transportation</p>	<p>$p=0.00$ ($p<0.01$)</p> <p>$r=0.456$</p>	<p>There is a significant relationship between transportation applications and time accuracy among SAL students in UMK Pengkalan Chepa.</p>

applications and time accuracy among SAL students in UMK Pengkalan Chepa.		
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5.3 Discussion

5.3.1 Hypothesis 1

H1: Is there any relationship between customer satisfaction and transportation applications among SAL students in UMK Pengkalan Chepa?

Customer satisfaction has a significant relationship with the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. Based on table 5.5, it shows that the value of Pearson Correlation Coefficient for the customer satisfaction is $r=0.495$ and the significance of p-value is lower than the alpha root (0.01) which is 0.000. Therefore, this can indicate that there is a positive relationship between customer satisfaction and transportation applications among SAL students in UMK Pengkalan Chepa. This factor is also strengthened by the past study where customer satisfaction can be defined as the service quality that had a positive effect on customer loyalty on behavior of the driver.

5.3.2 Hypothesis 2

H2: Is there any relationship between payment safety and transportation applications among SAL students in UMK Pengkalan Chepa?

Payment safety has a significant relationship with the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. Based on table 5.5, it shows that the value of Pearson Correlation Coefficient for the customer satisfaction is $r=0.570$ and the significance of p-value is lower than the alpha root (0.01) which is 0.000. Therefore, this is able to indicate that there is a positive relationship between payment safety and transportation applications among SAL students in UMK Pengkalan Chepa. This factor is also strengthened by the past study where safety and security are an important factor influencing customer trust and satisfaction in transportation apps. It is critical that these transactions and trips need to be safe and secure.

5.3.3 Hypothesis 3

H3: Is there any relationship between accessibility and transportation applications among SAL students in UMK Pengkalan Chepa?

Accessibility has a significant relationship with the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. Based on table 5.5, it shows that the value of Pearson Correlation Coefficient for the customer satisfaction is $r=0.467$ and the significance of p-value is lower than the alpha root (0.01) which is 0.000. Therefore, this can indicate that there is a positive relationship between accessibility and transportation applications among SAL students in UMK Pengkalan Chepa. This factor is also strengthened by the past study where design and implementation of features that facilitate ease of use, inclusivity, and accommodation of diverse user needs. By prioritizing accessibility, transportation applications can bridge the gap between the application and SAL students, fostering a symbiotic relationship that contributes to heightened usage and effectiveness.

5.3.4 Hypothesis 4

H4: Is there any relationship between time accuracy and transportation applications among SAL students in UMK Pengkalan Chepa?

Time accuracy has a significant relationship with the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. Based on table 5.5, it shows that the value of Pearson Correlation Coefficient for the customer satisfaction is $r=0.456$ and the significance of p-value is lower than the alpha root (0.01) which is 0.000. Therefore, this is able to indicate that there is a positive relationship between time accuracy and transportation applications among SAL students in UMK Pengkalan Chepa. This factor is also strengthened by the past study where the time spent waiting for transport, ease of access to transportation hubs, and the actual time spent traveling play pivotal roles in determining user satisfaction with transportation services. It is noted that according to a study by Chen et al. (2018), user satisfaction with transportation applications is highly influenced by time accuracy.

5.4 Implications of the Study

The objective of this study is to assess the effectiveness of transportation applications among SAL students in UMK Pengkalan Chepa. To ensure student happiness, it is crucial to emphasize the significant consequences of the comprehensive evaluation findings regarding

the efficacy of transport applications. Conducting this research aids in bolstering students' satisfaction with the efficacy of travel applications. provides diverse innovative concepts on the utilization of transportation applications. According to the results of this study, students anticipate the efficiency of transportation applications based on four specific variables, such as customer satisfaction, payment security, accessibility, and time. These elements influence the efficacy of utilizing this transit application for students.

