# FACTORS INFLUENCING THE INTENTION OF CHOOSING AN ELECTRIC VEHICLE IN PENGKALAN CHEPA, KELANTAN

MUHAMMAD WAFI BIN AHMAD

NAZRISYAZANA HUSNA BINTI ABU SAMAH GAN WEI LI

NURSHAMIRA BINTI ABDUL SAMAD

DEGREE OF BACHELOR OF ENTREPRENEURSHIP

(LOGISTIC & DISTRIBUTIVE TRADE) WITH

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# Factors Influencing the Intention of Choosing an Electric Vehicle in Pengkalan Chepa, Kelantan

by

**Muhammad Wafi Bin Ahmad Nazri**

**Syazana Husna Binti Abu Samah Gan**

**Wei Li**

**NurShamira Binti Abdul Samad**

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    AHMAD NAZRI

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_____
SIGNATURE
NAME: NURSHAMIRA BINTI ABDUL SAMAD

_____
SIGNATURE
NAME: GAN WEI LI

Date:

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## TABLE OF CONTENT

# LIST OF TABLES

## TABLES OF FIGURES

## LIST OF FORMULAS

$$y = b + mx^1 + mx^2 + mx^3$$

## LIST OF ABBREVIATIONS

| | |
|---|---|
| UMK | University Malaysia Kelantan |
| EVs | Electric Vehicles |
| TPB | Theory of Planned Behavior |
| MARii | Malaysia Automotive Robotics and Internet of Things Institute |
| MITI | Ministry of International Trade and Industries |
| ANOVA | Analysis of Variance |
| IBM SPSS | Statistical Package for Social Science |
| Sig. | Significance level value |

x

## LIST OF SYMBOLS

| | |
|---|---|
| % | Percentage |
| H1 | Hypothesis 1 |
| H2 | Hypothesis 2 |
| H3 | Hypothesis 3 |
| H4 | Hypothesis 4 |
| H5 | Hypothesis 5 |
| H0 | Null hypothesis |
| n | Sample size |
| N | Population Size |
| % | Percent sign |
| α | Coefficient Alpha Range |
| R | Multiple Correlation Coefficient |

# ABSTRAK

Jenis pengangkutan yang menggunakan elektrik dikenali sebagai kenderaan elektrik (EV).EV menggunakan motor elektrik yang dikuasakan oleh elektrik dari bateri atau sel bahan api, berbanding dengan kenderaan konvensional yang menggunakan petrol atau enjin berkuasa diesel. Untuk memenuhi pelbagai keperluan memandu, terdapat tiga jenis EV yang berbeza. Mereka datang dalam tiga jenis: sel bahan api, hibrid plug-in, dan semua elektrik. Tetapi, salah satu halangan serius kepada EV mungkin kos pembeliannya. EV biasanya lebih mahal daripada kenderaan enjin pembakaran dalaman konvensional, walaupun pada hakikatnya kos mereka mula menurun. Objektif utama kajian ini adalah untuk melihat pemilihan EV di Pengkalan Chepa, Kelantan dengan faktor-faktor yang berkaitan iaitu kebimbangan alam sekitar, faedah psikologi, julat harga, persepsi manfaat ekonomi dan kesediaan infrastruktur. Kajian ini akan mengedarkan soal selidik kepada responden di kalangan penduduk Pengkalan Chepa, Kelantan untuk mengumpul data menggunakan pendekatan penyelidikan kuantitatif.Kaedah penyelidikan kuantitatif telah digunakan dan 140 responden telah dinilai. Soal selidik diedarkan untuk mengumpul data utama sebagai tinjauan dengan soal selidik dalam talian dan secara peribadi untuk mendapatkan maklumat yang diperlukan untuk kajian ini. Semua data yang dikumpul telah dianalisis dengan menggunakan perisian IBM SPSS Versi 26 berdasarkan statistik deskriptif, analisis kebolehpercayaan, analisis korelasi Pearson, dan analisis regresi berbilang. Bagi hasilnya, kebanyakan pembolehubah bebas mempunyai hubungan yang signifikan dengan pembolehubah bergantung. Melalui kajian ini, ia akan memahami faktor yang mempengaruhi niat memilih kenderaan elektrik.

*Kata kunci: Kenderaan elektrik, kebimbangan alam sekitar, julat harga, kesediaan infrastruktur, EV*

## ABSTRACT

A type of transportation that runs on electricity is known as an electric vehicle (EVs). EVs use an electric motor that is powered by electricity from batteries or a fuel cell, as opposed to conventional vehicles that use a gasoline (petrol) or diesel-powered engine. To meet various driving requirements, there are three different types of EVs. They come in three varieties: fuel cell, plug-in hybrid, and all-electric. But one of the serious barriers to EVs may be the cost of purchasing one. EVs are generally more expensive than conventional internal combustion engine vehicles, despite the fact that their costs are beginning to decline. The main objective of this study is to see the intention of choosing EVs in Pengkalan Chepa, Kelantan with related factors which are environmental concern, psychological benefits, price range, perception of economic benefits, and infrastructure readiness. This study will distribute questionnaires to respondents among the Pengkalan Chepa, Kelantan residents in order to collect data using a quantitative research approach. Quantitative research method was used and 140 respondents were evaluated. Questionnaire were distributed to collect the primary data as a survey with online questionnaire and personally to get the information needed for this study. All the data collected was analyzed by using IBM SPSS Version 26 software based on descriptive statistics, reliability analysis, Pearson correlation analysis, and multiple regression analysis. As for the result, most of the independent variables have a significant relationship with the dependent variable. Through this study, it will understand the factor that factor influencing the intention of choosing an electric vehicle.

**Keywords:** *Electric vehicle, environmental concern, price range, infrastructure readiness, EVs*

# CHAPTER 1

# INTRODUCTION

## 1.0    Introduction

The first chapter discusses the academic foundation that is the basis of this investigation. The first chapter will discuss the ideas concerning the background study, problem statements, the significance of the analysis, the scope of the study, the limitations of the study, research objectives, and research questions.

## 1.1    Background of Study

Consequently, electric vehicles (EVs) are anticipated to lessen environmental impacts and conserve scarce non-renewable fuel reserves throughout their life cycles (Liu et al. 2019). EVs are being made now as an effective way to deal with the lack of fossil fuels and environmental problems, especially carbon dioxide ($CO_2$) emissions. Traditional transportation is causing more and more problems for the environment. For example, about a fifth of greenhouse gas emissions come from cars and trucks (EEA, 2019).

The expansion of the transportation sector in Malaysia has led to a significant rise in the country's demand for energy. The need for power from the transportation sector was more effective than any other single sector in 2012, accounting for more than 37% of total demand. This was primarily the result of an increase in the number of automobiles owned by individuals, which rose by almost 9% in the same year (National Energy Balance, 2014). According to Saidur, R.; Sattar, M.; Masjuki, H.; Ahmed (2007), the low energy conversion efficiency of combustion engines, which is expected to be 18.88% in 2019, will significantly impact Malaysia's transportation sector.

Several government agencies operating under various ministries propel Malaysia's automotive industry forward. The Ministry of Transport Malaysia is at the forefront of a government-wide effort to revitalize the country's auto sector. The Malaysia Automotive Robotics and Internet of Things Institute (MARii) is a government organization under the purview of the Ministry of International Trade and Industries. Malaysia (MITI) acts as a coordinating center and think tank for improving Malaysia's automotive industry and mobility more generally (National Automotive Policy, 2020).

Purview of the Ministry of International Trade and Industries. Malaysia (MITI) acts as a coordinating center and think tank for improving Malaysia's automotive industry and mobility more generally (National Automotive Policy, 2020). Malaysia plans to push the widespread adoption of EVs to decrease the country's reliance on fossil fuels and carbon emissions caused by the transportation industry. As the technology behind EVs continues to advance, more and more people see them as a practical, long-term solution to "decarbonize" individual modes of transportation.

The air and environmentally friendly technology state are "close to market" (Mayor of London, 2009; Shen, Han, Chock, Chai, and Zhang, 2012). There is a widespread belief that electrification is the most effective and essential method for cutting carbon emissions and lowering the energy required by the transportation sector. Therefore, if the government wants to create an economy that is both sustainable and kind to the environment, one of its top priorities should be to develop effective plans for greening the transportation sector. This should be a top priority for the government.

## 1.2    Problem Statement

In today's world, the operation of motor vehicles has a direct bearing on environmental problems on a worldwide scale, as well as the depletion of natural resources in many nations, including Malaysia. Because of this, the electrification of road transportation has become necessary. The replacement of vehicles powered by internal combustion engines with vehicles powered by new forms of energy, such as EVs, is a step in the right direction toward achieving urban sustainability.

Environmental concern is "the degree to which individuals are cognizant of ecological concerns, sympathetic to initiatives to address those problems, and demonstrably eager to take part in addressing those problems themselves" (Wu, Lio, Wang, & Chen, 2019). For example, in 2019, about 24% of the world's carbon emissions came from cars and trucks. More than 500,000 passenger cars are registered on Malaysian roads every year. These statistics show that cars and trucks that run on fossil fuels are not sustainable or suitable for the environment (AAM, 2019; Birol, 2019). Therefore, getting cars to release less carbon dioxide is a big part of ensuring environmental problems do not happen.

Sound pollution, air pollution, and traffic jams are all outside effects of transportation that city planners rarely consider. However, since the transportation industry uses 25% of the world's energy and energy production causes air pollution, these "issues" must be taken into account to ensure that the growth of transportation around the world is sustainable (Korzhenevych, 2016). Also, regular vehicles can be loud and annoying to other drivers, but EVs do not make any noise that can be heard. Even though this matches their stated preference for EVs, the psychological benefits are a plus (Figliozzi, 2018).

Both price and value play a role in determining whether or not a buyer will purchase an electric vehicle (EV). According to the findings of a study, one of the most critical factors influencing a person's decision regarding whether or not to adopt a system is its cost (Zhang et al.2020). Even though governments are providing incentives such as tax cuts and subsidies, electric vehicles (EVs) continue to be more expensive than their counterparts that are powered by internal combustion engines (Wang & Liu, 2017). The excellent EV price compared to gasoline-powered automobiles is why people choose something other than EVs.

Another problem customer will have to deal with is that no charging stations are available in any other location. When traveling long distances in an electric vehicle, it is necessary to have the infrastructure to charge the vehicle in the middle of the trip (Habib, S.; Khan & Ali, 2019). This is something that has been brought to highlight by several researchers, who have demonstrated that building infrastructure to charge EVs may encourage them because it enables electric vehicles to travel further distances than conventional automobiles (Javid & Nejat, 2017). Before settling on one option, prospective buyers of electric vehicles will carefully consider several factors. Important factors to consider include the total number of charging stations, their locations, their availability, and their costs (Zhang, Y. Liu, 2020).

However, a significant amount of research is still required to determine whether or not people in Pengkalan Chepa, Kelantan, are switching to EVs. The primary goal of this study, which is part of a larger study with a more extensive scope, is to investigate the factors that people in Pengkalan Chepa, Kelantan, particularly those interested in purchasing electric cars, consider important when making purchasing decisions.

**1.3    Research Objectives**
**The purpose of this study:**

1.3.1 To measure the relationship between environmental concern and the intention of choosing an EV in Pengkalan Chepa.

1.3.2 To measure the relationship between price range and the intention of choosingan EV in Pengkalan Chepa.

1.3.3 To measure the relationship between the perception of economic benefits andthe intention of choosing an EV in Pengkalan Chepa.

1.3.4 To measure the relationship between psychological benefit and the intention of choosing an EV in Pengkalan Chepa.

1.3.5 To measure the relationship between infrastructure readiness and the intentionof choosing an EV in Pengkalan Chepa.

**1.4     Research Questions**

**The purpose of this study:**

1.4.1 How does environmental concern affect the intention of choosing an EV in Pengkalan Chepa?

1.4.2 How does the price range affect the intention of choosing an EV in Pengkalan Chepa?

1.4.3 How does the perception of economic benefit affect the intention of choosing anEV in Pengkalan Chepa?

1.4.4 How do the psychological benefits affect the intention of choosing an EV in Pengkalan Chepa?

1.4.5 How does the infrastructure readiness affect the intention of choosing an EV in Pengkalan Chepa?

5

**1.5    Scope of Study**

The researcher will concentrate on factors influencing the intention of purchasing EVs in Pengkalan Chepa, Kelantan. There are numerous locations in Kelantan where researchers can explore utilizing EVs, but the researcher chose to do his research in Pengkalan Chepa. The requirement for any form of EVs in this area might be described as unique. According to LatLong.net, Pengkalan Chepa is a coastal area and a small town near Kota Bharu Airport with a population of about 14,000. They also mentioned that the town is a small educational spot with a few outstanding communities, private schools, and colleges.

**1.6    Significance of The Study**

Acceptance of EVs has become the standard nowadays because most people rely on vehicles to get from one location to another. However, the elements that impact people's intentions to use EVs can determine their vehicle type. Finding the value of this study can help certain parties establish a culture sensitive to current technology.

**1.6.1    Researcher**

There's a lot of benefit befall on researchers for conducting this research. First, researchers can extend their study regarding EVs in the future. The researcher may be able to adjust the topics of the study to acquire various results based on the knowledge and experience gained while doing this study. For example, adjusting the dependent variable in the next study may assist researchers in gaining new knowledge about EV and being able to share it with the public in order to raise public awareness about EV.

Next, researchers can expand their research in the future after understanding the relationship in the included factors. When conducted by competent individuals, any study has the potential to yield better results. the findings of different studies that have been conducted by different people will invariably fluctuate. Therefore, researchers who have recognized the relationship between the components that have been researched should have new suggestions that can be used to make the later study even better.

Also, researchers can conduct other research in different areas either in Malaysia or overseas to compare the main factors that influence the intention of choosing an EV. Every study conducted in a different location will inevitably yield different results. In Malaysia for example, fewer individuals use EVs due to a variety of constraints such as road conditions, infrastructural readiness, high prices, and so on. Meanwhile, Saudi Arabia is a country with a pretty solid economic condition, so many people who can afford a luxury car should be able to buy an EV that is better for the environment. This demonstrates that every study conducted in a different location will inevitably yield different results.

### 1.6.2   Consumer

This research can provide a detailed picture of the elements that influence consumers' intentions to acquire EVs in Pengkalan Chepa. The study's findings may raise their recognition of the advantages of using EVs. Knowledge can convince them of the advantages of driving an EV and persuade them to buy one.

### 1.6.3 Government Policy

The government or policymakers will profit from this study because it may be used as a guideline to provide better support to the green product business, particularly the automotive industry. In 2017, the automobile industry contributed RM 40 billion to the national GDP, making it one of Malaysia's most important businesses. Furthermore, one goal of Malaysia's national automotive policy (NAP) is to make the country a regional powerhouse for energy-efficient vehicles. As a result, this study will give policy makers some insight into consumer behavior by assessing the level of customers' intention to purchase an electric vehicle. As a result, it is possible to determine whether the NAP's goal can be met and whether the policy needs to be revised.

If there is a greater desire to purchase an electric vehicle, the government should consider enacting an appropriate policy in the future to raise the sales volume of energy efficient vehicles, particularly electric vehicles.

## 1.7    Definition of Terms

### 1.7.1 Environmental Concern

Environmental concern is the degree to which a person is aware of environmental issues, supports efforts to address them, and expresses a desire to participate personally in the solution. According to Simsekoglu and Lajunen (2008), taking care of the environment entails understanding climate change, utilizing clean energy sources, and conserving energy.

### 1.7.2 Price Range

The acceptable and unacceptable low and high price ranges have different effects on consumers based on their unique perceptions and evaluations of prices within those ranges. Cox (1986) makes a compelling case that purchasers should avoid coming into a purchase situation with tight price constraints (an acceptable price range). In contrast, the price levels perceived by customers who have become potential buyers help "shape or shift" the acceptable price range.

### 1.7.3 Perception of Economic Benefit

Money-based measures, such as net income, earnings, and others, can be used to quantify economic benefits. A cost-cutting strategy also saves money.

### 1.7.4 Psychological Benefits

A reward or benefit that materializes compared to typical alternatives and a "better feeling" that improves status and reputation due to choosing a specific product would be considered psychological benefits. Sriram and Forman (1993), Bech-Larsen (1996) When compared to conventional alternatives, consumers felt that using products with environmentally friendly features offered additional benefits.

### 1.7.5 Infrastructure Readiness

The term "infrastructure readiness" refers to the availability of public charging stations for EVs (technological conditions that simplify the use of the technology). New transportation fuels face a significant barrier due to a lack of retail infrastructure, as stated by Sperling and Kitamura (1986). This is especially important when debating the purchase of a vehicle that runs on a novel fuel.

**1.8      Organization of The Proposal**

The first chapter presents the background of the study, a statement of the problem, a research question, and a research goal. After that, chapter 2 will apply the literature review related to the factor influencing the intention of choosing an electric vehicle in Pengkalan Chepa, Kelantan. Finally, chapter 3 will state the design and methodology of the study that has been explained. Moreover, this chapter included the method used in the research, sampling technique, data sources, data collection, and data analysis methods that will be defined.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 Introduction

Chapter 2 will discuss previous literature related to the topic of the study. In addition, this study also explains the underpinning theory, dependent variable, independent variables, hypothesis statement, and conceptual framework.

## 2.2 Theory of Planned Behavior

This study adopts the Theory of Planned Behavior (TPB) as its underpinning theory to investigate the determinants influencing the intention of choosing an EV in Pengkalan Chepa.

Ajzen came up with the TPB, which builds on the extension of the Theory of Reasoned Action (TRA) (Dutta & Hwang, 2021). Specifically, TPB is a social- psychological theory that can modify a person's intention to behave based on internal and external circumstances. Yeğin and Ikram (2022) also claim that TPB can identify individuals' buying intentions and brand preferences.

According to the TPB model, Ajzen (1991) has differentiated three categories of beliefs: behavioral beliefs, normative beliefs, and control beliefs (Arafat & Mohamed Ibrahim, 2018). The TPB model states that when consumers have a favorable attitude toward the behavior, are responsive to social support or approval of the behavior (subjective norm) and are capable of adopting the behavior (perceived behavioral control), the behavioral intention of consumers is affected.