Prior to developing transport applications, public transport service providers must ascertain the requirements of their clientele by analyzing their demographic characteristics. Demographics play a crucial role in enhancing comprehension of consumer background characteristics by utilizing demographic data, which includes but is not limited to age, race, ethnicity, and income. This may indirectly reveal the criteria of consumers who utilize the application frequently in greater detail. As a result, it facilitates the process for businesses to enhance a transportation application in accordance with consumer requirements to meet their level of application satisfaction. As an illustration, the acquired data indicates that most customers utilize this transit application on a weekly schedule. Consequently, the transport application company may be able to generate novel strategies to entice consumers to utilize the application, such as implementing weekend discounts, by utilizing this information.

This study offers valuable insights to public transport service providers who offer transport applications, enabling them to enhance their services in terms of customer satisfaction, payment security, accessibility, and time accuracy. According to the data collected from the survey, a significant number of respondents expressed satisfaction with the features provided by the transport application, which effectively catered to the special requirements of SAL students at UMK Pengkalan Chepa. Hence, the efficacy of utilizing the transport application is influenced by its qualities.

Furthermore, it is well recognized in the service business that customer satisfaction serves as a crucial metric for evaluating the quality of service. Hence, it is anticipated that the quality of service will exert a definite impact on consumer satisfaction. Conducting a study on user satisfaction with transport services is an appropriate method to gauge the level of user satisfaction with the advantages offered by transport applications in terms of the services they provide. For instance, a transport application offers precise and current information regarding routes, schedules, and fares.

One crucial aspect to consider is the correlation between payment security and the effectiveness of transport applications. Given that these applications frequently necessitate users to input payment and security details during their usage, it is imperative to guarantee the safety and security of these transactions and journeys. Examining the correlation between safety and security and the efficacy of transport applications among SAL students at UMK Pengkalan Chepa is crucial for a transport application to uphold a secure network for processing online payments. This can be achieved by employing the most recent software and software to safeguard against known vulnerabilities in the software, thereby mitigating any potential risks or concerns in this domain.

Accessibility, also known as shared opportunities, pertains to the simplicity of accessing goods, services, destinations, and activities. Apart from a brief segment of the voyage where mobility is the final objective, accessibility is the aim of most transport activities. Accessibility disparities persist among diverse student populations, despite the extensive implementation of mobility technologies, as is common knowledge. Consequently, it is critical that a transport application guarantees the comprehension of critical notifications, including service delays and updates, by users and provides explicit guidance and feedback to aid in the navigation of its functionalities.

Ultimately, the transportation application significantly contributes to assisting students in efficiently managing their daily travel and arriving at their intended location punctually. Hence, the level of user contentment with transport applications is greatly affected by punctuality, as it profoundly affects students' capacity to effectively organize their daily timetables. The transportation requests are crucial for demonstrating the correlation between punctuality and effectiveness of transportation applications among SAL students at UMK Pengkalan Chepa. This is done to guarantee prompt arrival to classrooms and other university-related activities.

5.5 Limitations of the Study

The limitations of a study are applicable to the variables or elements that may be subject to several limitations that could impact their overall utility. Although the current investigation has been conducted efficiently, the researcher has also encountered certain difficulties. One of the key drawbacks of the study is the small sample size, which does not adequately represent all SAL students at UMK Pengkalan Chepa. The reason is that certain conditions allow some

pupils to have no time limits. Despite the small sample size of only 260 students, obtaining respondents within a short timeframe proves to be challenging.

Furthermore, the survey instrument was solely conducted using Google Form and delivered in a sequential manner using WhatsApp on social media platforms. In addition, several participants showed a deficiency in understanding the survey questions as opposed to the interviews. This may have resulted in respondents offering responses without a comprehensive grasp of the study's main areas of focus. Furthermore, the conducted research is based on the most recent life trend, therefore limiting the availability of prior studies as references for the researcher. Obtaining precise data poses a challenge for studies in developing a framework to address the research subject.

In addition, one of the unavoidable limitations of the study is the ambiguity surrounding respondents who frequently utilize transportation applications. This is since most students in year 2 and higher prefer to utilize their personal vehicles as their primary mode of transportation at UMK Pengkalan Chepa. This is due to the convenience of unrestricted mobility, as it allows individuals to travel freely without the need to adhere to the predetermined timetables of public transport. Consequently, they declined to participate in the survey because of their infrequent use of transit applications. Another potential limitation is the lack of integration with existing university systems. If transportation applications operate independently of other university services or fail to integrate seamlessly with academic schedules and events, students may find it challenging to coordinate their transportation needs with their academic commitments.

Ultimately, this study was exclusively carried out among SAL students in UMK Pengkalan Chepa, Kota Bharu, Kelantan. This study lacks comprehensiveness in representing all institutions across Malaysia as it solely focuses on the state of Kelantan and SAL students at UMK Pengkalan Chepa. The results of this study can serve as a point of reference for future researchers, however they are less applicable to UMK Bachok and UMK Jeli campuses, as well as public institutions located outside of Kelantan state. Addressing these limitations is crucial for optimizing the impact of transportation applications and ensuring they meet the diverse needs of the student population. The variability of study outcomes is attributed to the geographical context in which the study undertakes itself.

5.6 Recommendations/ Suggestion for Future Research

To significantly augment the study's reach and enhance its overall relevance, it is imperative for future research endeavors to transcend the confines of the current investigation. To amplify the study's applicability and extend its impact, it is recommended that forthcoming investigations should transcend the exclusive focus on SAL students at UMK Pengkalan Chepa. A pivotal stride towards achieving a more comprehensive and inclusive perspective would involve incorporating a more diverse student demographic, spanning across various academic institutions in Malaysia. Examining the preferences and experiences of students from various regions and academic backgrounds would provide a more holistic understanding of the effectiveness of transportation applications. Through this expansive approach, the research endeavors to empower service providers, educational institutions, and policymakers alike with the knowledge and insights needed to make informed decisions and implement targeted interventions for the improvement of transportation services in an educational context.

Next, enhancing practical application. This strategic approach not only underscores the commitment to enhancing the user experience but also recognizes the intricate intersection of transportation services with the broader academic landscape. Future research could enhance the practical application of transportation applications by investigating their integration with existing university systems. Exploring how transportation services can seamlessly fit into academic schedules, events, and other university activities would address challenges students face in aligning their transportation needs with academic commitments. In essence, by expanding the scope of inquiry to encompass the intricate interplay between transportation applications and university systems, future research endeavors have the potential to usher in a new era of enhanced practicality and synergy, creating a transformative impact on the overall experience of students within the university landscape.

Furthermore, another recommendation will be streamlining university systems integration. To optimize the practical utility of transportation applications for students, future research could delve deeper into the integration of these applications with university systems. Furthermore, this recommended focus on streamlining university systems integration is not merely a technical endeavor but a strategic move towards fostering a holistic and supportive environment for students. It is an acknowledgment of the symbiotic relationship between transportation services and academic pursuits. The seamless integration of these applications into academic schedules and events not only addresses practical challenges but also enhances

the overall effectiveness of transportation services, aligning them more closely with the dynamic and multifaceted needs of students navigating their educational journey within the university context. In essence, by championing the cause of streamlining university systems integration, future research endeavors hold the potential to reshape the landscape of transportation services within the academic sphere. This comprehensive approach transcends the conventional boundaries of service provision, envisioning a future where transportation applications become an integral and indispensable part of the student experience, contributing significantly to their success and well-being in the university setting.

In summary, it is paramount to advocate for a comprehensive expansion of the study's focus, transcending its current boundaries to encompass a more diverse and representative student population. This entails a deliberate effort to explore the dynamics of transportation application usage across various demographics, including students from different regions, academic disciplines, and socio-economic backgrounds. Additionally, there is a need to delve into the integration of transportation applications with university systems and undertake longitudinal studies to comprehend the evolving patterns of user behavior. In essence, these suggested research directions collectively aspire to be active contributors to the ongoing enhancement and optimization of transportation applications within the higher education environment. By embracing inclusivity, exploring integration intricacies, and adopting a longitudinal lens, researchers can shape a transformative narrative that not only addresses current challenges but anticipates and adapts to the evolving needs of students, thereby solidifying the sustained effectiveness and relevance of transportation applications in the higher education landscape.