Behavioral intentions are formed carefully considering attitudes, subjective norms, and perceived behavioral control. An individual's behavior is motivated by their intention, which captures the reason to engage in the behavior (Azjen, 1991). Individuals are more likely to carry out specific such behavior when they have a stronger intention to perform it (Sang & Bekhet, 2017). Hence, Sheppard et al. (1988) have mentioned that people commonly employ intention as a predictor of future behavior.

TPB has been widely used in transportation research literature as an underlying framework for predicting various behaviors. For instance, TPB has been used to forecast speeding intention (Cristea et al. 2013; Horvath et al. 2012), travel mode choice (Chen & Chao, 2011; Hsiao & Yang, 2010), drink and drive behaviour (Moan, 2013; Rivis et al. 2011), and seat belt usage (Okamura et al. 2012).

Even though the TPB is thought to be a complete theory of behavior, (Ajzen, 1991) has emphasized that it allows for adding more variables as long as they contribute significantly to the model's explanation of behavior. Therefore, this study has broadened the scope of the intention of choosing an EV paradigm by analyzing explicitly variables such as environmental concern, price range, perception of economic benefit, psychological benefit, and infrastructure readiness in order to better capture the full breadth of the theory.

The number of EVs on Malaysian roads is still low because EVs are a relatively new technology in Malaysia (Sang & Bekhet, 2015). As a result, it was impractical to research the actual adoption of EVs at this time. Thus, this study has focused on analyzing the intention of choosing an EV in Pengkalan Chepa. Additionally, previous studies have established that usage intentions are the most accurate indicator of technology dissemination behavior. Sang and Bekhet (2015) also prove that usage intention can serve as a benchmark and assist in forecasting actual technology adoption.

**2.3   Literature Review**

According to (Nikitas A, Njoya ET,Dani S, 2019), a literature review can systematically report the current state of knowledge in a specific area. The literature review aims to understand the topic clearly (Alawadhi, Almazrouie, Kamil, Khalil, and Khalil, K. A., 2020) and also to ensure the literature review is helpful, it is essential to follow a well-defined method that includes allocating existing data, choosing papers based on specific criteria, and evaluating, analyzing, synthesizing, and reporting the results. The researcher explained the dependent variable as well as the independent variable within this literature review.

The choice of an electric vehicle (EV) as the dependent variable will be explained as an intention to take advantage of the many advantages and improved environmental conditions offered by an EV compared to a conventional vehicle. After that, the researcher explained the independent variable which is an environmental concern, a price range, a perception of economic benefit, a psychological benefit, and infrastructure readiness. Environmental concerns may significantly influence consumer behavior, leading them to choose electric vehicles over other types of cars. The price range defines the customer's budgetary constraints as the determining factor in whether or not they could purchase an EV, and the higher cost of EVs is one reason why many customers do not choose EVs. The definition of economic perception shifts depending on the state of the economy. Following that, there are EVs, which are synonymous with low maintenance because EVs do not pollute the fuel in the same way that conventional vehicles do. Moreover, the psychological benefit is defined as a factor that entices consumers to decide the circle of the consumer market.

Additionally, it refers to consumer knowledge toward selecting EVs and should improve consumer buying intention toward an environmentally friendly product. Infrastructure readiness refers to the availability of infrastructure facilities for EV users. For example, adding charging points at certain stations to facilitate users is an example of how infrastructure facilities can be made available. When purchasing an electric vehicle, prospective customers will consider the following aspects: charge-point location, charge-point interoperability, charge cost, and the total number of charging stations (Hardman etal. 2018).

### 2.3.1 Intention of Choosing an Electric Vehicle (EV)

Several studies have examined the values, advantages, and risks that affect the growth of the EV industry since the development of EVs in the early2010s by analyzing the information gathered from various users and experts (Kim, Oh 2018). Electrifying transportation has many benefits, including less dependence on oil and better environmental conditions. EVs are an example of electric mobility because they use less energy and emit no greenhouse gases atthe tailpipe. The three types of EVs are plug-in hybrids, battery-powered, and hybrid vehicles. Many people have praised battery- powered vehicles (BEVs) for having an energy-efficient system compared to vehicles with internal combustion engines (ICEVs).

Promoting EVs to Malaysia's mass market is one way to reduce the country's reliance on fossil fuels and the number of carbon emissions the transportation industry produces, particularly in the personal transportation segment (Yew-Ngin San, 2015). Reducing carbon emissions from motor vehicles is a significant factor in lowering the possibility of environmental problems. For instance, the greenhouse effect, which results in global climate change, will be triggered by carbon emissions from vehicles into the air (Aminzadegan, 2022). Moreover, Malaysia's distinct environment as an emerging economy can differ significantly from that of other developed nations

14

regarding geography, culture, infrastructure, and living standards (Idris Muhammad, 2022).

Before this, the study focused on EVs for the general public. Since (Ajzen, 1991) Theory of Planned Behavior (TBP) has already been used in another research, it will be utilized here. Various studies in the field of transportation research have used TBP to predict things like driving after drinking (Abraham, 2011), travel mode choice and speeding intentions (Watson, 2012). Moreover, since EVs are still a new technology in Malaysia, not many studies have been done on Malaysian drivers to find out how the public feels about them and what they plan to do with this new technology (Adnan, 2016). Furthermore, (Hong et al. 2013) say that EVs are not as common in Malaysia as they are in Japan, the United States, or Europe. At the same time, many people who want to use EVs have only just started to use this technology. Even though it's important to switch or choose EVs for complex reasons like environmental sustainability and a sustainable transportation system, it's also crucial to consider how consumers feel about the change (Long, 2012). The desire of residents in Pengkalan Chepa, Kelantan, to choose an EVs is also examined in this study, along with the relevant theoretical framework.

**2.3.2   Independent Variables**

**2.3.2.1 Environmental Concern**

Previous research has shown that consumers' environmental concerns influence their product purchases. (Vainio,Paloniemi, 2014) define ecological concern as a general value orientation toward the natural environment, a level of concern about the future of the environment, and how human progress is hurtingthe environment. Reached the conclusion that when people buy green products, their awareness of the environment will grow. A number of studies have shown that concern about the environment has a big effect on how peoplefeel about green products and whether or not they plan to buy them (Wang, Zhan, 2017).

Environmental concerns may have a more significant impact on some behaviours than others, according to the results of some studies. Evidence shows that people's direct and indirect environmental concerns influence their willingness to pay a premium for environmentally friendly products. In addition, previous research on cutting-edge automotive technology investigated how environmental benefits might affect consumers' choice of vehicle.

Electric vehicles (EVs) are seen as a good way to keep cities moving by reducing oil dependence and air pollution, which could be good for health and the environment (Buekers, 2014). Because electric vehicles have no exhaust emissions, driving one can help you lessen your carbon footprint. By choosing renewable energy sources for your home's electricity, you can further lessen the environmental impact of charging automobiles. Fuel cell vehicles (FCVs) that run on hydrogen will be a big part of the switch to a hydrogen-based energy system. When paired with the right energy source, fuel cells can be the most efficient and produce the least amount of pollution of any vehicle power source(Suzanna, 2013).

**2.3.2.2 Price Range**

The amount in which consumers value new technology is a significant factor in whether or not they will adopt it. Previous studies have shown that a product's price range substantially impacts consumer intent (Bower, Dewitt & Lai,2020; Kaur & Arora,2021). Incentives such as tax reductions and subsidies have yet to be enough to close the price gap, and electric cars are now more expensive than conventional gas- powered vehicles. Researchers have found that the high cost of eco- friendly products is a significant barrier to widespread use.

The expensive cost of most EVs is a significant contributor to the low profile of EV culture. The government of Malaysia has set a goal of 20% EV market share by 2025 and 50% by 2035. This is from the year 2021 (Azni, M. Khalid). That is why it is crucial to investigate the issues that drive up EV prices and work to bring them down by using more recent, technically feasible ideas and principles. The price of batteries is the next most significant factor in the high retail price of electric vehicles. About half of an electric car's price is determined by the battery's cost (Bashash, S.; Moura, S.J.; Forman, J.C.; Fathy, 2021).

However, finding methods to reduce the cost of batteries is crucial for addressing the market's high price of EVs. Problems like late deliveries, high production costs, and a scarcity of parts can be avoided, along with other issues, by implementing more industrial procedures for making and obtaining raw materials for batteries and EV parts. Eventually, this will lead to a more streamlined assembly line for the EV battery pack. Battery manufacturers have responded to increased demand and competition by investing in more efficient machinery, reducing their capital expenditures, and increasing the energy density of their cathodes (Hancock, 2020).

People think twice about buying an electric car because of how much it costs. The price of an electric car in Malaysia is higher than that of a regular car. A green car, like the Myvi 1.5 L AV, costs 23.7% less than a MINI Cooper SE, even though they have almost the same body structure (Onn, CC; Chai, C.; Rashid, A.F.A.; Karim, M.R.; Yusoff, S., 2017). On the other hand, the Nissan Almera, a sedan with the same number of seats, is 42% cheaper than the Nissan Leaf (Leurent, F.; Windisch, 2015). Also, the market for electric vehicles is still relatively new compared to the millions of new and used internal combustion engine vehicles (CV) that come in all shapes, sizes, and prices.

The potential for customers to save money on future fuel expenses by purchasing EVs could motivate sales (ICEVs) to affect EV financial factors, as shown in previous research. There is also the cost of purchase, maintenance, and eventual sale (Rezvani et al., 2015). Cost-effectiveness is, of course, crucial for any consumer thinking about purchasing an electric vehicle. Despite government efforts to reduce the price gap through incentives such as tax reduction and subsidies, electric cars are currently more expensive than combustion engine cars. Many researchers have found that the high cost of environmentally friendly products is a significant barrier to widespread adoption.

### 2.3.2.3 Perception of Economic Benefits

Perceptions of economic benefit frequently impact how well a product is received. Some examples of perceived economic benefits include net earnings, revenues, and other financial advantages. It can also be saved when discussing a cost-cutting strategy (Chen, 2021). According to research by (Berensteanu 2011), high fuel prices increase the sales of hybrid vehicles over gasoline-powered cars because full EVs have low operating and maintenance costs. When deciding between an electric car and a gasoline-powered one, both high-power and low electricity prices can be taken

into account. Customers may take these benefits into account when deciding whether or not to buy a brand-new car.

With the system's low usage factor, more electricity can be made at existing power plants and sent through substations, transformers, and feeders. Time-of-use pricing or other dynamic price signals promote off-peak use, which has no additional cost to the distribution network and only slightly raises the cost of operating the power plants. As long as EVdrivers continue to pay for this power, revenue and profit margins increase because marginal costs are lower than the average costs used toset rates. This means that charging EVs overnight at home reduces everyone's electricity costs while also reducing the cost of EVs. Keep inmind that the fees you pay to charge your EV primarily go toward covering the costs of producing electricity and maintaining utilities. The majority of these costs, which are typically higher than grid rates, are generated by power plants in the same state. Producers of both utilities and non-utilities are included in this. Spending on charging stations nearby has increased because EV charging service providers profit whenEVs are not charged at home. Last but not least, will get the local community benefits from the city and county's electricity taxes.

### 2.3.2.4 Psychological Benefits

According to Ellen (1994), a significant factor in enticing consumers to make decisions in the consumer market is providing opportunities for consumer education. The term "consumer knowledge" was used in this investigation to refer to a level of erudition the participants had acquired through formal education. In this context,"familiarity" can mean either a theoretical or an actual grasp of the topic.Considering that EVs are generally accepted as a product that efficiently utilizes energy, the consumer's expectation of this product will undoubtedly play a role in the consumer's ultimate decision to go with anEV.

Furthermore, lifecycle knowledge, product-related knowledge, formal education, and hands-on familiarity are all examples of what we mean when people say "experiences." According to Chu et al. (2019) findings, people only utilize EVs when they have to. Customers who valued a clean, pollution-free environment and were looking to reduce their carbon footprint viewed electric vehicles as a requirement for modern civilization. The ability to regulate one's behavior is an illusion that cannot be used to evaluate the merits of different individuals' actions (Mohamed et al., 2018; Adnan et al. 2017a, b).

The consumer's expectation of psychological benefits from purchasing environmentally friendly products should improve their attitudes and knowledge regarding buying intention and adoption. A person's attitude toward something is a product of his or her own internal mental process of deciding whether or not to value that thing (Screen, Purbey, & Sadarangani, 2018). The theory of planned behavior (TPB) postulates that individuals are more likely to carry out an action if they have a favorable attitude (Collins, Witkiewitz, & Larimer, 2011).

Previous empirical findings suggested that some consumers were willing to purchase green products at a premium price to feel better themselves and demonstrate a status motive rather than the environmental impact. Their purchasing products demonstrated this with a lower carbon footprint (Wuestenhagen & Bilharz, 2006; Griskevicius, Tybur, and van den Bergh, 2010). Expectations of psychological benefits gained from purchasing environmentally friendly products should encourage a more positive attitude among consumers regarding their intention to make purchases and their level of adoption. As a result, psychological benefits play a vital role in accepting EVs.

Different consumers may drive for various reasons, depending on the context. Even though the purpose of transportation is consistent across all customers, other higher-order needs may vary (Morton, 2016). The way people think about automobiles can be broken down into three categories: functional, symbolic, and experiential (Steg, 2005). The idea that people purchase automobiles for no other reason than the ability to get from one location to another is known as having a functional motive.

Researchers from a variety of nations, including China (Huang & Ge, 2019), Malaysia (Adnan et al. 2018), and Norway (Klockner et al. 2013), have utilized the TPB in order to explain and predict consumers' EV purchase intentions or behaviors. Examples of these nations include Malaysia, China, and Norway. According to previous research findings, these three psychological characteristics significantly impact the consumer's likelihood of purchasing an EV (Adnan et al.,2018; Jansson et al. 2017a).

### 2.3.2.5 Infrastructure Readiness

The term infrastructure readiness refers to the ease with which consumers can refuel their EVs at public charging stations also known as "technologically facilitating" (conditions). According to (Khalil, 2020) Infrastructure accessibility is thought to be important for the adoption of EVs to be successful. It was constantly necessary to improve road infrastructure for vehicle operations. It was constantly necessary to improve road infrastructure for vehicle operations. Infrastructure accessibility is thought to be important for the adoption of EVs to be successful. It was constantly necessary to improve road infrastructure for vehicle operations. (Palinski, 2017), considers that charging infrastructure may be required to attract groups other than the traditional early adopters of PEVs. The public charging infrastructure should be accessible and located on publicly owned land.

There are three different kinds of public charging infrastructure for light vehicles, according to (Funke 2019), the first one is charging (near home) as a replacement for privately charged vehicles, charging opportunities in points of interest (POI charging), like grocery stores and fast charging in long-distance (high charging) journey corridors of high charge. Therefore, for this study, infrastructure components like charging ports and parking spaces were considered.

The distribution, transmission, and generation of electricity are impacted by EV charging (Anwar, 2022). For instance, it has been demonstrated that unchecked charging can worsen power quality, increase peak demand, overload transformers, force equipment to be replaced sooner, overload transmission lines, and overload substations. One important benefit of controlled charging is the avoidance of the high costs associated with distribution system upgrades. EVs can benefit the grid by offering services like real-time ramping and frequency regulation. Furthermore, by 2030, all motor vehicles, including passenger cars, commercial vehicles, and freight forwarders, will be electric. Charging infrastructure was shown to be significant, and infrastructure demonstrated its significance. It is anticipated that within the next decade, the number of electric passenger vehicles will surpass the number of gasoline-powered vehicles, resulting in a significant increase in the demand for charging infrastructure (Wang, 2015).

Due to Malaysia's unique characteristics, many people still rely on private vehicles for medium- and long-distance mobility because the rail system and buses are ineffective as long-distance public transportation options. As a result, a charging station is required if someone wants to use an EV for medium- and long- distance travel.

## 2.4 Hypotheses Statement

This research aimed to investigate the connection between the dependent variable, EV usage intention with the other five independent variables, namely environmental concern, price range, perception of economic benefits, psychological benefit, and infrastructure readiness. A total of five hypotheses were developed as part of this investigation.

**H1**: There is a significant relationship between environmental concern and the intentionof choosing an EV in Pengkalan Chepa.

**H2**: There is a significant relationship between price range and the intention of choosingan EV in Pengkalan Chepa.

**H3:** There is a significant relationship between the perception of economic benefits andthe intention of choosing an EV among locals in Pengkalan Chepa.

**H4:** There is a significant relationship between psychological benefits and the intentionof choosing an EV in Pengkalan Chepa.

**H5:** There is a significant relationship between infrastructure readiness and the intentionsof choosing an EV in Pengkalan Chepa.