5.7 Overall Conclusion of the Study

In summary, this study extensively examined the effectiveness of transportation applications among SAL students at UMK Pengkalan Chepa. The research ventured beyond surface evaluations, delving deep into the intricate relationships among pivotal variables such as customer satisfaction, payment safety, accessibility, and time accuracy. By adopting a nuanced approach, the study successfully established significant correlations, shedding light on the interconnected dynamics that define the user experience. Beyond mere functionality, the findings underscored the profound impact these applications wield in shaping the daily routines and academic commitments of students. Uncovering the pivotal role played by transportation applications in influencing the multifaceted aspects of students' lives, this research contributes

invaluable insights to the broader discourse on technology integration in academic environments, emphasizing the need for tailored solutions that resonate with the unique needs and experiences of SAL students at UMK Pengkalan Chepa.

The implications of the study reach out to public transport service providers, urging them to consider demographic characteristics and customize their applications to cater to the specific needs of students. A central emphasis is placed on the critical importance of customer satisfaction, as the study underscores a clear positive correlation between user satisfaction, loyalty, and the overarching quality of service provided. In this context, the integration of features ensuring payment safety, accessibility, and time accuracy surfaces as pivotal factors that wield considerable impact on the overall effectiveness of transportation applications. This nuanced understanding emphasizes the imperative for service providers to not only acknowledge these key components but also to actively integrate them into their offerings, thereby fostering a user-centric approach that not only meets but exceeds the expectations of the student demographic. Such customization and attention to specific user needs can result in heightened user loyalty, improved customer satisfaction, and ultimately, the establishment of transportation applications as indispensable and trusted tools within the broader public transport landscape.

While the study yielded valuable insights, it is crucial to conscientiously acknowledge and address certain limitations that may temper the generalizability of the findings. Furthermore, potential biases in survey delivery mechanisms could have influenced respondent feedback, introducing a layer of subjectivity that demands careful consideration. The study's narrow focus on SAL students exclusively at UMK Pengkalan Chepa introduces a geographical and demographic constraint, limiting the applicability of the findings to a more expansive context. Recognizing these constraints underscores the imperative for future research initiatives to adopt a more inclusive approach, encompassing diverse student populations across various institutions in Malaysia.

In essence, this research advocates for ongoing enhancements and optimizations of transportation applications to align with the dynamic needs of students in higher education. The recommendation for integration with university systems and exploration of region-specific challenges underscores potential avenues for future research. Addressing these considerations can propel the transportation landscape towards a more efficient, user-friendly, and inclusive experience for students nationwide.

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APPENDIX A

UNIVERSITI MALAYSIA KELANTAN
 ENROLMEN PELAJAR AKTIF IJAZAH SARJANA MUDA SESI 2023/2024
 (Mengikut Program dan Semester Pengajian)

FAKULTI KEUSAHAWAHAN DAN PERNIAGAAN	Program	Semester 1			Semester 3			Semester 4		Semester 5			Semester 6			Semester 7			Semester 8			Semester 9			Semester 10		Semester 11			Semester 12		Jumlah				
		L	P	Jum	L	P	Jum	L	Jum	L	P	Jum	L	P	Jum	L	P	Jum	L	P	Jum	L	P	Jum	P	Jum	L	P	Jum	L	P	Jum				
	SAA - B. Accounting (Hons)	22	70	92	22	67	89			2	16	18	3	13	16	1		1															50	166	216	
	SAB - BBA. (Hons) (Islamic Bank & Fin)	47	175	222	45	163	208	1	1	37	162	199		2	2	34	166	200				4	10	14				1	1	2			169	679	848	
	SAE - B.Ent. (Hons)	10	13	23	12	36	48			18	31	49				14	32	46				1		1										55	112	167
	SAK - B. Ent. (Hons.) (Commerce)	57	140	197	44	134	178	2	2	49	137	166				56	159	215		1	1	12	6	18	1	1	2		2	1	1	222	579	801		
	SAL - B. ENT. (HONS) (LOGISTIC)	62	127	189	50	138	188			58	140	198				54	148	202				4	2	6									4	11	15	
	SALD -	1	2	3	2	9	11	1	1																								174	555	729	
	SAR - B. Ent. (Hons) (Retailing)	39	114	153	41	136	177			50	138	188		2	2	36	147	183	1	11	12	5	4	9	2	2	2	1	3							
	Jumlah Fakulti	238	641	879	216	683	899	4	4	214	624	838	3	17	20	195	652	847	1	12	13	26	22	48	3	3	5	2	7	1	1	902	2657	3559		
	Jumlah Keseluruhan	238	641	879	216	683	899	4	4	214	624	838	3	17	20	195	652	847	1	12	13	26	22	48	3	3	5	2	7	1	1	902	2657	3559		