**2.4    Conceptual Framework**
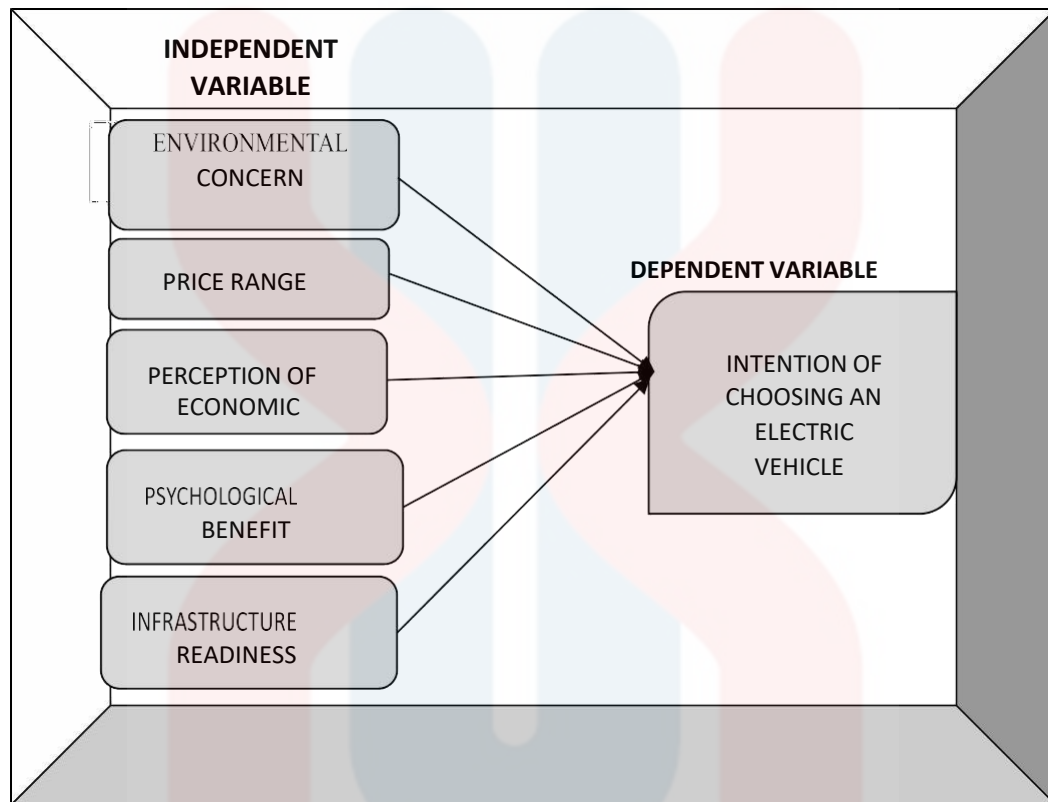


Figure 2.1: A Conceptual Framework of Factors that are influencing
the Intention of Choosing an EV in Pengkalan Chepa

This study focuses on the factors that influence the intention of choosing EVs. The conceptual structure of this study about the factors that impact the intention of selecting EVs is presented in figure 2.1. A conceptual framework is the "justification for why a certain study should be done," as stated by Young (2020). The conceptual framework describes the current knowledge state, typically accomplished through a literature review. It also identifies gaps in our understanding of a phenomenon or problem and outlines the methodological foundation on which the research project is based.

According to Imenda (2014), the purpose of using conceptual framework is to help the researcher clearly see the main variables and concepts in a given study. Additionally, it gives the researcher a broad methodological approach, which includes study design, target population, research sample, data collecting, and analysis. In the absence of a dominating theoretical perspective, the objective of the conceptual framework is to guide the researcher in the gathering, analysis, and explanation of data. Also, to help future researchers, particularly where the conceptual framework includes a literature study and data from the field.

The relationship between five independent variables (IV)—environmental concern, price range, perception of economic benefit, psychological benefit, and infrastructure readiness—and the dependent variable (DV), the intention to choose an EV, will be discussed.

## 2.5    Summary

In conclusion, the purpose of this section was to review the literature review associated with the previously studied components. The proposed theoretical framework was developed after reviewing the relevant prior research. The researcher tends to conduct an analysis of the relationship between all of the dependent variables of EV usage intentions and the five independent variables involved in this study, which are as follows: the environmental concern, the price range, the reception economic benefit, the psychological benefit, and the infrastructure readiness. The researcher concluded that these five independent variables were the most important in determining a person's intention to use an EV. This is the kind of method that will be discussed in the following chapter to find out the results of this study.

# CHAPTER 3

# RESEARCH METHOD

## 3.1    Introduction

The prior research on the topic, discussed in chapter 2, was brought up again in this chapter, which then went on to detail the research methodology employed in the study. In order to achieve the goals of the study and provide a response to the research objective presented in Chapter 1, this research methodology aims to provide the answer to the research objective. In this chapter, a researcher will clarify the research design, the process of designing questionnaires, the process of conducting a survey, the process of collecting data, and the process of completing a Statistical Package for the Social Sciences (SPSS) or data analysis.

## 3.2    Research Design

According to Asenahabi (2019), it is said that the thought of a researcher is reflected in the design of the research. It prevents people from being frustrated by bringing together all of the main aspects of the study in a systematic framework that demonstrates how they operate together to answer the research questions. This eliminates people from feeling like they are missing out on anything. According to Sousa (2007), the research design is the framework or guidance used to plan, implement, and analyze an investigation. The strategy will be used to answer the research question or test the hypothesis. Different varieties of inquiries or hypotheses call for the application of diverse research methodologies. Therefore, it is essential to have a comprehensive preparation and a solid awareness of the many available study design options. Quantitative and qualitative approaches to research design are often the two most used classifications.

Empirical evaluation relies heavily on numerical measurements and analyses. Hence the researcher opted for a quantitative approach. Quantitative studies, as outlined by Sibanda, N. (2009), concentrate on collecting numerical data and extrapolating those results to larger populations. Quantitative research can also be used to learn a group's widespread beliefs, attitudes, and actions. For instance, researchers need to know how many individuals consider EVs superior to conventional automobiles. Establish a startingpoint and give the respondent a chance to offer input on the new direction.

According to Sukamolson (2007), there are few advantages of quantitative research which is being able to provide results which can be condensed to statistics, has precision, definitive and standardized. Quantitative research is a common approach through surveys, internet surveys, and telephone surveys.



Figure 3.1: shows 11 steps of quantitative research by Karl Thompson

27

According to Thompson (2022), there are 11 steps of quantitative research design which are theory, hypothesis, research design, operationalizing concepts, selecting a research site, selecting respondents, data collection, data processing, data analysis, findingsand lastly publishing results.

### 3.2.1 Theory

The fact that quantitative research begins with theory reflects this tradition's broadly deductive approach to the link between theory and research. Theory of planned behavior (TPB) is a social-psychological theory that can modify a person's intention to behave based on internal and external circumstances.

### 3.2.2 Hypothesis

It is usual to practice providing an overview of the fundamental procedures of quantitative research to demonstrate that a hypothesis is derivedfrom the theory and then tested.

However, a significant portion of quantitative research does not call for the development of a hypothesis; instead, a theory is used as a broadly definedcollection of concerns about which social researchers collect data. It is most frequent in experimental research to specify hypotheses to be investigated, butit is also prevalent in survey research, which is typically based on a cross- sectional design.

### 3.2.3 Research Design

The second step is to select a research design, which has consequences for various issues, such as the ability of researchers to link explanations to theirresults and the external validity of the findings themselves. Quantitative research design is the approach that will be taken for this particular research project research design.

### 3.2.4   Operational Concepts

The site will already be set in laboratory experiments; in field studies, this will entail the selection of a field-site or sites, such as a school or factory; and in survey research, site-selection may be more diversified. Practical and ethical considerations will limit the number of study sites available. The site that has been chosen in this study is Pengkalan Chepa which is one of the citiesin Kelantan.

### 3.2.5   Selection of Research Site

The site will already be set in laboratory experiments; in field studies, this will entail the selection of a field-site or sites, such as a school or factory; and in survey research, site-selection may be more diversified. Practical and ethical considerations will limit the number of study sites available. The site that has been chosen in this study is Pengkalan Chepa which is one of the citiesin Kelantan.

### 3.2.6   Selection of Respondent

Step six entails selecting a sample of subjects to participate in the study, which might employ any variety of sampling approaches based on the hypothesis, as well as practical and ethical considerations. For this research, residents of Pengkalan Chepa will be the target of respondents.

### 3.2.7 Data Collection

The seventh step is what most people picture when they think of doing research. In the context of experimental research, this will likely involve pre- testing respondents, modifying the independent variable for the experimental group, and then testing respondents again after the modification. This will require either conducting structured interviews with study respondents or administering a pre-coded questionnaire using surveys in the context of cross- sectional research. The purpose of an observational study will involve observing the circumstances in which people find themselves and the behaviors they exhibit, then classifying each specific aspect of behavior. The respondents will be provided with the URL to an online Google Form where the data will be collected and they will be asked to answer the questions presented.

### 3.2.8 Processing Data

Converting information into data is a necessary step in this process. When have the researcher detailed data, this becomes a straightforward operation. For instance, variables such as age and income already have associated numeric values. Before further information can be evaluated, it may need to be codified or converted into numerical form. Codes serve the purpose of labels and are applied to data about individuals, which enables the data to be processed by a computer.

### 3.2.9  Data Analysis

The ninth stage analyzes the collected data to look for patterns and determine if one variable significantly affects another. Graphs, pie charts, and bar charts are among the most fundamental methods for displaying the outcomes of quantitative data analysis because of the immediate intuitive visual impression they provide as to whether or not there is an essential link between the variables.

Quantitative studies that want to be considered seriously must use a battery of established statistical methods, including the Chi-squared test, to establish causality between their variables. This is the portion that many sociology students hate, but it is becoming increasingly common in the age of big data.

### 3.2.10 Findings and Conclusions

The researcher must analyze the results of the analysis based on the data analysis. The findings will appear at this stage. For example, if there is a hypothesis, is it supported? What are the consequences of the findings for the theoretical concepts that acted as the research's framework?

### 3.2.11  Writing Up Findings

At the eleventh and final stage, the research needs to be typed out. The research will be written for either an academic audience or a client audience; however, in either case, the write-up must convince the reader that the research process was exhaustive, that the data is as legitimate, dependable, and indicative as it needs to be for the research, and that the findings are significant in the context of existing research. After being published, the findings are added to the existing knowledge of their subject. As a direct consequence, a feedback loop can be drawn from step eleven back to step one.

**3.3 Data Collection Methods**

According to Nayak and Narayan (2019) provide a reference for the feasibility of online administration and management of self-administered questionnaires. This method systematically gathers information and pursues the desired data on the dependent variables. Primary data and secondary data are the two primary types of information. Preliminary data will be used in this study and gathered through an online survey or questionnaire. The questionnaires for this study will be distributed using Google's free Forms service. This presents a chance to reduce expenses temporarily while simultaneously boosting productivity and informational trustworthiness. The researcher only needs a web address to conduct a survey online, and Google Forms will host the form for you (URL). In this case, primary data will be gathered through an electronic questionnaire distributed via channels like WhatsApp, Instagram, Facebook, and e-mail.

The residents living in Pengkalan Chepa will be allowed to fill out the survey and share their responses on social media.

### 3.3.1 Primary Data

According to Boeji (2005), there are a variety of approaches to data gathering that social scientists utilize in the process of data collection. Experiments and quasi- experiments are significant because they typically have a study technique that enables solid casual assessments. This makes them particularly useful. Second, structured questionnaire surveys are an essential method of data collection because they frequently collect data on many variables from a large and representative sample of respondents. This makes structured questionnaire surveys a critical approach to data collection. Third, the data collection method in a qualitative research design typically entails collecting a large quantity of data on a small, purposeful sample by employing in-depth interviews, participant observation, or focus groups. This is done to maximize the amount of information gained from the research.

Boeije (2005) says that primary data are data that are collected for the specific research problem at hand, using procedures that fit the research problem best. Whenever new primary data is obtained, they are added to the existing store of social knowledge. This material developed by other researchers is increasingly being made available for reuse by the general research community. It is then referred to as secondary data.

A survey is what researchers do when they wish to collect data on population's observations, opinions, feelings, experiences, or perspectives. When conducting a survey. It is common to practice interviewing members of a large and diverse cross-section of the target population. Typically, many standardized questions will be asked, and the responses will be sorted into many standardized answer groups. It is only possible to collect information by questioning respondents about the incidents from their subjective perspectives. In addition, surveys can be used to collect data about people's behaviors. Researching behavior by observation is possible in theory, but such an endeavor is sometimes either impracticable or excessively expensive. One example of the latter is

looking at past behavior. When conducting a social survey, it is common to target the population of households; however, it is alsopossible to target a more specific subgroup.

In this research, the researcher decided to obtain the data through a personally administered questionnaire to gather the required input. The researcher usually used the questionnaire method because it is less expensive when administered to respondents and free from errors, which is an efficient way of getting information from a large population.

Three hundred seventy-five questionnaires will be distributed in the targeted population area which is in Pengkalan Chepa. Google forms will be sent through online platforms such as Whatsapps, Telegram and much more in the form of URL. Respondents can answer the question via their devices and the data will be collected through google form websites that are monitored by researchers. A cover letter was included together with the questionnaire. The cover letter consists of the purpose, objective, and word of honor for the confidential information that the respondents will give.

### 3.4     Study Population

Information can be obtained in a variety of ways. In an ideal world, a researcher would collect data from every member of a population under investigation. This study's population consisted of consumers aged 18 and up who lived in Pengkalan Chepa. The primary reason for selecting consumers aged 18 and up is that the study context involves a high-end product category. So those target populations are appropriate since they have ahigher income level and require a car for road transport. Furthermore, these groups of people are more focused on a car's performance, value, quality, and risk as factors to consider when purchasing a car.

The set or group of all units to whom the research's findings are applied is referred to as the population (Shukla, 2020). In other words, the population can be defined as the total number of

people or residents living in a nation or area. The population for this study will be residents of Pengkalan Chepa. Among residents, some students studied at University Malaysia Kelantan and those who already live there. Therefore, the total population of this study is about 14,000, including students and those who live there, according to Latlong.net.

Pengkalan Chepa, also known as P.C in Kelantan, is a suburb in the Kemumin area, in the colony of Kota Bharu district, Kelantan, Malaysia. Pengkalan Chepa is well-known for being Malaysia's second busiest aviation hub, as well as the main education and industrial area in the state of Kelantan. It also houses the Teacher Training College, Kota Bharu Police Headquarters, Army Headquarters, PGA Police, and the National Anti-Drug Agency. Sultan Ismail Petra Airport, Kelantan's state airport, is also located here.

## 3.5    Sample Size

According to Taherdoost (2017), the sample size is an important aspect of any empirical study in which the objective is to draw conclusions about a population based on a sample of that population. It is impossible to draw conclusions from a random sample without first ensuring that the sample is large enough to eliminate any possibility of sampling error or bias.

In order to summarize from a random sample and prevent sampling errors or biases, the sample needs to have a sufficient size. What constitutes a sufficient response depends on several aspects, many of which need to be clarified for people conducting surveys for the first time. This is because the total size of the sample chosen in consideration of the population's complexity, the goals of the researcher, and the types of statistical manipulation that will be utilized in data analysis is what matters in this situation, and not the percentage of the study community that was sampled. For instance, researchers seek to predict how a particular generation will respond to a brand-new product. In such a situation, the research can begin by putting it through its pace with a sufficient

number of representatives drawn from the target demographic. Because of this circumstance, the sample size will be established based on the number of people who fall within the specified age range and participate in the research.

In this study, the researcher used the table made by Krejcie and Morgan to figure out the right size of the sample (1970). Based on the table by Kriejcie and Morgan, a population of about 14,000 people needs at least 375 responses as a sample size. For this study, 375 people will be chosen randomly. The dimensions of Krejcie and Morgan's samples are shown in table 3.1.

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

Note.—N is population size.　S is sample size.
Source: Krejcie & Morgan, 1970

Table 3.1: Krejcie & Morgan 1970

The researchers will administer the questionnaire randomly to a population sample in Pengkalan Chepa. The researchers opted to use sampling based on convenience for this particular study. It is defined as the randomly chosen respondent willing to provide their information and is either convenient or willing to do so (Sekaran & Bougie, 2013).

**3.6     Sampling Technique**

**3.6.1   Sampling Method**

There are two types of sampling techniques: probability sampling and non- probability sampling (McCombes, 2022). This study employed the non- probability sampling method as the sampling design, in which the samples were gathered without providing an equal chance of selection to all populationmembers.

According to Nikolopoulou (2022), non-probability sampling refers to sampling techniques that allow researchers to select samples randomly from atarget population. McCombes (2022) stated that there are four types of non- probability sampling: convenience, quota, snowball, and judgmental. Convenience sampling will be applied in this study as it is the most appropriatetechnique for the time and budget constraints and the larger sampling size (Simkus, 2022)**.**

Sekaran and Bougie (2013) highlighted that convenience sampling is an effective way of getting some basic information faster and efficiently. The use of convenience sampling makes it easier for the researcher to find the target respondents. In general, respondents chose because they happened to be in theright place at the right moment.

**3.6.2   Units of Sampling**

This study attempts to take the urban areas, Pengkalan Chepa as the sampling unit. It will look for people in Pengkalan Chepa who are interested inpurchasing an EV and provide online questionnaires for them to fill out.

### 3.7 Research Instrument Development

A research Instrument is a tool used to collect, measure, and analyze data related to research (Aloben 2022). In this study, researchers will analyze the data collected using the quantitative method. Because it is more practical for data management and collection. The survey instrument used a questionnaire. According to (Rowley 2014), a questionnaire is the best research tool for handling many respondents in different locations because it facilitates straightforward information requests, allows for consistent data collection from similar questionnaires, and facilitates direct analysis of the results. In order to collect data from the sample, which are the respondents, a survey has been developed. All respondents are Pengkalan Chepa residents, but the data processing researcher will focus on those who drive EVs.

In the questionnaire, the Likert Scale will be used 1=Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree. The questionnaire will divide into three sections which are Section A, B, and C. Section A consist of question about demographic segmentation, which is gender, age, marital status, academic qualification, employment status, monthly personal income, the number of vehicles owned, driving experience, user conventional vehicle, knowledge about EVs and vehicle purchase experience. In section B, the questions are based on the independent variables which are environmental concern, perception of economic benefits, psychological benefits, price range, and infrastructure readiness. In section C, the question will be based on the dependent variable intention of choosing an EVs.

| SECTION | Description | Source | No item |
|---------|-------------|--------|---------|
| Section A | Demographic | - | - |
| Section B | Environmental Concern<br>Price Range<br>Perception of Economic<br><br>Benefits<br>Psychological Benefits<br>Infrastructure Readiness | (Idris Muhammad, 2022;\|<br>tawir, 2021)<br>(Lin,Huang, 2015)<br><br>(Chen, 2021)<br>(Funke, 2019;Beckhet, 2015)<br>(Beckhet,2015; Palinski,<br>2017) | 5<br>5<br><br>5<br><br>5<br>5 |
| Section C | Intention of choosing EV | (Krishnan v, 2021; Yew-<br>NginSan, 2015) (sharma,<br>2021) | 8 |
| | | Total | 33 |

Table 3.2: Sources of Question

## 3.8 Measurement of The Variables

The values of a variable are analyzed and categorized with the help of measuring scales. Ndukwu (2022) claims that in 1946, psychologist Stanley Smith Stevens developed four tiers of assessment scales. The nominal scale, ordinal scale, interval scale, and ratio scale are all examples of these measurement systems. In particular, each level of the measurement scale's distinguishing aspects indicates the likelihood of statistical analysis being available (Faridi, 2017).

According to Stevens (2022), different items call for various forms of measuring variables. For this reason, the questionnaires used in this investigation included three different measuring scales: nominal, ordinal, and interval (Likert scale). In order to select the appropriate statistical inference test, the researchers will collect and analyze data from each scale variable (Bhandari, 2022).

### 3.8.1 Nominal Scale

A nominal scale is for qualitative variables, meaning that numbers are only used to categorize or identify objects in this context (Bhattacherjee, 2022). Bhandari (2022) stated that the nominal scale is the most basic and least expensive type of measurement. When using a nominal scale, responses are named or classified. The Section A (Demographic Profile) of this questionnaire employed a nominal scale to measure gender, age, race, marital status, academic qualification, employment status, monthly personal income (RM), number of vehicles owned, driving experience, user conventional vehicle, know EV, and vehicle purchase experience.

### 3.8.2 Ordinal Scale

A measurement variable known as an ordinal variable allows for the entry of values in a predetermined order or rank and is utilized in quantitative variables (Bhattacherjee, 2022). As well as being the second level of measurement, it is a subset of the nominal variable. According to Bhandari (2022), the items on the ordinal scale are organized in an escalating sequence of satisfaction, moving from the least satisfied to the most satisfied. In contrast to nominal scales, ordinal scales enable comparisons of the degree to which two individuals possess the dependent variable. Nominal scales, on the other hand, do not. In sections, Band C of this questionnaire, an ordinal scale and an interval scale (also known as a Likert scale) were used to measure the dependent variable and the independent variables, which were the respondent's intention to purchase an EV, their concern for the environment, their price range, their perception of the economic benefit, their perception of the psychological benefit, and the readiness of the infrastructure. To be more specific, the purpose of the Likert scale, which consists of five levels (strongly disagree (1), disagree (2), neutral (3), agree (4), and highly agree (5)), is to determine the degree to which the assertions agree or disagree with one another.

### 3.9 Produce for Data Analysis

For the data analysis process, the SPSS system, which is short for "Statistical Package of Social Science version 26," is used to analyze the data (Sekaran & Bourgie, 2013). The steps taken to look at the data from the questionnaire are explained in the dataanalysis design. Descriptive data like mean, median, mode, frequencies, and percentages were used for the analysis. Three types of statistical analysis are used: descriptive, reliability analysis, and Pearson correlation. Descriptive research determines the factors influencing the intention of choosing EVs in Pengkalan Chepa, Kelantan. The study's goals, the concept or construct, the measurement, and the scale are all used to gather the data analysis. This software gave a robust statistical analysis and data management system in a graphical interface, with easy-to-use menus and dialogue boxes so that the data couldbe filled in. It will also help researchers set up and gather accurate data (Ong, 2011). Also,the researchers would make a questionnaire based on a relevant journal article before doing a statistical analysis. The respondents would then get the questionnaire and have a chance to fill it out. In this way, the information would be gathered. The researchers wouldput all the information from the Google forms filled out by the target respondents into SPSS and do the statistical analysis there.

### 3.9.1 Reliability Analysis

In this study, the reliability of an instrument will be evaluated using the Reliability Analysis method. Researchers will calculate their reliability coefficients for all dependent and independent variables using Cronbach's Alpha, the most popular measure of dependability (Tavakol & Dennick, 2011).When Cronbach's Alpha exceeds 0.70, it is regarded as dependable and consistent (Cronbach & Shavelson, 2004). The Alpha will be low if there are few questions, weak connections between items, and distinct building styles (Tavakol & Dennick, 2011). Cronbach's Alpha is a statistical measure of agreement between raters. The relationship is more substantial when theCronbach alpha

is smaller than 1. For further information, dial the provided number. A value of 0.51 or above is likewise acceptable (Straub et al., 2015).

| Cronbach's Alpha Score | Level of Reliability |
|---|---|
| 0.0 - 0.20 | Less Reliable |
| >0.20 - 0.40 | Rather Reliable |
| >0.40 - 0.60 | Quite Reliable |
| >0.60 - 0.80 | Reliable |
| >0.80 - 1.00 | Very Reliable |

Table 3.3: Cronbach's Alpha Level of Reliability

### 3.9.2 Descriptive Analysis

Inferential and descriptive statistics were utilized in the process of doing the data analysis. The descriptive analysis will be carried out using SPSS version 23, which attempts to elucidate the overall understanding of the respondent profile by summarizing the data, providing various types of tabular presentations, and describing the data by presenting various outcomes and their frequency of occurrence. A descriptive analysis will be carried out (Agresti & Finlay, 2009). After that, one of the ways of statistical analysis is called descriptive analysis. However, descriptive analysis summarizes and analyzes the data acquired quantitatively. The data will be used to compute the mean and standard deviation. This research will evaluate the data using descriptive statistics such as percentages and frequencies, as well as measures of central tendency (MCT) such as the mean,

mode, and median. Textbooks and data analysis courses frequently use rates and frequencies to explore topics such as gender, age, material status, occupation, monthly personal income, level of education, and a variety of other topics. This was extremely helpful for the questionnaire section labeled "A," in which respondents were requested to provide information on their demographic characteristics.

### 3.9.3   Multiple Regression

A regression model known as multiple linear regression calculates the relationship between two or more independent variables and a quantitative dependent variable.

$$Y = b + mx_1 + mx_2 + mx_3$$

Figures 3.2: Formula of Multiple Regression

### 3.9.4   Pearson Correlation

Testing for multiple linear regression is used to look into the serial correlation. The Pearson Correlation Analysis can determine how closely two numbers are linked (Saunders et al. 2012). If the Pearson Correlation coefficient is more than 0.90, there is a problem with multi-collinearity and there will also be a big problem with multi-collinearity if the tolerance values are lower than 0.10 or the variance inflation factor (VIF) values are higher than 10. (Hair et al. 2005). If multiple linear regression results show a problem, one related or important independent variable must be taken out. Then, the Pearson correlation analysis is done to see how strongly independent and dependent variables are linked. Depending on the direction of the coefficient, we may learn whether the two variables are unrelated, have a positive correlation, or have a negative correlation.

Pearson's product-moment correlation coefficient is a way to measure how closely X and Y are linked in a straight line. It is a standard tool for researchers to use when figuring out how much two variables linearly depend on each other. There are different data sets, and the X and Y correlation coefficients are found differently for each stage. It is essential to remember that correlations can only show a relationship's linear model and direction. They must show the nonlinear slope of the relationship and many other nonlinear features. For example, if the variance Y is equal to zero and the center numberis found in a different 0 pitch, it is impossible to figure out the correlation coefficient. According to Pallant (2016), a Pearson correlation is a number between -1 and 1 that shows how two variables are related in a straight line. This value can be interpreted in two ways, both of which are positive.

### 3.10    Summary

Finally, this chapter has defined and outlined the methodology that guided our study. Methods for conducting research, identifying a study population, selecting a sampling strategy, determining appropriate sample size, developing proper measurement tools, analyzing collected data, and drawing conclusions are all discussed. Chapter 4 willlook deeper and even further into our analysis and discussion of the findings.

**CHAPTER 4**

**DATA ANALYSIS AND FINDINGS**

**4.1    Introduction**

In this chapter, the results that were collected from the research and analysis are discussed and described. Included in this chapter are the following topics: response rate, data screening and cleaning, demographic profile, scale measurement, which includes descriptive analysis, reliability analysis, a normality test, Pearson's correlation test, a hypothesis test, and multiple regression analysis. In the course of this investigation, we require responses from a total of one hundred and forty participants. In order to analyze and understand the data, the researcher makes use of IBM/SPSS Statistics 26, which can be found here. In general, this chapter will provide a summary of all of the descriptive andinferential findings, as well as a discussion of those findings.

**4.2    Response Rate**

In the context of survey research, the term "response rate" refers to the percentage of the entire sample size that is comprised of respondents, and it is equal to "complete rate" and "return rate." In most cases, it is presented in the form of a percentage. The response rate for our research is as stated in the table below:

| Description | Number of Sample | Percentage |
|---|---|---|
| Complete Response | 140 | 37.33% |
| Incomplete Response | 235 | 62.67% |
| Total | 375 | 100% |

Table 4.1: Response Rate

## 4.3    Data Screening and Cleaning

This study adopted the archival and statistical methods of data screening and cleaning. According to De Simone, Harms (2015), statistical screening approaches do not necessarily call for adjustment of a survey and depend on statistical techniques to discover aberrant answer pattern. Its mean, the archival screening method focusing on pattern of response behaviour across the period responding survey.

Data screening and cleaning was analyzed in SPSS. Based on the SPSS data output result there is no missing value or problem data from the survey for part section A (demographic), Section B (Independent Variable which is environmental concern, price range, perception of economic benefit, psychological benefit and infrastructure readiness) and in section C (Intention of choosing electric vehicle).

| Statistics | | |
|---|---|---|
| | **Valid** | **Missing** |
| Gender | 140 | 0 |
| Age | 140 | 0 |
| Marital Status | 140 | 0 |
| Academic Qualification | 140 | 0 |
| Employment Status | 140 | 0 |
| Monthly Income | 140 | 0 |
| Drive Experience | 140 | 0 |
| Are you a consumer electric vehicle or conventional vehicle? | 140 | 0 |
| Have awareness about electric vehicle? | 140 | 0 |
| Vehicle Purchase Experience | 140 | 0 |
| I think that electric vehicles don't contribute to noise pollution. | 140 | 0 |
| I believe that electric vehicle usage can help reduce carbon emissions. | 140 | 0 |
| I am sure that the use of EV is more suggestive of eco mode (eco-friendly). | 140 | 0 |
| I am certain that using EVs can provide awareness to users about the importance of preserving nature. | 140 | 0 |

| | | |
|---|---|---|
| I am expecting the use of recycled batteries by EVs is more environmentally friendly than conventional cars. | 140 | 0 |
| I am satisfied with the government provides road tax relief incentives to owners of electric vehicles. | 140 | 0 |
| I think that the electric vehicle maintenance rate is low. | 140 | 0 |
| I believe that charging electric vehicle at home is cheaper. | 140 | 0 |
| I am expecting electric vehicle charging market price unchanged compared to petrol price for conventional cars. | 140 | 0 |
| I am confident that battery electric vehicles are much simpler and cheaper. | 140 | 0 |
| I am aware that the widespread use of electric vehicles will reduce the dependence on gasoline subsidies. | 140 | 0 |
| I understand that the widespread use of electric vehicles will attract investors to invest in the automotive industry in our country. | 140 | 0 |
| I know that increasing the use of electric vehicles will increase job opportunities in the automotive industry. | 140 | 0 |
| I believe that a full exemption on import duty, excise duty and sales tax for electric vehicles can support the development of the local electric vehicle industry. | 140 | 0 |

| | | |
|---|---|---|
| I think that the use of electric vehicles can reduce fuel costs as EVs are comprehensively dependent on electricity. | 140 | 0 |
| I consider the use of electric vehicles is safer because there are safety functions such as electrical extinguishing sensors in case of violations. | 140 | 0 |
| I agree that the use of electric vehicles is more comfortable as no noise is generated from the vehicle's engine. | 140 | 0 |
| I think that a fully charged electric vehicle is capable of travelling farther than conventional cars. | 140 | 0 |
| I support the use of electric vehicles using more efficient technologies such as steering without interlocking. | 140 | 0 |
| I feel that electric vehicle usage is safer because there are safety functions such as auto breaking sensors. | 140 | 0 |
| I know that when using an electric vehicle, special facilities such as parking will be provided. | 140 | 0 |
| I think that as the use of electric vehicles increases on Pengkalan Chepa, the government should set up more charging stations in the area. | 140 | 0 |
| I support the convenience of the online application during charging to see the charging percentage provided by electric vehicle will make it easier for its users. | 140 | 0 |

| | | |
|---|---|---|
| I feel that charging equipment needs to be provided completely. | 140 | 0 |
| I assume that if the consumption of electric vehicles increases, charging points should be established more especially in workplaces and residential areas. | 140 | 0 |
| I prefer an electric car even if it is more expensive as compared to a conventional car. | 140 | 0 |
| I think purchasing an electric car is a valuable green purchase. | 140 | 0 |
| In the near future, I will consider switching to an electric car. | 140 | 0 |
| The purchase and operation of an electric vehicle are on my list of future goals. | 140 | 0 |
| I am sure there are various options for the electric vehicle brand that will be available on the market. | 140 | 0 |
| Compared to conventional vehicles, I prefer the advantages of using electric vehicles. | 140 | 0 |
| The benefits of electric cars make me more likely to use them. | 140 | 0 |
| Compared to conventional vehicles, I believe that electric vehicles offer a superior level of protection in terms of their safety technology features. | 140 | 0 |
| I think purchasing an electric car is a valuable green purchase. | 140 | 0 |
| In the near future, I will consider switching to an electric car. | 140 | 0 |
| *No missing value | | |

Table 4.2: Data Screening and Cleaning

**4.4    Demographic Profile**

**4.4.1   Gender**

| Gender | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Male | 58 | 41.4 | 41.4 | 41.4 |
| Female | 82 | 58.6 | 58.6 | 100.0 |
| Total | 140 | 100.0 | 100.0 | |

Table 4.3: Gender of Respondents
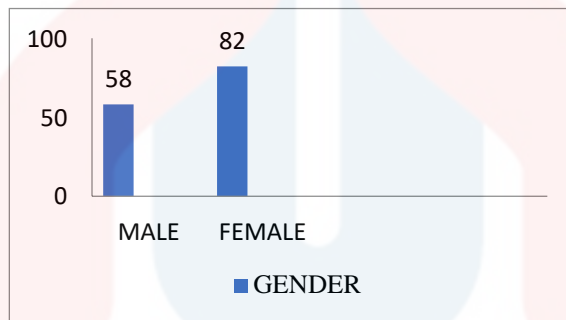


Figure 4.1: Gender of Respondent

Based on Table 4.3 and figure 4.1 show that the female respondent shows the female was highest percent which is 58.6% or 82 respondents, compared to the malerespondents, which is 41.4% or 58 respondents in this study survey. This result might be due to the female's preferbility in participating in online surveys.

51

### 4.4.2 Age

| Age | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| 25-34 years | 77 | 55.0 | 55.0 | 55.0 |
| 35-44 years | 29 | 20.7 | 20.7 | 75.7 |
| 45-54 years | 15 | 10.7 | 10.7 | 86.4 |
| 55-64 years | 15 | 10.7 | 10.7 | 97.1 |
| 65 years and above | 4 | 2.9 | 2.9 | 100.0 |
| Total | 140 | 100.0 | 100.0 | |

Table 4.4: Age
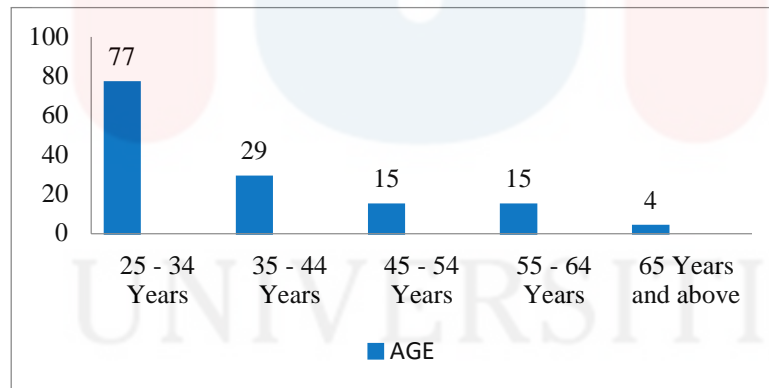


Figure 4.2: Age

According to table 4.4 and figure 4.2, the age group of 25–34 years old has the most respondents (55.0% or 77 respondents). This is followed by the age group of 35–44 years old (20.7% or 29 respondents), the age group of 45–54 years old (10.7% or 15 respondents), and the age group of 55–64 years old (2.9% or 4 respondents). The group of 65 years and older had the fewest respondents (2.9%).

### 4.4.3 Marital Status

| | | | Valid | Cumulative |
|:---:|:---:|:---:|:---:|:---:|
| **Marital Status** | | | | |
| | **Frequency** | **Percent** | **Percent** | **Percent** |
| Single | 67 | 47.9 | 47.9 | 47.9 |
| Married | 68 | 48.6 | 48.6 | 96.4 |
| Divorced | 5 | 3.6 | 3.6 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** | |

Table 4.5: Marital Status
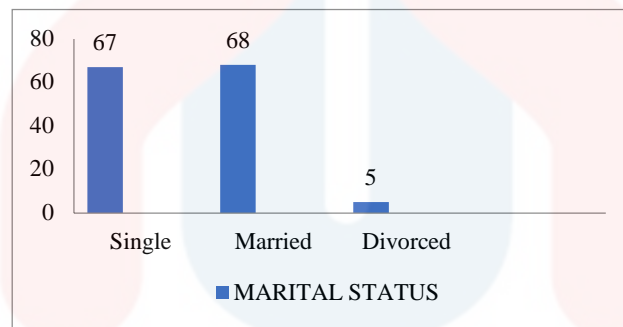


Figure 4.3: Marital Status

According to Table 4.5 and Figure 4.3, the maximum number of respondents whose marital status is married is 48.6%, which is equivalent to 68 respondents. In comparison, the number of respondents whose marital status is single is 47.6%, with 67 respondents for both categories. Divorced respondents make up only 3.6% of the total, making this the least common marital status among those who took the survey.