FKP

APPENDIX B

Measuring The Effectiveness of Transportation Applications Among SAL Students In UMK Pengkalan Chepa

Hi and greetings to our respondent,

We are Bachelor of Entrepreneurship (Logistics and Distributive Trade) students with Honors from University Malaysia Kelantan (UMK). The purpose of carrying out this questionnaire is to conduct a survey about **Measuring the Effectiveness of Transportation Applications among SAL students in UMK Pengkalan Chepa** for our final year project. We hope that you could spare some time to answer the questionnaire for completing our task. This research is for academic purpose only and your information will be kept confidential.

*Kami merupakan pelajar Ijazah Sarjana Muda Keusahawanan (Logistik) dengan Keptujian dari Universiti Malaysia Kelantan (UMK). Tujuan menjalankan soal selidik ini adalah untuk mengkaji kajian tentang **Mengukur Keberkesanan Aplikasi Pengangkutan dalam kalangan pelajar SAL di UMK Pengkalan Chepa** untuk projek tahun akhir kami. Kami berharap anda dapat meluangkan sedikit masa untuk menjawab soal selidik untuk penyelesaian tugas kami. Penyelidikan ini adalah untuk tujuan akademik sahaja dan maklumat anda akan dirahsiakan.*

Thank you very much

Prepared by/ Disediakan oleh:

AHMAD WAFIUDEEN BIN ROSIDI (A20A1244)
RAVEEN KUMAR A/L M.MURAILEE (A20A1924)
ALIYANA NAJWA BINTI MUSTAPHA (A20A1258)
CHENG EE KHIN (A20A1298)

* Indicates required question

DEMOGRAPHIC INFORMATION: MAKLUMAT DEMOGRAFI

Instruction: Please choose your answers based on the question below. / Arahan: Sila pilih jawapan anda berdasarkan soalan di bawah.

1. **Gender/Jantina: ***

Mark only one oval.

Male/Lelaki

Female/Perempuan

2. **Race/Bangsa: ***

Mark only one oval.

Malay/Melayu

Chinese/Cina

Indian/India

Others/Lain-lain

3. **Year of Study/Tahun Pengajian: ***

Mark only one oval.

Year 1/Tahun 1

Year 2/Tahun 2

Year 3/Tahun 3

Year 4/Tahun 4

4. Age/Umur: *

Mark only one oval.

- 20-22 years old/ 20-22 tahun
 23-25 years old/ 23-25 tahun

Part A: Effectiveness of transportation application among SAL students in UMK Pengkalan Chepa

Please answer each question by choosing the correct measure based on the given scale about **Effectiveness of transportation application among SAL students in UMK Pengkalan Chepa.** / Sila jawab setiap soalan dengan memilih ukuran yang betul berdasarkan skala yang diberikan tentang **Mengukur Keberkesanan Aplikasi Pengangkutan dalam kalangan pelajar SAL di UMK Pengkalan Chepa.**

1. Strongly Disagree (SD) /Sangat Tidak Setuju
2. Disagree (D) /Tidak Setuju
3. Neutral (N)/ Neutral
4. Agree (A) /Setuju
5. Strongly Agree (SA) /Sangat Setuju

5. **Question 1**

Transportation applications significantly contribute to the efficiency of my daily commuting experience. / Aplikasi pengangkutan menyumbang dengan ketara kepada kecekapan pengalaman berulang-alik harian saya.

Mark only one oval.