### 4.4.4. Academic Qualification

| Academic Qualification | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| SPM and below | 37 | 26.4 | 26.4 | 26.4 |
| STPM | 31 | 22.1 | 22.1 | 48.6 |
| Degree | 64 | 45.7 | 45.7 | 94.3 |
| Postgraduate (Master/PhD) | 8 | 5.7 | 5.7 | 100.0 |
| Total | 140 | 100.0 | 100.0 | |

Table 4.6: Academic Qualification
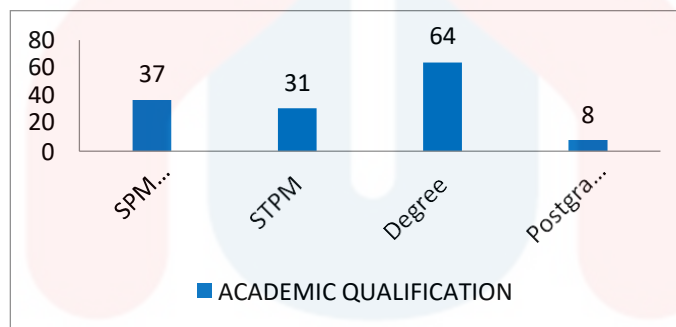


Figure 4.4: Academic Qualification

According to Table 4.6 and Figure 4.4 shows that the academic qualification respondents. The highest of academic qualification is degree which is 45.7% or 64 respondents, followed by academic qualification of SPM & below which is 26.4% or 37 respondent while the respondent academic qualification of STPM / Diploma is 22.1% or 31 respondent. After that, the academic qualification that get the lowest is postgraduate is 45.7% which is and postgraduate for (Master / PhD) is 45.7% and 0.70% or 7.

.

### 4.4.5. Employment Status

| Employment Status | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Paid Employment | 88 | 62.9 | 62.9 | 62.9 |
| Self-Employed | 32 | 22.9 | 22.9 | 85.7 |
| Retired | 8 | 5.7 | 5.7 | 91.4 |
| Other | 12 | 8.6 | 8.6 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** | |

Table 4.7: Employment Status
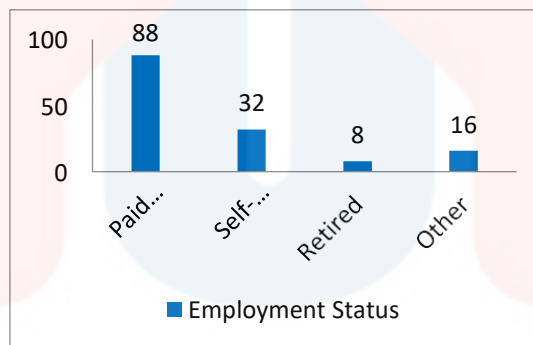


Figure 4.5: Employment Status

According to Table 4.7 and Figure 4.5 shows the employment status of responses that answer this survey which are paid employment, retired, self-employed and other employment status. For this question, most of employment status of responses is paid employment which is 62.9% or 88 responses. While retired, self- employed and others employment only get 5.7% or 8 respondents for retired, 22.90% of self-employed or 32 responses and 8.6% or 12 responses for others employment.

55

**4.4.6  Monthly Income**

<table>
<thead>
<tr><th colspan="5">Monthly Income</th></tr>
<tr><th></th><th>Frequency</th><th>Percent</th><th>Valid Percent</th><th>Cumulative Percent</th></tr>
</thead>
<tbody>
<tr><td>Below RM3000</td><td>71</td><td>50.7</td><td>50.7</td><td>50.7</td></tr>
<tr><td>RM 3,001 - RM 5,000</td><td>30</td><td>21.4</td><td>21.4</td><td>72.1</td></tr>
<tr><td>RM 5,001 - RM 7,000</td><td>16</td><td>11.4</td><td>11.4</td><td>83.6</td></tr>
<tr><td>RM 7,001 - RM 9,000</td><td>12</td><td>8.6</td><td>8.6</td><td>92.1</td></tr>
<tr><td>RM 9,001 - RM 11,000</td><td>6</td><td>4.3</td><td>4.3</td><td>96.4</td></tr>
<tr><td>RM11,001 and above</td><td>5</td><td>3.6</td><td>3.6</td><td>100.0</td></tr>
<tr><td>**Total**</td><td>**140**</td><td>**100.0**</td><td>**100.0**</td><td></td></tr>
</tbody>
</table>

Table 4.8: Monthly Income
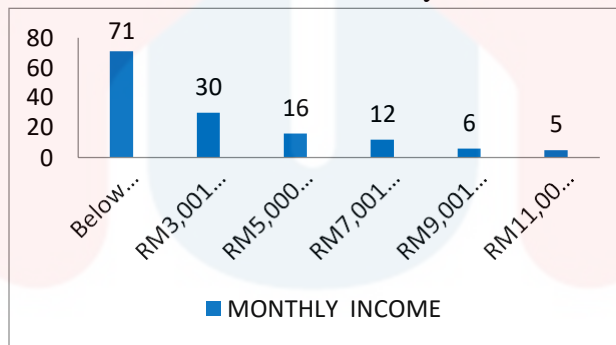


Figure 4.6: Monthly Income

The average monthly income of survey respondents is displayed in Table 4.8 and Figure 4.6. Six groups have been created based on how much money people make every month. Fifty-seven percent of respondents (71 total) had monthly salaries of less than RM3,000, while twenty-one percent (30 total) have monthly incomes of between RM3,001 and RM5,000. However, only 16 respondents are 11.4% and RM7,001 - RM 9,000 . Followed by the income RM 9,001- RM 11,000 was have 6 respondents with (4.6%) and lastly income RM11,001 and above have a lowest responded which 5 (3.6%).

### 4.4.7. Drive Experience

| Drive Experience | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| 1 year and below | 16 | 11.4 | 11.4 | 11.4 |
| 2-5 years | 41 | 29.3 | 29.3 | 40.7 |
| 6-10 years | 31 | 22.1 | 22.1 | 62.9 |
| 11-15 years | 20 | 14.3 | 14.3 | 77.1 |
| 16 years and above | 32 | 22.9 | 22.9 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** | |

Table 4.9: Drive Experience
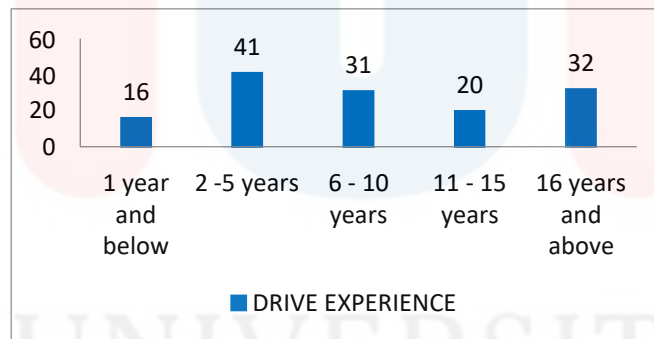


Figure 4.7: Drive Experience

Table 4.9 and Figure 4.7 show the driving experiences of the respondents. Figure 4.7 shows that the drivers with experience of 1 year and below get the lowest percentage from the others, which is 11.4% or only 16 respondents. The highest driving experience of the respondent is between 2 and 5 years, which is 29.3% or 41 respondents, followed by 16 years and above, which is 22.9% or 32 respondents. Furthermore, the rest of the driving experience respondents only get the 22.10% for 6-10 years, and 14.3% which is 20 respondents for 11-15 years.

### 4.4.8. Consumer Electric Vehicle or Conventional Vehicle

| Are you a consumer electric vehicle or conventional vehicle? | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Conventional vehicle | 121 | 86.4 | 86.4 | 86.4 |
| Electric vehicle | 2 | 1.4 | 1.4 | 87.9 |
| Conventional and electric vehicle | 17 | 12.1 | 12.1 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** | |

Table 4.10: Consumer electric vehicle or conventional vehicle
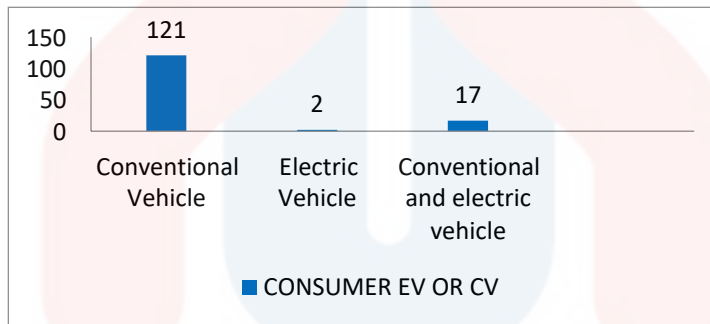


Figure 4.8: Consumer Electric Vehicle or Conventional Vehicle

Figure 4.8 and Table 4.10 show that only 1.4% of respondents prefer EVs over conventional automobiles. Eighty-six percent of respondents said they opted for a traditional car. There are only 17 respondents left who are both EV and gas car purchasers, or 12.1% of the total.

### 4.4.9. Have Awareness About Electric Vehicle

| Have awareness about electric vehicle? | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| Yes | 112 | 80.0 | 80.0 | 80.0 |
| No | 28 | 20.0 | 20.0 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** | |

Table 4.11: Awareness about Electric Vehicle
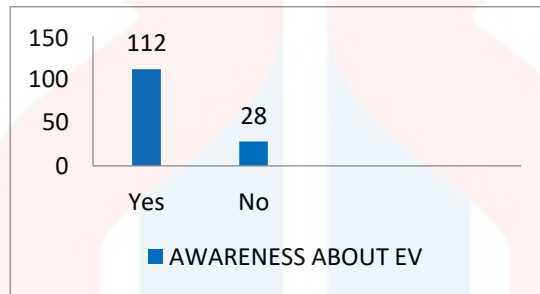


Figure 4.9: Awareness about EV

The percentage of respondents who are aware of EV is shown in Table 4.11 and Figure 4.9. The percentage of respondents who are aware of electric vehicles (EVs) is 80%, or 112 total respondents, whereas the percentage of respondents who are unaware of EVs is 20%, or just 28 totalrespondents.
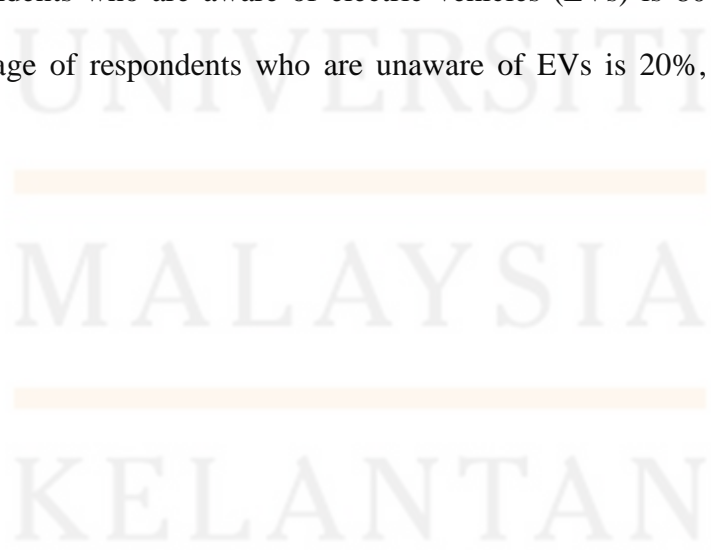
**4.4.10 Vehicle Purchase Experience**

| Vehicle Purchase Experience | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Fuel Vehicle | 134 | 95.7 | 95.7 | 95.7 |
| Hybrid Vehicle | 4 | 2.9 | 2.9 | 98.6 |
| Electric Vehicle | 2 | 1.4 | 1.4 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** | |

Table 4.12: Vehicle Purchase Experience
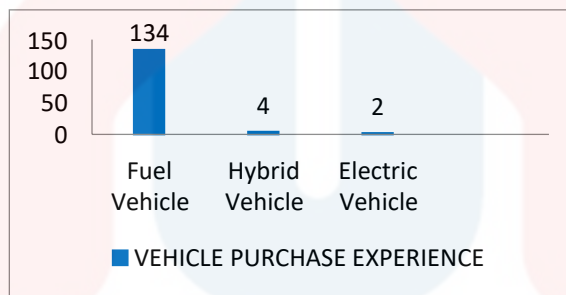


Figure 4.10: Vehicle Purchase Experience

According to Figure 4.10 and Table 4.12, the vehicle purchase experience that has been chosen by the respondents shows that more respondents are likely to purchase fuel vehicles, which are represented by 95.7%, or 134 respondents, in comparison to the respondents who chose the vehicle purchase experience for an EV, which had the lowest experience other than fuel vehicles and hybrid vehicles. The percentage of respondents who are likely to purchase fuel-powered vehicles is higher than the percentage of respondents who are likely to purchase electric vehicles. The buying experience for hybrid vehicles was 2.9%, which equals 4 respondents, whereas the purchasing experience for electric vehicles was 1.4%, which is only 2 respondents.

## 4.5    Scale Measurement

### 4.5.1    Descriptive Analysis

The descriptive analysis tested with 33 items according to their variableand listed out the

summary of the mean and standard deviation in Table 4.13

| | **Variables** | **Mean** | **Std. Deviation** |
|---|---|---|---|
| | *Environmental  Concers* | | |
| EC1 | **I think that electric vehicles don't contribute to noise pollution.** | **4.22** | **0.982** |
| EC2 | **I believe that electric vehicle usage can help reduce carbon emissions.** | **4.37** | **0.834** |
| EC3 | I am sure that the use of EV is more suggestive of eco mode (eco-friendly). | 4.30 | 0.911 |
| EC4 | I am certain that using EVs can provide awareness to users about the importance of preserving nature. | 4.25 | 0.945 |
| EC5 | I am expecting the use of recycled batteries by EVs is more environmentally friendly than conventionalcars. | 4.22 | 0.931 |
| | | **4.27** | **0.848** |

| | **Price Range** | | |
|---|---|---|---|
| **PR1** | **I am satisfied with the government provides road tax relief incentives to owners of electric vehicles.** | **4.05** | **0.994** |
| PR2 | I think that the electric vehicle maintenance rate is low. | 3.68 | 1.144 |
| PR3 | I believe that charging electric vehicle at home is cheaper. | 3.65 | 1.180 |
| PR4 | I am expecting electric vehicle charging market price unchanged compared to petrol price for conventional cars. | 3.74 | 1.041 |
| **PR5** | **I am confident that battery electric vehicles are much simpler and cheaper.** | **3.63** | **1.132** |
| | | 3.75 | 0.941 |
| | | | |
| | **Perception of Economic Benefit** | | |
| **PEB1** | **I am aware that the widespread use of electric vehicles will reduce the dependence on gasoline subsidies.** | **4.08** | **0.955** |
| PEB2 | I understand that the widespread use of electric vehicles will attract investors to invest in the automotive industry in our country. | 4.12 | 0.973 |
| **PEB3** | **I know that increasing the use of electric vehicles will increase job opportunities in theautomotive industry.** | **4.16** | **0.941** |
| PEB4 | I believe that a full exemption on import duty, excise duty and sales tax for electric vehicles can support the development of the local electric vehicle industry. | 4.14 | 0.941 |
| PEB5 | I think that the use of electric vehicles can reducefuel costs as EVs are comprehensively dependent on electricity. | 4.13 | 0.891 |
| | | **4.131** | **0.847** |

| | | | |
|---|---|---|---|
| | ***Psychological Benefits*** | | |
| PB1 | I consider the use of electric vehicles is safer because there are safety functions such as electrical extinguishing sensors in case of violations. | 3.95 | 0.958 |
| **PB2** | **I agree that the use of electric vehicles is more comfortable as no noise is generated from thevehicle's engine.** | **4.15** | **0.920** |
| **PB3** | **I think that a fully charged electric vehicle is capable of travelling farther than conventionalcars.** | **3.90** | **1.058** |
| PB4 | I support the use of electric vehicles using more efficient technologies such as steering without interlocking. | 3.95 | 0.976 |
| PB5 | I feel that electric vehicle usage is safer because there are safety functions such as auto breaking sensors. | 3.97 | 0.951 |
| | | **3.96** | **0.865** |
| | | | |
| | ***Infrastructure Readiness*** | | |
| **IR1** | **I know that when using an electric vehicle, special facilities such as parking will beprovided.** | **3.97** | **0.959** |
| IR2 | I think that as the use of electric vehicles increases on Pengkalan Chepa, the government should set upmore charging stations in the area. | 4.16 | 0.886 |
| IR3 | I support the convenience of the online application during charging to see the charging percentage provided by electric vehicle will make it easier for its users. | 4.16 | .861 |
| **IR4** | **I feel that charging equipment needs to be provided completely.** | **4.27** | **.873** |
| IR5 | I assume that if the consumption of electric vehicles increases, charging points should be established more especially in workplaces and residential areas. | 4.20 | .874 |
| | | **4.15** | **0.784** |

| | *Intention of Choosing Electric Vehicle* | | |
|---|---|---|---|
| **ICEV1** | **I prefer an electric car even if it is more expensive as compared to a conventional car** | **3.80** | **1.058** |
| ICEV2 | I think purchasing an electric car is a valuable green purchase | 4.02 | 0.966 |
| ICEV3 | In the near future, I will consider switching to an electric car | 3.85 | 1.105 |
| ICEV4 | The purchase and operation of an electric vehicle are on my list of future goals | 3.95 | 1.058 |
| ICEV5 | I am sure there are various options for the electric vehicle brand that will be available on the market | 3.99 | 1.049 |
| ICEV6 | Compared to conventional vehicles, I prefer the advantages of using electric vehicles | 3.92 | 1.090 |
| ICEV7 | The benefits of electric cars make me more likely to use them | 3.97 | 1.014 |
| **ICEV8** | **Compared to conventional vehicles, I believethat electric vehicles offer a superior level of protection in terms of their safety technology features** | **4.15** | **0.915** |
| | | **3.96** | **0.940** |

Table 4.13: The Summary of the mean and standard deviation

In table 4.13, the averages and standard deviations of the parameters that successfully influenced respondents' intentions to purchase an electric vehicle were displayed. According to the summary, each of the five independent variables was close to the value of 4.00, and the standard deviation was not very high. The findings suggest that respondents have 87 every intention of going with an electric vehicle, as the outcome can be interpreted to indicate. In addition, it was shown that the independent variable representing environmental concern had the highest mean, whereas the price range had thelowest mean over the course of this research. In general, the respondents, whoare

residents of Pengkalan Chepa, Kelantan, are aware that having concern for the environment was a significant motivating factor in their decision to purchase an electric vehicle. The reason for this is EC2, which states, "I feel that electric vehicle usage can help reduce carbon emissions" and has a mean score of 4.37. The majority of respondents agreed with this statement. While this is going on, the EC1 stated, "I do not believe that electric vehicles contribute to noise pollution." EC5: "I anticipate the usage of recycled batteries by electric vehicles to be more environmentally favorable than that of conventional automobiles." 4.22 was the lowest mean, which was shared by all groups. The statement that "I am satisfied with the government giving road tax reduction incentives to owners of electric vehicles" has the highest mean for the price range, PR1, with a mean of 4.05, followed by the PR5 statement with the lowest mean, "I am convinced that battery electric vehicles are considerably easier and cheaper," which has a mean of 3.63. It indicates that the respondent is in agreement that the government would supply the tax, but the respondent does not feel confident with the price of battery maintenance. In addition, in terms of the perception of economic benefits, the statement "I am aware that the widespread use of electric vehicles will reduce the 88 dependences on gasoline subsidies" had the lowest mean score of 4.08, while the statement "I am aware that increasing the use of electric vehicles will increase job opportunities in the automotive industry" had the highest mean score of 4.16. Both of these statements were based on the PEB3 question. This indicates that the respondents have faith that the use of electric vehicles will boost the economy and the number of job prospects in the automotive industry, but that it will not reduce the number of subsidies. In addition to this, the statement that "I agree that the use of electric vehicles is more comfortable as there is no noise generated from the vehicle's engine" has the highest mean in terms of psychological benefits with 4.15 means. This statement is followed by the statement that "I think that a fully charged electric vehicle is capable of travelling farther than conventional cars," which has the lowest mean with a 3.90 mean. The future user or respondents agree that there is no

noise from themotors, although it's possible that they might not be fully charged for a lengthyjourney. In addition, infrastructure readiness had the highest mean score of 4.27 for IR4, which read, "I feel that charging equipment needs to be provided completely." On the other hand, the lowest mean score of 3.97 was for IR1, which read, "I know that when using an electric vehicle, special facilities suchas parking will be provided." This indicates that the respondents are in agreement that if they choose an electric vehicle, they will be provided with the necessary charging equipment; however, this does not mean that they will have access to any specialized public facilities. In conclusion, environmental concern, price range, perception of economic benefits, psychological benefits, and infrastructure readiness are the elements thatinfluence the intention to choose an electric vehicle in Pengkalan Chepa, Kelantan. These are the independent variables. According to Table 4.13, the category with the highest mean is environmental concern, whereas the price range has the category with the lowest mean.

**4.6    Reliability Analysis**

Cronbach's alpha was the measurement that was used for testing the reliability of the variable in the questionnaire. In addition to the stability and consistency of the created item, Cronbach's alpha was also used. The rule of thumb regarding the size of Cronbach's alpha coefficient is displayed in Table 4.1. (Malhotra and Peterson, 2009).

| Alpha Coefficient Range, a | Strength of Associations |
|---|---|
| $\alpha \geq 0.90$ | Excellent |
| $0.90 > \alpha \geq 0.80$ | Very Good |
| $0.80 > \alpha \geq 0.70$ | Good |
| $0.70 > \alpha \geq 0.60$ | Moderate |
| $0.60 > \alpha$ | Poor |

Source: Hair, Ringle and Sarstedt 2011

**4.6.1    Pilot Test**

The pilot study was an essential step before sending out the questionnaire to the intended recipients. Additionally, the pilot test can be used to examine the dependability of the relationship between the independent and dependent variables, thereby ensuring that the questions for each variable can provide adequate support for the research. As stated by George and Mallery (2003), the acceptance reliability coefficient value needs to be greater than 0.70. Therefore, the questionnaire may need some adjustments before it is disseminated to the intended respondents for the study if the reliability findings are lower than 0.7. Cronbach's alpha coefficient was used to determine the reliability of the questionnaire with a sample size of 30.

67

|  |  | Cronbach's Alpha | N items | Results |
|---|---|---|---|---|
| **Independent Variables** | Environmental Concern (IV$_1$) | .969 | 5 | Excellent |
| | Price Range(IV$_2$) | .957 | 5 | Excellent |
| | Perception of Economic Benefit (IV$_3$) | .970 | 5 | Excellent |
| | Psychological Benefits (IV$_4$) | .933 | 5 | Excellent |
| | Infrastructure Readiness (IV$_5$) | .940 | 5 | Excellent |
| **Dependent Variables** | Intention of choosing an electric vehicle (DV) | .984 | 8 | Excellent |

Table 4.14: Reliability Statistics for Pilot Test

Statistics on dependability for the pilot test's individual variables are displayed in Table 4.14. Results from reliability testing showed that, with the exception of sort out, the vast majority of variables achieved an "excellent" outcome, with Cronbach's Alpha values above 0.90. The complete result of reliability for the pilot test may be concluded to be that all the dependent and independent variables were favourably associated with each other. This signifies that the questionnaire may be trusted and that the research can move on with the distribution of questionnaires to the specified population in Cronbach's Alpha N items Results Environmental Concern (IV1) .969 5 Excellent Price Range (IV2) .957 5 Excellent Independent Variables Perceptionof Economic Benefit (IV3) .970 5 Excellent Psychological Benefits (IV4) .933 5 Excellent Infrastructure Readiness (IV5) .940 5 Excellent Dependent Variables Intention of choosing an electric vehicle (DV) .984 8 Excellent 92 Pengkalan Chepa, Kelantan.

**4.6.2   Actual Reliability Test**

After collecting all data from 140 respondents, the reliability test neededto be conducted again to ensure all the variables were reliable.

| | | Cronbach's Alpha | N items | Results |
|---|---|---|---|---|
| **Independent Variables** | Environmental Concern (IV$_1$) | .955 | 5 | Excellent |
| | Price Range(IV$_2$) | .908 | 5 | Excellent |
| | Perception of Economic Benefit (IV$_3$) | .941 | 5 | Excellent |
| | Psychological Benefits (IV$_4$) | .933 | 5 | Excellent |
| | Infrastructure Readiness (IV$_5$) | .927 | 5 | Excellent |
| **Dependent Variables** | Intention of choosing an electric vehicle (DV) | .970 | 8 | Excellent |

Table 4.15: Actual Reliability Statistics

The actual results of the reliability statistics for all variables are shown in Table 4.15. Table 4.15 displays the results of a reliability test, with Cronbach's alpha indicating an outstanding reliability of 0.9 for both dependentand independent variables. 94 Cronbach's alpha (a) values for all variables aregreater than 0.90, indicating that the internal consistency is strong for all questions (see table 4.15). The results for the dependent variable of "electric vehicle intention" are, for instance,.970 (excellent). Cronbach's alpha for the independent variables of environmental worry (.955), price range (.908), perceived economic gain (.941), psychological benefit (.933), and infrastructure readiness (.933) is all very high, indicating high reliability (.927).

**4.7    Normality Test**

| Tests of Normality | | | | | | |
|---|---|---|---|---|---|---|
| | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Environmental Concern | .196 | 140 | .000 | .796 | 140 | .000 |
| Price Range | .100 | 140 | .002 | .939 | 140 | .000 |
| Perception of Economic Benefit | .153 | 140 | .000 | .859 | 140 | .000 |
| Psychological Benefits | .149 | 140 | .000 | .900 | 140 | .000 |
| Infrastructure Readiness | .152 | 140 | .000 | .890 | 140 | .000 |
| a. Lilliefors Significance Correction | | | | | | |

Table 4.16: Test of Normality for all Variable

Table 4.16 shows the result of Kolmogorov-Smirnov2 and Shapiro-Wilk test of normality for statistic, degree of freedom and p-value. Since the data has more than 50 observations, this study will interpret the Kolmogorov-Smirnov2 test results rather than Shapiro-Wilk because this test is only suitable for sample size. If the p-value is less than 0.5, the research must reject the null hypotheses.
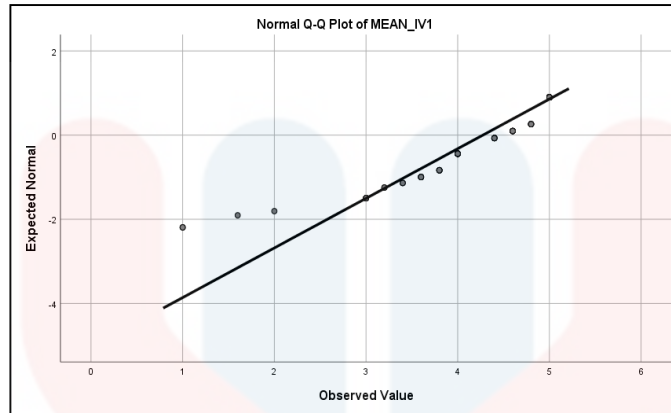
Figure 4.11: Normality Test Mean IV1

(Environmental Concern)
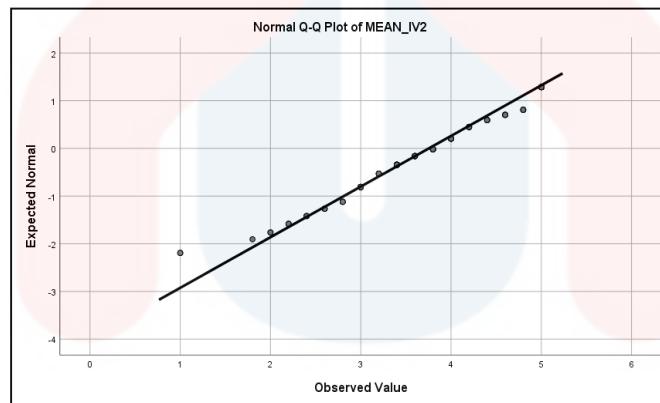


Figure 4.12: Normality Test of Mean

IV2(Price Range)
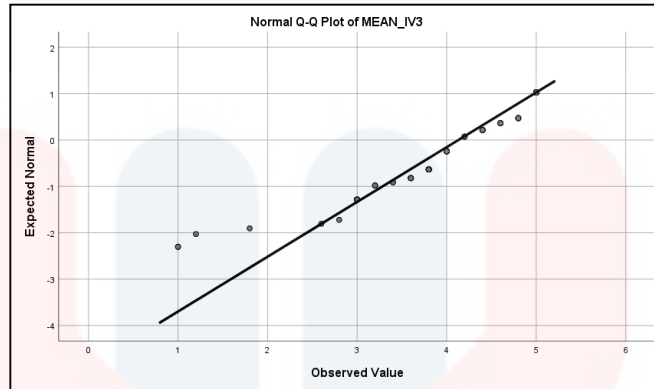
Figure 4.13: Normality Test of

MeanIV3(Perception of Economic Benefit)
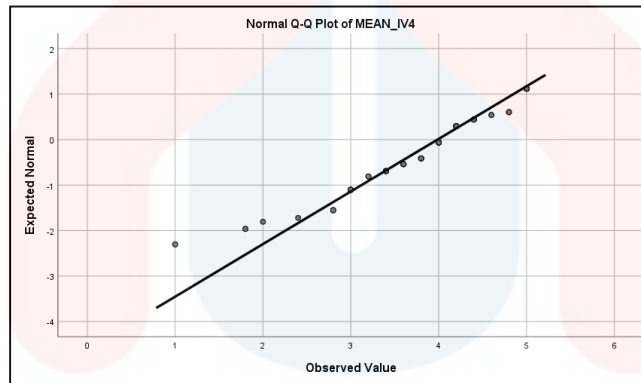


Figure 4.14: Normality Test of Mean

IV4(Psychological Benefit)
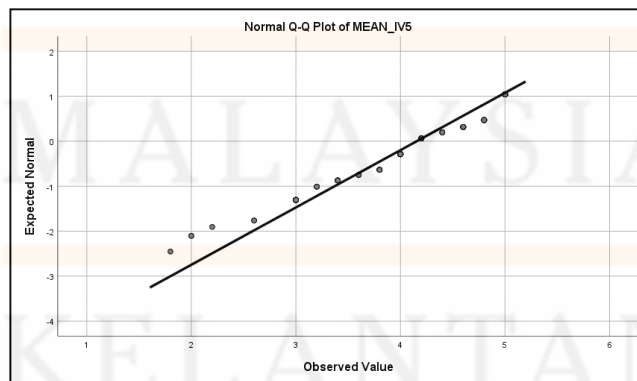


Figure 4.15: Normality Test of Mean

IV5(Infrastructure Readiness)

72

The output also shows a Normal Q-Q Plot for independent variable and dependent variable where the data do not close to the diagonal line on the chart so that data is not normally distributed and based on the table 4.20 show that the data not normal distribution. So, all figures from 4.11 to 4.15 can conclude that data points are not normally because they are not in the diagonal line.

## 4.8    Pearson's Correlation Analysis

Pearson Each independent variable was analyzed using a correlational method. This is because the direction and magnitude of the association between variables are assessed by the study question. The next step in the analysis procedure was checking the significance of the relationships between the variables by using the model test. One common application of the rule of thumb is to determine the nature and direction of a relationship between two variables by looking at their relative sizes. to be precise.Principles and Practices of Business Research (Hair, 2018).

| Coefficient of Correlation | Interpretation |
|---|---|
| r=1 | Perfect positive linear correlation |
| 0.5< r <1 | Strong positive linear correlation |
| 0< r < 0.5 | Weak positive linear correlation |
| r=0 | No linear correlation |
| 0<r<-0.5 | Weak negative linear correlation |
| -0.5<r, -1 | Strong negative correlation |
| r=-1 | Perfect negative correlation |

Source: Essential of Business Research Method (Hair,2018)

73

| Correlations | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Environmental Concern | Price Range | Perception of Economic Benefits | Psychological Benefits | Infrastrcuture Readiness | Intention of choosing ElectrIic Vehicle |
| Environmental Concern | Pearson Correlation | 1 | .665** | .836** | .761** | .772** | .595** |
| | Sig. (2-tailed) | | .000 | .000 | .000 | .000 | .000 |
| | N | 140 | 140 | 140 | 140 | 140 | 140 |
| Price Range | Pearson Correlation | .665** | 1 | .733** | .790** | .690** | .739** |
| | Sig. (2-tailed) | .000 | | .000 | .000 | .000 | .000 |
| | N | 140 | 140 | 140 | 140 | 140 | 140 |
| Perception of Economic Benefits | Pearson Correlation | .836** | .733** | 1 | .824** | .819** | .734** |
| | Sig. (2-tailed) | .000 | .000 | | .000 | .000 | .000 |
| | N | 140 | 140 | 140 | 140 | 140 | 140 |
| Psychological Benefits | Pearson Correlation | .761** | .790** | .824** | 1 | .820** | .749** |
| | Sig. (2-tailed) | .000 | .000 | .000 | | .000 | .000 |
| | N | 140 | 140 | 140 | 140 | 140 | 140 |

74

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Infrastrc uture Readines s | Pearson Correlation | .772** | .690** | .819** | .820** | 1 | .754** |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | | .000 |
| | N | 140 | 140 | 140 | 140 | 140 | 140 |
| Intention of choosing Electric Vehicle | Pearson Correlation | .595** | .739** | .734** | .749** | .754** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | |
| | N | 140 | 140 | 140 | 140 | 140 | 140 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | | | | | |

Table 4.17: Correlation between independent variable and dependent
variable

In order to provide early indicators of prospective interrelationships in the various interactions, the Pearson product-moment correlation coefficient (r) analysis is employed to characterize the strength and direction of bivariate relationships. The purpose of the test is to determine the degree to which each of the five independent factors is associated with the dependent variable. Table 4.17 displays the outcomes of the correlation analyses. Taken as a whole, the results demonstrate that all hypothesized links between the study's independent factors and the dependent variable are supported by the data. Economic benefit perception, psychological benefit perception, and infrastructure readiness all have positive correlations 101 above.000 in this study, indicating a rather high correlation between the independent variables and the dependent measure. Relationships between the other variables and costs vary from moderate to strong. In addition, the value of the correlation between each independent variable shouldn't be 0.70 or higher. In such a case, it might be best to ignore one of the factors. Table 4.17 shows that the greatest value among independent

75

variables is 0.00, which is the correlation between the perceived economic advantage, the perceived psychological benefit, and the preparedness of the underlying infrastructure. When compared to 0.70, this value is below, so all variables are retained.

## 4.9    Hypothesis Test

### 4.9.1    The relationship between Environmental Concern and Intention ofChoosing Electric Vehicle

**Hypothesis 1:**

H0: There is no significant relationship between environmental concern and intention of choosing an electric vehicle.

H1: There is a significant relationship between environmental concern and intention of choosing an electric vehicle.

The data provided by the Pearson correlation test on Table 4.17 demonstratedthat a concern for the environment was significantly connected to an intention to select an electric car (P-value = 0.000, less than 0.05). This finding hints at the importance of environmental considerations in the decision to go in an electric vehicle. The researchers 102 decided to go with the alternative hypothesis H1 andreject the null hypothesis H0.

**4.9.2 The relationship between Price Range and Intention of ChoosingElectric Vehicle**

**Hypothesis 2:**

H0: There is no significant relationship between price range and intention of choosing an electric vehicle.

H2: There is a significant relationship between price range and intention of choosing an electric vehicle.

The results demonstrated a significant relationship between price range and desire to choose an electric vehicle (P-value = 0.000, less than 0.05), as shown bythe Pearson correlation test on Table 4.17. This finding provides further evidencethat the price range is important when making the decision to purchase an electricvehicle. It was determined that the researchers should accept H2 and reject H0.

**4.9.3 The relationship between Perception of Economic Benefit and Intentionof Choosing Electric Vehicle**

**Hypothesis 3:**

H0: There is no significant relationship between perception of economic benefitsand intention of choosing an electric vehicle.