- 1 2 3 4 5
-
- Strongly Disagree (SD) Strongly Agree (SA)

6. **Question 2**

The features offered by transportation applications meet the specific needs of SAL students effectively. / Ciri-ciri yang ditawarkan oleh aplikasi pengangkutan memenuhi keperluan khusus pelajar SAL dengan berkesan.

Mark only one oval.

- 1 2 3 4 5
-
- Strongly Disagree (SD) Strongly Agree (SA)

7. **Question 3**

Using transportation applications is a convenient and time-saving way for students to plan their journeys. / Penggunaan aplikasi pengangkutan ialah cara yang mudah dan menjimatkan masa untuk pelajar merancang perjalanan mereka.

Mark only one oval.

- 1 2 3 4 5
-
- Strongly Disagree (SD) Strongly Agree (SA)

8. **Question 4**

The information provided by transportation applications, such as schedules and routes, is accurate and reliable. / Maklumat yang diberikan oleh aplikasi pengangkutan, seperti jadual dan laluan, adalah tepat dan boleh dipercayai.

Mark only one oval.

- 1 2 3 4 5
-
- Strongly Disagree (SD) Strongly Agree (SA)

Part B: Customer Satisfaction/ Bahagian B: Kepuasan pelanggan

Please answer each question by choosing the correct measure based on the given scale about **Customer Satisfaction**. / Sila jawab setiap soalan dengan memilih ukuran yang betul berdasarkan skala yang diberikan tentang **Kepuasan pelanggan**.

1. Strongly Disagree (SD) /Sangat Tidak Setuju
2. Disagree (D) /Tidak Setuju
3. Neutral (N)/ Neutral
4. Agree (A) /Setuju
5. Strongly Agree (SA) /Sangat Setuju

9. **QUESTION 1**

I am satisfied with the service offered by transportations application. / *Saya berpuas hati dengan perkhidmatan yang ditawarkan oleh aplikasi pengangkutan.*

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

10. **QUESTION 2**

The transportation application provides accurate and up-to-date information about routes, schedules and fares. / *Aplikasi pengangkutan menyediakan maklumat yang tepat dan terkini tentang laluan, jadual dan tambang.*

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

11. **QUESTION 3**

The customer support provided by the transportation application is helpful and responsive. / *Perkhidmatan pelanggan yang disediakan oleh aplikasi pengangkutan sangat membantu dan responsif.*

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

12. **QUESTION 4**

The transportation application lacks of features that enhance my overall transportation experienced. / *Aplikasi pengangkutan tidak mempunyai ciri yang dapat meningkatkan pengalaman pengangkutan saya.*

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

Part C: Safety Payment/ Bahagian C: Pembayaran keselamatan

Please answer each question by choosing the correct measure based on the given scale about **Safety Payment**. / Sila jawab setiap soalan dengan memilih ukuran yang betul berdasarkan skala yang diberikan tentang **Pembayaran keselamatan**.

1. Strongly Disagree (SD) /Sangat Tidak Setuju
2. Disagree (D) /Tidak Setuju
3. Neutral (N)/ Neutral
4. Agree (A) /Setuju
5. Strongly Agree (SA) /Sangat Setuju

13. QUESTION 1 *

Transportation applications maintain a secure network to process online payments. / Aplikasi pengangkutan mengekalkan rangkaian selamat untuk memproses pembayaran dalam talian

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

14. QUESTION 2 *

Transportation applications using updated software and spyware to protect against known software vulnerabilities. / Aplikasi pengangkutan menggunakan perisian dan perisian pengintip yang dikemas kini untuk melindungi daripada kelemahan perisian yang diketahui.

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

15. QUESTION 3 *

Transportation applications used 3D Secure to maintain payment security in e-commerce by verifying a customer's identity. / Aplikasi pengangkutan menggunakan 3D Secure untuk mengekalkan keselamatan pembayaran dalam e-dagang dengan mengesahkan identiti pelanggan

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

16. QUESTION 4 *

Transportation applications always improve security of payment by verifying the transaction of user. / Aplikasi pengangkutan sentiasa meningkatkan keselamatan pembayaran dengan mengesahkan transaksi pengguna.