H3: There is a significant relationship between perception of economic benefitsand intention of choosing an electric vehicle.

Based on the result of the Pearson correlation test on table 4.17, the dataprovided proved that perception of economic benefits was significantly related with intention of

choosing electric vehicle with (P-value= 0.000 less than 0.05). So, this result suggested that the perception of economic benefits was significant with the intention of choosing electric vehicles. The researchers accepted the alternate hypothesis H3 and rejected null hypothesis H0.

### 4.9.4 The relationship between Psychological Benefits and Intention of Choosing Electric Vehicle

**Hypothesis 4:**

H0: There is no significant relationship between psychological benefits and intention of choosing an electric vehicle.

H4: There is a significant relationship between psychological benefits and intention of choosing an electric vehicle.

Based on the result of the Pearson correlation test on table 4.17, the data provided proved that psychological benefits were significantly related with intention of choosing electric vehicle with (P-value= 0.000 less than 0.05). So, this result suggested that the psychological benefits were significant with the intention of choosing electric vehicle. The researchers accepted the alternate hypothesis H4 and rejected null hypothesis H0.

**4.9.5** **The relationship between Infrastructure Readiness and Intention of Choosing Electric Vehicle**

**Hypothesis 5:**

H0: There is no significant relationship between infrastructure readiness and intention of choosing an electric vehicle.

H5: There is a significant relationship between infrastructure readiness and intention of choosing an electric vehicle.

Based on the result of the Pearson correlation test on table 4.17, the data provided proved that infrastructure readiness was significantly related with intention of choosing electric vehicle with (P-value= 0.000 less than 0.05). So, this result suggests that the infrastructure readiness was significant with the intention of choosing electric vehicle. The researchers accepted the alternate hypothesis H5and rejected null hypothesis H0.

**4.10     Multiple Regression Analysis**

As a statistical method, multiple regression analysis involves regressing the independent variables against the dependent variable to get an estimate of the latter's variability (Sekaran & Bougie, 2016). According to Cooper and Schindler (2014), multiple regression analysis is a statistical technique for testing and characterizing a causal hypothesis, constructing a self-weighting estimation formula for the dependent variable from the values of the independent variables, and keeping an eye on confounding variables to better assess the influence of other variables. All of the presumptions for the multiple regression analysis were met. Tables 4.18–4.20 display the results of the multiple regression analyses.

| Model Summary[b] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Std. Error | Change Statistics | | | | |
| Model | R | R Square | Adjusted R Square | of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .831[a] | .690 | .678 | .53377 | .690 | 59.581 | 5 | 134 | .000 |
| a. Predictors: (Constant),  Environmental concern, price range, perception of economic benefits, psychological benefit and infrastructure readiness | | | | | | | | | |
| b. Dependent Variable: Independent Variable | | | | | | | | | |

Table 4.18: Model Summary Result of Multiple Regression

Correlations (R = 0.831) between the criterion and numerous predictors are displayed in Table 4.27. (Dependent variable). Environmental concern, price range, perceived economic benefits, psychological benefit, and infrastructure preparation all play a role in the decision to purchase an electric vehicle. Moreover, the two factors explain 67.8% of the variation in population, leading to an increased price range and infrastructure readiness, as evidenced by the modified R2. Hair et al. (2017) state that R2 = 0.75 is quite significant. In addition, R2 = 0.67 is quite high, as stated by Chin (1998).

| ANOVAª | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 84.875 | 5 | 16.975 | 59.581 | .000[b] |
| | Residual | 38.178 | 134 | .285 | | |
| | Total | 123.053 | 139 | | | |
| a. Dependent Variable: Intention of choosing an electric vehicle | | | | | | |
| b. Predictors: (Constant), Environmental concern, price range, perception of economic benefits, pscyhological benefit and infrastructure readiness | | | | | | |

Table 4.19: ANOVA Results

Based on the table 4.19 the results show that it was significant regression(F16.975=59.581, p<0.1)

| | | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| Model | | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| 1 | (Constant) | .159 | .253 | | .629 | .530 | | |
| | Environmental Concern | .295 | .102 | .266 | -2.888 | .005 | .273 | 3.656 |
| | Price Range | .331 | .081 | .332 | 4.100 | .000 | .354 | 2.826 |
| | Perception of economic Benefit | .314 | .121 | .283 | 2.592 | .011 | .194 | 5.146 |
| | Psychological Benefits | .158 | .115 | .145 | 1.369 | .173 | .206 | 4.858 |
| | Infrastructure Readiness | .455 | .115 | .380 | 3.969 | .000 | .253 | 3.949 |
| a. Dependent Variable: MEAN_DV | | | | | | | | |

Table 4.20: Coefficient Results Multiple Regression

A coefficient of standard regression that indicates the number of standard deviation 108 units per shift in the independent variables that the dependent variables undergo (De, 2002). Table 4.29 demonstrates that two significant factors have favorable associations with the regression criterion. The price range comes in second, with a regression coefficient of 417, behind infrastructure readiness's 445. The perceived economic benefits come in at.314, the perceived environmental benefits at.295, and the perceived psychological benefits at.158. All other predictors were left out of

the multiple regression model since their effects were negligible when applied to this set of combinations. Knockand Hadaya (2018) state that p-values greater than 0.2 are significant, p-values between 0.11 and 0.19 are ambiguous, and p-values between 0 and 0.10 are not.

$$y = b + mx^1 + mx^2 + mx^3$$

Where
Y = dependent variable of the regression equation
M = slope of the regression equation
X = independent variable of the regression equation
B = constant of the equation

Figure 4.16: The Formula of Multiple Regression Equation

## 4.11 Summary

| Number of hypothesis | Statement of hypothesis | Result | Significant Value |
|---|---|---|---|
| $H_1$ | There is significant relation between environmental concern and intention of choosing an electric vehicle | Accepted | 0.000 |
| $H_2$ | There is significant relation between price range and intention of choosing an electric vehicle | Accepted | 0.000 |
| $H3$ | There is significant relation between perception of economic benefits and intention of choosing an electric vehicle | Accepted | 0.000 |
| $H_4$ | There is significant relation between psychological benefits and intention of choosing an electric vehicle | Accepted | 0.000 |
| $H_5$ | There is significant relation between infrastructure readiness and intention of choosing an electric vehicle | Accepted | 0.000 |

Table 4.21: Approval in this Analysis of all hypothesis

As the p-value should be less than 0.005, this analysis accepted environmental concern, price range, perception of economic benefits, psychological benefits, and infrastructure readiness. Table 4.21 showed the approval in this analysis of hypothesis. The first hypothesis, which is the relationship between environmental concern and intention of choosing an electric vehicle is significantly positive or H1 accepted because the p-value is below 0.005 which is 0.000. Next, there is the relationship between pricerange and intention of choosing an electric vehicle is significantly positive or H2 accepted because the p-value is below 0.005 which is 0.000. Moreover, there is the relationship between perception of economic benefits and intention of choosing an electric vehicle is significantly positive or H3 accepted because the p-value is below 0.005 which is 0.000. Followed by relationship between psychological benefits and intention of choosing an electric vehicle is significantly positive or H4 accepted becausethe p-value is below 0.005 which is 0.000. Lastly, there is the relationship between infrastructure readiness and intention of choosing an electric vehicle is significantly positive or H5 accepted because the p-value is below 0.005 which is 0.000.

# CHAPTER 5

# DISCUSSION AND CONCLUSION

## 5.1    Introduction

In this chapter of the research, the results of the research that were obtained through the descriptive analysis, reliability analysis, Pearson correlation test, and multiple linear regression analysis, all of which were explained in chapter 4, were 111 discussed and explained. The problem and previous research were taken into consideration when developing the overview of the results that are presented in Chapter 2. In addition, researchers have highlighted the assumptions they made regarding the hypothesis testing to determine if the research hypothesis was accepted or rejected. Additionally, the conclusion of the outcome objective in accordance with the study objective that was statedin Chapter 1 was explored in this chapter.

## 5.2    Key Findings

The primary goal of this research is to determine how infrastructure readiness in Pengkalan Chepa, Kelantan, relates to environmental concerns, price range, perceived economic gain, psychological benefit, and the likelihood of purchasing an electric vehicle. A total of 140 licensed residents of the Pengkalan Chepa area were randomly selected to participate in the survey and have so far agreed to do so. SPSS Statistics version 26 was used to analyze the data obtained for this investigation. After collecting data from questionnaires, a reliability test was performed to confirm the accuracy of the results. Thirty participants were used in the pilot test of Cronbach's alpha

coefficient. The results of the tests show a dependability of greater than 0.7. The results of the questionnaires' reliability tests showed that they were sufficient for this study. If you want to keep digging through your data for insights, you need to know if your independent variables and dependent variables have a good enough relationship, which is why this reliability test is so crucial. The validity and accuracy of each variable are checked during the data analysisprocess. The goals of this study were determined via a Pearson correlation analysis. Chapter 4's findings show that people in Pengkalan Chepa, Kelantan, are influenced toward buying an EV due to environmental concerns, affordability, perceived economic gain, perceived psychological benefit, and infrastructure readiness. In Pengkalan Chepa, Kelantan, the factors influencing the intention to choose an electric car include environmental concern, price range, perceived economic gain, psychological benefit, andinfrastructural readiness, all of which are summarized in Table 5.1.

| Hypotheses | Result | Findings of data analysis |
|---|---|---|
| **H1**: There is a significant relationship between environmental concern and intention of choosing an electric vehicle. | $r = 0.595^{**}$ p $= 0.000$ Strong positive linear correlation | H1 is accepted |
| **H2**: There is a significant relationship between price range and | $r = 0.739^{**}$ p $= 0.000$ | H2 is accepted |

| | | |
|---|---|---|
| intention of choosing an electric vehicle. | Strong positive linear correlation | |
| **H3**: There is a significant relationship. between perception of economic benefits and intention of choosing an electric vehicle. | $r = 0.734^{**}$ $p = 0.000$ Strong positive linear correlation | H3 is accepted |
| **H4**: There is a significant relationship between psychological benefits and intention of choosing an electric vehicle. | $r = 0.749^{**}$ $p = 0.000$ Strong positive linear correlation | H4 is accepted |
| **H5:** There is a significant relationship between infrastructure readiness and intention of choosing an electric vehicle. | $r = 0.754$ $^{**}p = 0.000$ Strong positive linear correlation | H5 is accepted |

Table 5.1: Findings of the Result

**5.3    Discussion**

**5.3.1    Environmental Concern**

The environmental concern Pearson Correlation Coefficient has a p- value of 0.000, which is less than the alpha value of 0.05, as shown in Table 5.1 (0.05). Table 5.1 also displayed the 0.000 p-value from the multiple linearregression coefficient, showing that environmental concern is a positive predictor of the desire to purchase an EV in Pengkalan Chepa.

Consistent with other research, it confirms that care for the natural world is a crucial component of the idealized framework. Consumers' environmentalconcerns do have an impact on their product choices, as has been established in previous studies. Care for the natural world, worrying about its future, and awareness of the ways in which human activity has negative effects on ecosystems all fall under the umbrella term "ecological concern" (Vainio & Paloniemi, 2014). Concern for the environment significantly influences consumers' attitudes about green products and their willingness to purchase them, as demonstrated by a number of studies and confirmed by Wang and Zhan (2017).

### 5.3.2  Price Range

The p-value of 0.417 for the price range The Pearson correlation coefficient was found in table 5.1, which is higher than the significance level of alpha (0.05). The coefficient of multiple linear regression showed a p-value of 0.417, indicating a negative link between price range and the intention of choosing an electric car as a factor influencing the choice of an electric vehicle in Pengkalan Chepa (Table 5.1).

Kaur and Arora (2021) argue that customers' perceived value of new technology is a key determinant of whether or not they will adopt it. Previous research has demonstrated that the price point at which a product can be purchased has a significant effect on sales. Electric cars are now more expensive than conventional gas-powered vehicles, and incentives like tax reductions and subsidies have not been enough to bridge the price gap. The high price of eco-friendly items has been identified as a major impediment to their wider adoption, according to studies.

### 5.3.3  Perception of Economic Benefit

In table 5.1, the Pearson correlation coefficient for the sense of economic gain has a p-value of 0.000, which is significantly lower than the alpha-level significance level (0.05). Table 5.1 also displayed the 0.000 p-value from the coefficient of multiple linear regression, indicating that the sense of economic gain is a factor influencing the selection of electric vehicles in Pengkalan Chepa. According to previous research, consumers' estimations of a product's financial value can significantly influence their opinions of it. Positive effects on the bottom line, such as increased sales or profits, are examples of what can be considered 116 economic benefits. According to Chen (2021), it is a potential savings option as well.

### 5.3.4 Psychological Benefits

The p-value of 0.000 for the Pearson Correlation Coefficient indicating psychological advantages is significantly lower than the alpha-level significance level in Table 5.1 (0.05). Table 5.1 also displayed the 0.000 p value from the coefficient of multiple linear regression, showing that the results indicate a positive relationship between psychological benefits and the intention of choosing an electric vehicle, which is a factor influencing the choice of an electric vehicle in Pengkalan Chepa.

Results from a study by Chu et al. (2019) show that EV use is primarily motivated by necessity. Customers who cared about pollution levels and wanted to lessen their impact on the planet saw electric vehicles as a necessity for the development of civilization. Since the belief in one's own self-control is illusory, it cannot be used to judge the relative merits of various courses of conduct (Mohamed et al., 2018; Adnan et al., 2017a, b). The consumer's anticipation of the product will likely play a factor in the consumer's eventual decision to go with an EV, given that EVs are usually acknowledged as a product that efficiently utilizes energy.

### 5.3.5 Infrastructure Readiness

From the table of 5.1, the Pearson Correlation Coefficient for the infrastructure readiness, showed the p-value of 0.558 which that value is morethan alpha value (0.05). Table 5.1 also showed the 0.000 of p-value from coefficient of multiple linear regression which the results indicates that there is a positive relationship between infrastructure readiness with the intention of choosing electric vehicle and it is a factor influencing the choosing electric vehicle in Pengkalan Chepa. Khalil (2020) stated that infrastructure accessibility is thought to be important for the adoption of EVs to be successful. Charging infrastructure was shown to be significant, and infrastructure demonstrated its significance. Wang (2015) mentioned that it is anticipated that within the next decade, the number of electric passenger vehicles will surpass the number of gasoline-powered vehicles, resulting in a significant increase in the demand for charging infrastructure.

## 5.4  Implications

The study findings have some implication for electric vehicles. The survey has the potential to increase the residents Pengkalan Chepa, Kelantan have the intention of choosing electric vehicle. It is because some of residents Pengkalan Chepa, have awareness and know about the electric vehicle advantages. Also, the variety of theoretical contributions to future studies have been made possible by the investigation. It also shows that the electric vehicle will be involved in industry automotive sector. There is sufficient evidence here to suggest this research has contributed to the theoretical and empirical understanding of the intention of choosing electric vehicle in Pengkalan Chepa, Kelantan. Theory of planned behavior (TPB) has provided theoretical backing for this study research. This research also showed that price range and infrastructure readiness was the highest choice by the respondents for intention of choosing an electric vehicle. It means that the price of the electric vehicle is worth it. The second that the respondents choose is for infrastructure readiness. This showed that if having an electric vehicle, the infrastructure needs to build it for the future electric vehicle user.

**5.5    Limitations**

Limitation of study means there is a constraint of this study. The constraint will affect the accuracy of conduct of this research.

- Small Amount of Target Population

This study was mostly about the residents who live in Pengkalan Chepa, Kelantan. Researchers in Pengkalan Chepa, Kelantan, couldn't get reliable information from locals because some of them refused to fill out the survey. Because of this, the research did not reach the people it was meant for. They couldn't use this study as a guide because of this.

- Time Constraint

There was a limited time period given to conduct this study. This limited time period would affect the accuracy of the data collected. The researchers needed more time to collect the quality data and information, reliability and help in conducting the study in order to do good research. Besides that, researchers needed to complete each of the chapters within a short period of time. Researchers cannot accomplish each of the chapters before the deadline given. For example, researchers need to distribute more than 140 questionnaires in the limited time to collect the final data of the study and conduct the data analysis. Furthermore, chapter 4 needs extra time to complete all the data analysis processes and fulfil the Final Year Project (FYP).

- Internet Sources

The library sometimes didn't have the information that could be found on the Internet. Researchers were not able to get all of the information they needed. Some of the information didn't match what researchers needed to use as references for this study. Aside from that, all of the information comes from the blog, so it wasn't a good way to finish this researchable to get all of the information they needed. Some of the information didn't match what researchers needed to use as references for this study. Aside from that, all of the information comes from the blog, so it wasn't a good way to finish this research. Also, there wasn't a lot of information on the Internet, and some information couldn't even be accessed through the Internet. So, this study didn't get a more complete proposal to use as a guide.

- Respondent's Knowledge

This research relied entirely on the knowledge provided by the respondents and did not attempt to account for any personal biases. It was challenging to identify respondents who not only had knowledge but also experiences related to the decision to purchase an electric vehicle. Because this type of sampling lowers the likelihood of getting a representative sample, the use of non-probability convenience sampling was a limitation that had to be adhered to. In order for the researchers to find a solution to this dilemma, they will need to wait and look for the appropriate respondent to complete this study. As a direct consequence of this, the researchers need a significant amount of time to locate respondents who will fill out the questionnaire.

## 5.6 Recommendation

This study focuses on the study of the factors influencing the intention of choosing an electric vehicle (EV) in Pengkalan Chepa, Kelantan. Based on the result and findings, this study has come up with the several recommendations for future research in increasing the consumer or residents to choose an EV other than conventional cars. There are a few recommendations for future researchers which help the new researchers to improve their surveys for their research.

Based on the findings result and discussion, the following recommendation for future research has been identified. Firstly, to fulfill the needs of EV adoption, factories have expanded their supply networks to acquire assets (raw materials and labor) from all over the world at competitive prices. In order to further the widespread adoption of electric vehicles in developing countries, multinational corporations are banding up with government agencies in these countries. More studies may be done in poor countries by looking at the success stories of countries like China and Malaysia, which are leading the way in EV adoption and serving as an example to the rest of the globe.