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

Part D: Accessibility/ Bahagian D: Kebolehcapaian

Please answer each question by choosing the correct measure based on the given scale about **Accessibility**. / Sila jawab setiap soalan dengan memilih ukuran yang betul berdasarkan skala yang diberikan tentang **Kebolehcapaian**.

1. Strongly Disagree (SD) /Sangat Tidak Setuju
2. Disagree (D) /Tidak Setuju
3. Neutral (N) / Neutral
4. Agree (A) /Setuju
5. Strongly Agree (SA) /Sangat Setuju

17. Question 1 *

Transportation applications offers information in different forms such as text-to-speech capabilities and audio announcements. / Aplikasi pengangkutan menawarkan maklumat dalam bentuk yang berbeza seperti keupayaan teks-ke-ucapan dan pengumuman audio.

Mark only one oval.

1 2 3 4 5

Stroi Strongly Agree (SA)

18. **Question 2** *

Transport applications ensure notifications that are significant like updates or delays in service are delivered in a way that students easy to understand. / Aplikasi pengangkutan memastikan pemberitahuan yang penting seperti kemas kini atau kelewatan dalam perkhidmatan disampaikan dengan cara yang mudah difahami oleh pelajar.

Mark only one oval.

1 2 3 4 5

Strongly Disagree (SD) Strongly Agree (SA)

19. **Question 3** *

Transport applications upgrades its features frequently to take into account new accessibility rules and requirements. / Aplikasi pengangkutan menaik taraf cirinya dengan kerap untuk mengambil kira peraturan dan keperluan kebolehcapaian baharu.

Mark only one oval.

1 2 3 4 5

Strongly Disagree (SD) Strongly Agree (SA)

20. **Question 4** *

Transportation application provides clear instructions and feedback to assist users in navigating through its features. / Aplikasi pengangkutan menyediakan arahan dan maklum balas yang jelas untuk membantu pengguna menavigasi ciri-cirinya.

Mark only one oval.

1 2 3 4 5

Strongly Disagree (SD) Strongly Agree (SA)

Skip to question 21

Part E: Time Accuracy / Bahagian E: Ketepatan masa

Please answer each question by choosing the correct measure based on the given scale about **Time Accuracy**. / Sila jawab setiap soalan dengan memilih ukuran yang betul berdasarkan skala yang diberikan tentang **Ketepatan masa**.

1. Strongly Disagree (SD) /Sangat Tidak Setuju
2. Disagree (D) /Tidak Setuju
3. Neutral (N) /Neutral
4. Agree (A) /Setuju
5. Strongly Agree (SA) /Sangat Setuju

21. **Question 1** *

The accuracy of transportation application timings significantly impacts my ability to manage my daily schedule. / Ketepatan pemasaan aplikasi pengangkutan memberi kesan ketara kepada keupayaan saya untuk mengurus jadual harian saya.

Mark only one oval.

1 2 3 4 5

Strongly Disagree (SD) Strongly Agree (SA)

22. Question 2

*

Thank you for having your time.

I find that the estimated time of arrival provided by transportation applications aligns well with the actual arrival times. / *Saya mendapati anggaran masa ketibaan yang disediakan oleh aplikasi pengangkutan adalah sejajar dengan masa ketibaan sebenar.*

Mark only one oval.

1 2 3 4 5

Strongly Strongly Agree (SA)



23. Question 3

*

The transportation applications are crucial for ensuring timely attendance to classes and other university-related activities. / *Aplikasi pengangkutan adalah penting untuk memastikan kehadiran tepat pada masanya ke kelas dan aktiviti lain yang berkaitan dengan universiti.*

Mark only one oval.

1 2 3 4 5

Strongly Strongly Agree (SA)

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Google Forms

24. Question 4

*

I trust the time accuracy of transportation applications when planning my journeys to and from the university. / *Saya mempercayai ketepatan masa aplikasi pengangkutan semasa merancang perjalanan saya ke dan dari universiti.*

Mark only one oval.

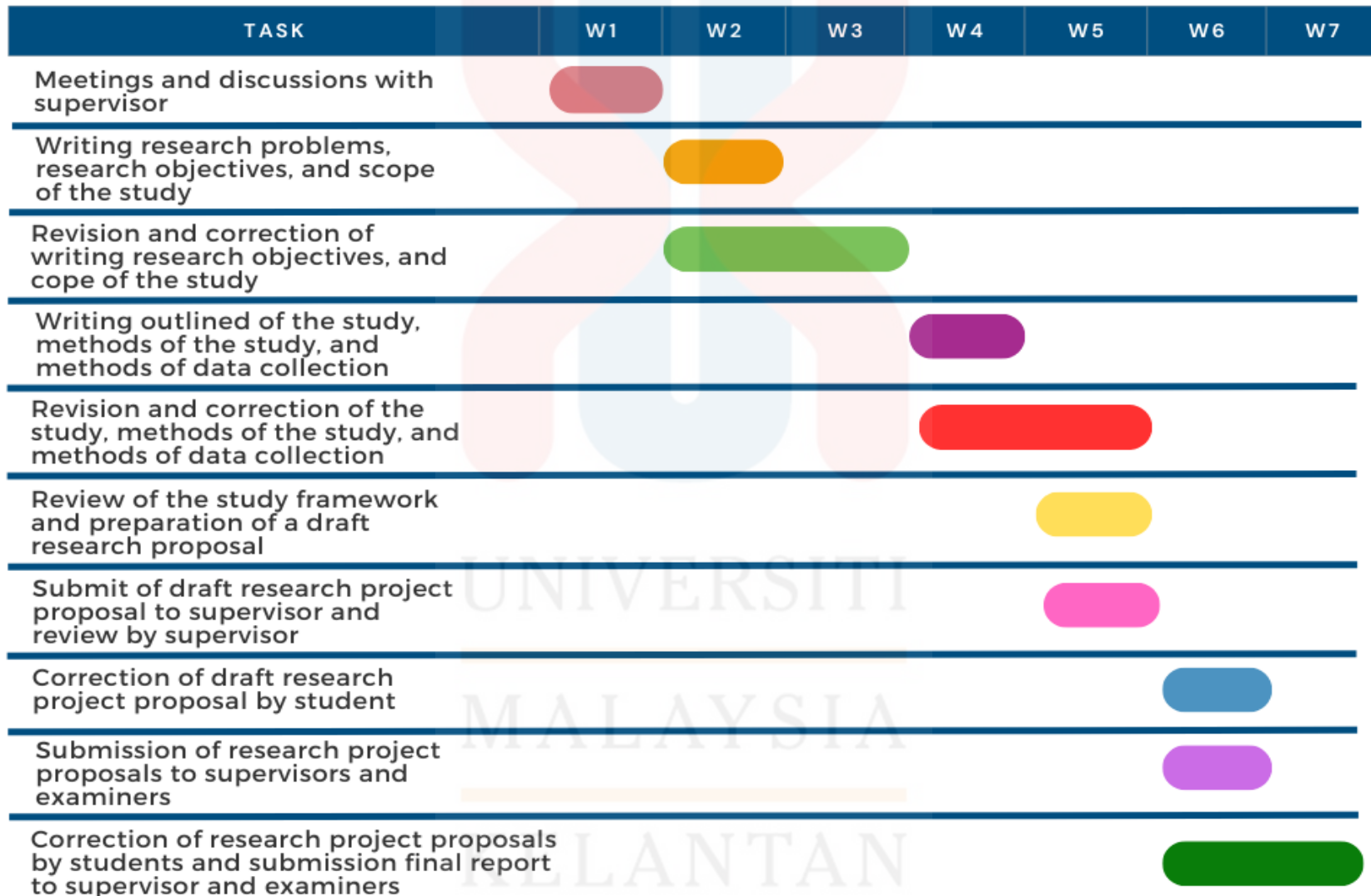
1 2 3 4 5

Strongly Strongly Agree (SA)

UNIVERSITI
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APPENDIX C

TIMELINE PROGRESS ALS4112 RESEARCH PROJECT - GANTT CHART



TIMELINE PROGRESS ALS4112 RESEARCH PROJECT - GANTT CHART