Secondly, the range is the factor that concerns Malaysians the most when comparing electric cars to other types of vehicles, thus the country's government should concentrate first on installing charging stations rather than offering financial incentives or anything else of the sort. Moreover, the government must first determine the user need before implementing the incentive because the majority of incentives do not meet the requirements for residents of Pengkalan Chepa to purchase EV.

Lastly, automobile manufacturers can also encourage the purchase of EV by offering financial incentives, such as leasing, corporate discounts, and free accessories. On the other hand, in a few of the research, the insignificant effect of factors can be because customers aren't paying enough

attention to the environment or they're being irresponsible. As a result, more information should be provided to consumers regarding the protection of the environment, the benefits of using electric vehicles, and the essential characteristics of these vehicles through various forms of advertising for EV such as online, television, theatres, global, outdoor, and product placement.

## 5.7    Conclusion

This chapter has focused on the findings that were derived from the total investigation. The research was carried out by researchers in Pengkalan Chepa, Kelantan, using questionnaire surveys to assess people's intentions regarding purchasing an EV. Researchers were able to analyze and categorize the findings of the study in order to determine whether or not the conclusion satisfied the objectives of this analysis because the study gave an overview of the final results based on survey data. The results of the research have offered a complete overview of the previous research on the elements that influence the decision to purchase an EV. Based on the literature that was supplied, it was discovered that this study fills in the gaps and provides a preview of the studies that are based on EV. It also shows the penetration rates of customer behaviour toward the intention of buying an EV. For the purpose of cutting down on carbon dioxide emissions, the EV has emerged as the most promising.

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**APPENDICE**

**APPENDIX A**

**DRAFT OF QUESTIONNAIRE**

## Factors Influencing the Intention of Choosing an Electric Vehicle

## (EV)In Pengkalan Chepa, Kelantan

Dear Respondent,

We are undergraduate students from Faculty Entrepreneurship and Business (FEB) under the Bachelor of Entrepreneurship (Logistic and Distributive Trade) at Universiti Malaysia Kelantan (UMK). We are conducting a study on "Factors Influencing the Intention of Choosing an Electric Vehicle (EV) in Pengkalan Chepa". The aim of this study is to measure the relationship between factors influencing the intention of choosing an EV. Thus, we are very grateful if you could spend five to ten minutes answering this questionnaire. All responses will be used for research purposes only. Thank you for your kind cooperation and contribution to this research.

*Responden yang dihormati,*

*Kami merupakan pelajar Ijazah Sarjana Muda Fakulti Keusahawanan dan Perniagaan (FKP) di bawah Ijazah Sarjana Muda Keusahawanan (Logistik dan Perniagaan Pengedaran) di Universiti Malaysia Kelantan (UMK). Kami sedang menjalankan kajian mengenai "Faktor-Faktor Yang Mempengaruhi Niat Memilih sebuah Kenderaan Elektrik (EV) di Pengkalan Chepa, Kelantan". Matlamat kajian ini adalah untuk mengukur hubungan antara faktor-faktor yang mempengaruhi EV dan niat untuk memilih EV. Justeru, kami amat berterima kasih sekiranya anda dapat meluangkan masa lima hingga sepuluh minit untuk*

*menjawab soal selidik ini. Semua jawapan tidak akan digunakan selain daripada tujuan penyelidikan sahaja. Jutaan terima kasih atas kerjasama dan sumbangan anda dalam penyelidikan ini.*

Reseachers/ *Penyelidik:*

Muhammad Wafi

NurShamira

Syazana Husna Gan

Wei Li

Lectrurer/ *Pensyarah*: Dr.Rosmaizura Binti Mohd

Zain

Faculty of Entrepreneurship and Business

*Fakulti Keusahawanan dan Perniagaan*

**Section A: Demographic Respondent / *Bahagian A: Latar Belakang Responden***

Please tick (/) at the appopriate answer. *Sila tandakan (/) pada jawapan yang sesuai.*

*1.* Gender / *Jantina:*

☐ Male*/ Lelaki*

☐ Female*/ Perempuan*

*2.* Age / *Umur:*

☐ 25 – 34 years / *25 -34 tahun*

☐ 35- 44 years / *35-44 tahun*

☐ 45- 54 years / *45-54 tahun*

☐ 55 - 64 years *55 - 64 tahun*

☐ 65 years and above/ *65 tahun dan keatas*

*3.* Marital status/ *Status perkahwinan :*

☐ Single*/ Bujang*

☐ Married*/ Berkawin*

☐ Divorced*/ Bercerai*

☐ Others*/ Lain-lain,*____(please specify*/sila nyatakan)*

*4.* Academic Qualification/ *Kalayaan Akademik:*

☐ SPM and above/*SPM dan ke bawah*

☐ STPM/*Diploma*

☐ Degree/*Ijazah*

☐ Postgraduate *(Master/PhD)*

☐ Others/*Lain-lain*_____ (please specify/*sila nyatakan*

*5.* Employment Status */ Pekerjaan:*

☐ Paid Employment*/ Pekerjaan Bergaji*

☐ Self-Employed*/ Berkerja Sendiri*

☐ Retired*/ Persara*

☐ Others*/ Lain-lain,*_____ *(*Please specify*/sila nyatakan)*

*6.* Monthly income (Malaysian Ringgit) */ Pendapatan sebulan (Ringgit Malaysia):*

☐ Below RM 3,000*/ Bawah RM 3,000*

☐ RM 3,001 - RM 5,000

☐ RM 5,001 - RM 7,000

☐ RM 7,001 - RM 9,000

☐ RM 9,001 - RM 11,000

☐ RM 11,001 and above*/ RM 11,001 dan ke atas*

*7.* Drive experience */ Pengalaman memandu:*

☐ 1 year and below/ *1 tahun ke bawah*

☐ 1 - 4 years/ *1- 4 tahun*

☐ 5- 9 years/ *5 - 9 tahun*

☐ 10 - 15 years/ *10 - 15 tahun*

☐ 16 years and above/ *16 tahun dan ke atas*

*8.* Are you a consumer electric vehicle or conventional vehicle */ Adakah anda penggunakenderaan elektrik atau kenderaan konvensional.*

☐ Conventional vehicle/*kenderaan konvensional*

☐ Electric vehicle/ *kenderaan elektrik*

☐ Conventional and electric vehicle / *kenderaan konvensional dan elektrik*

☐ Others/Lain-lain_____(Please specify/*sila nyatakan*)

*9.* Have awareness about electric vehicle */ Mempunyai kesedaran tentang kenderaan elektrik*

☐ Yes/ Ya

☐ No/ Tidak

*10.* Vehicle Purchase Experience */ Pengalaman Pembelian Kenderaan:*

☐ Fuel Vehicle/ *Kenderaan Bahan Api*

☐ Hybrid Vehicle/ *Kenderaan Hibrid*

☐ Electric Vehicle / Kenderaan Elektrik

**SECTION B: Factor Influencing the Intention of Choosing an Electric Vehicles (EV)**

*BAHAGIAN B: Faktor yang Mempengaruhi Niat Memilih  Kenderaan Elektrik*

The following question is to identify the factors influencing Electric vehicles (EV) among residents in Pengkalan Chepa, Kelantan. You can mark your answer on a scale of 1 to 5. Each scale for the question is provided.

*Soalan berikut adalah untuk mengenal pasti faktor-faktor yang mempengaruhi kenderaan Elektrik (EV) dalam kalangan penduduk di Pengkalan Chepa, Kelantan. Anda boleh menandajawapan anda pada skala 1 hingga 5. Setiap skala untuk soalan disediakan.*

| Five Point of Likert Scale / *Skala Likert* | | | | |
|---|---|---|---|---|
| *1* | *2* | *3* | *4* | *5* |
| Strongly Disagree / *Sangat Tidak Setuju* | Disagree / *Tidak Setuju* | Neutral / *Tidak Pasti* | Agree / *Setuju* | Strongly Agree / *Sangat Setuju* |

**Environmental Concern /** *Keperhatinan Alam Sekitar*

| | Question/ *Soalan* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1. | I think that electric vehicles don't contribute to noise pollution. / *Saya berpendapat bahawa kenderaan elektrik  tidak menyumbang kepada pencemaran bunyi.* | | | | | |
| 2. | I believe that electric vehicle usage can help reduce carbonemissions. / *Saya percaya bahawa penggunaan kenderaan  elektrik boleh membantu mengurangkan pelepasan karbon.* | | | | | |
| 3. | I am sure that the use of EV is more suggestive of eco mode (eco- friendly). / *Saya yakin bahawa penggunaan EV lebih kepada mod eko (mesra alam).* | | | | | |
| 4. | I am certain that using EVs can provide awareness to users about the importance of preserving nature. / *Saya pasti menggunakan EV boleh memberi kesedaran kepada pengguna tentang kepentingan memelihara alam semula jadi.* | | | | | |
| 5. | I am expecting the use of recycled batteries by EVs is more environmentally friendly than conventional cars. / *Saya mengjangkakan penggunaan bateri kitar semula oleh EV lebih mesra alam berbanding kereta konvensional.* | | | | | |

**Price Range / *Julat Harga***

| | Question/ *Soalan* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1. | I am satisfied with the government provides road tax relief incentives to owners of electric vehicles. / *Saya berpuas hati dengan kerajaan menyediakan insentif pelepasan cukai jalan kepada pemilik kenderaan elektrik.* | | | | | |
| 2. | I think that the electric vehicle maintenance rate is low. / *Saya berpendapat bahawa kadar penyelenggaraan kenderaan elektrikadalah rendah.* | | | | | |
| 3. | I believe that charging electric vehicle at home is cheaper. /*Saya percaya bahawa mengecas kenderaan elektrik di rumah lebih murah.* | | | | | |
| 4. | I am expecting electric vehicle charging market price unchanged compared to petrol price for conventional cars. / *Saya mengjangkakan harga pasaran pengecasan kenderaan elektrik tidak berubah berbanding harga petrol untuk kereta konvensional.* | | | | | |
| 5. | I am confident that battery electric vehicles are much simpler and cheaper. / *Saya yakin bahawa kenderaan elektrik bateri jauh lebih mudah dan lebih murah.* | | | | | |

**Perception of Economic Benefit / *Persepsi Faedah Ekonomi***

| | Question/ *Soalan* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1. | I am aware that the widespread use of electric vehicles will reduce the dependence on gasoline subsidies. / *Saya sedar bahawa penggunaan kenderaan elektrik yang meluas akan mengurangkan pergantungan kepada subsidi petrol.* | | | | | |
| 2. | I understand that the widespread use of electric vehicles will attract investors to invest in the automotive industry in our country. / *Saya faham bahawa penggunaan kenderaan elektrik yang meluas akan menarik pelabur untuk melabur dalam industri automotif di negara kita.* | | | | | |

| | Question/ Soalan | | | | | |
|---|---|---|---|---|---|---|
| 3. | I know that increasing the use of electric vehicles willincrease job opportunities in the automotive industry. / *Saya tahu bahawa meningkatkan penggunaan kenderaan elektrik akan meningkatkan peluang pekerjaandalam industri automotif.* | | | | | |
| 4. | I believe that a full exemption on import duty, excise duty and sales tax for electric vehicles can support the development of the local electric vehicle industry. / *Saya percaya bahawa pengecualian sepenuhnya ke atas duti import, duti eksais dan cukai jualan untuk kenderaan elektrik boleh menyokong pembangunan industri kenderaan elektrik tempatan.* | | | | | |
| 5. | I think that the use of electric vehicles can reduce fuel costs as EVs are comprehensively dependent on electricity. / *Saya berpendapat bahawa penggunaan kenderaan elektrik mampu mengurangkan kos bahan api kerana EV bergantung kepada elektrik secara menyeluruh.* | | | | | |

**Psychological Benefit** */ Faedah Psikologi*

| | **Question/ *Soalan*** | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 1. | I consider the use of electric vehicles is safer because there are safety functions such as electrical extinguishing sensors in case of violations. / *Saya menganggap penggunaan kenderaan elektrik adalah lebih selamat kerana terdapat fungsi keselamatan seperti sensor pemadam elektrik sekiranya berlaku pelanggaran.* | | | | | |
| 2. | I agree that the use of electric vehicles is more comfortable as no noise is generated from the vehicle's engine. / *Saya bersetuju bahawa penggunaan kenderaan elektrik lebih selesa kerana tiada bunyi bising dihasilkan daripada enjin kenderaan.* | | | | | |

| 3. | I think that a fully charged electric vehicle is capable of travelling farther than conventional cars. / *Saya berpendapat bahawa pengecasan penuh kenderaan elektrik mampu bergerak lebih jauh daripada kereta konvensional.* | | | | | |

| 4. | I support the use of electric vehicles using more efficient technologies such as steering without interlocking. / *Saya menyokong penggunaan kenderaan elektrik menggunakan teknologi yang lebih cekap seperti stereng tanpa kunci.* | | | | | |
|---|---|---|---|---|---|---|
| 5. | I feel that electric vehicle usage is safer because there are safety functions such as auto breaking sensors. / *Saya rasa penggunaan kenderaan elektrik adalah lebih selamat kerana terdapat fungsi keselamatan seperti sensor break automatic.* | | | | | |

**Infrastructure Readiness / *Kesediaan Infrastruktur***

| | **Question/ *Soalan*** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| 1. | I know that when using an electric vehicle, special facilities such as parking will be provided. / *Saya tahu apabila menggunakan kenderaan elektrik kemudahankhas seperti tempat letak kereta akan disediakan.* | | | | | |
| 2. | I think that as the use of electric vehicles increases on Pengkalan Chepa, the government should set up more charging stations in the area. / *Saya berpendapat bahawa apabila penggunaan kenderaan elektrik meningkat di Pengkalan Chepa, kerajaan harus menubuhkan lebih banyak stesen pengecasan di kawasan tersebut.* | | | | | |
| 3. | I support the convenience of the online application during charging to see the charging percentage providedby electric vehicle will make it easier for itsusers. / *Saya menyokong kemudahan aplikasi atas talian semasa pengecasan untuk melihat peratusan pengecasan yang disediakan oleh kenderaan elektrik akan memudahkan penggunanya.* | | | | | |
| 4. | I feel that charging equipment needs to be provided completely. / *Saya rasa peralatan pengecasan perlu disediakan sepenuhnya.* | | | | | |

| | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| 5. | I assume that if the consumption of electric vehicles increases, charging points should be established more especially in workplaces and residential areas. / *Saya menganggap bahawa jika penggunaan kenderaan elektrik meningkat, titik pengecasan harus diwujudkan lebih terutamanya di tempat kerja dan kawasan kediaman.* | | | | | |

**SECTION C: Intention of Choosing EV / *BAHAGIAN C: Hasrat Untuk MemilihKenderaan Elektrik***

| | **Question/ *Soalan*** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| 1. | I prefer an electric car even if it is more expensive as compared to a conventional car / *Saya lebih suka kereta elektrik walaupun harganya lebih mahal berbanding kereta konvensional* | | | | | |
| 2. | I think purchasing an electric car is a valuable green purchase / *Saya fikir membeli kereta elektrik adalah pembelian hijau yang bernilai* | | | | | |
| 3. | In the near future, I will consider switching to an electric car / *Dalam masa terdekat, saya akan mempertimbangkan untuk beralih kepada kereta elektrik* | | | | | |
| 4. | The purchase and operation of an electric vehicle are on my list of future goals / *Pembelian dan pengendalian kenderaan elektrik adalah dalam senarai matlamat masa depan saya* | | | | | |
| 5. | I am sure there are various options for the electric vehicle brand that will be available on the market / *Saya pasti terdapat pelbagai pilihan untuk jenama Kenderaan Elektrik yang akan tersedia di pasaran.* | | | | | |
| 6. | Compared to conventional vehicles, I prefer the advantages of using electric vehicles / *Berbanding dengan kenderaan konvensional,saya lebih suka kelebihan penggunaan kenderaan elektrik* | | | | | |

| 7. | The benefits of electric cars make me more likely to use them / *Kelebihan kereta elektrik membuatkan saya lebih cenderung untuk menggunakannya* | | | | | |
|----|-----|---|---|---|---|---|
| 8. | Compared to conventional vehicles, I believe that electric vehicles offer a superior level of protection in terms of their safety technology features / *Berbanding dengan kenderaan konvensional, saya percaya bahawa kenderaan elektrik menawarkan tahap perlindungan yang unggul dari segi ciri teknologi keselamatan mereka* | | | | | |

**Thank you for your participation.**

*Terima Kasih atas Penyertaan Anda.*

**APPENDIX B**

**GANTT CHART**

| Description | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 | Week 11 | Week 12 | Week 13 | Week 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chapter 1: Introduction | | | | | | | | | | | | | | |
| Background of the study | | | | | | | | | | | | | | |
| Problem statement | | | | | | | | | | | | | | |
| Research question | | | | | | | | | | | | | | |
| Research objectives | | | | | | | | | | | | | | |
| Scope of the study | | | | | | | | | | | | | | |
| Significance of study | | | | | | | | | | | | | | |
| Definition of term | | | | | | | | | | | | | | |
| Organization of the proposal | | | | | | | | | | | | | | |
| Chapter 2: Literature Review | | | | | | | | | | | | | | |
| Introduction | | | | | | | | | | | | | | |
| Underpinning theory | | | | | | | | | | | | | | |
| Previous studies | | | | | | | | | | | | | | |
| Hypotheses statement | | | | | | | | | | | | | | |

114

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conceptual framework | | | | | | | | | | | | | | | |
| Summary/ Conclusion | | | | | | | | | | | | | | | |
| Chapter 3: Research Methods | | | | | | | | | | | | | | | |
| Introduction | | | | | | | | | | | | | | | |
| Research design | | | | | | | | | | | | | | | |
| Data collection methods | | | | | | | | | | | | | | | |
| Study population | | | | | | | | | | | | | | | |
| Sample size | | | | | | | | | | | | | | | |
| Sampling techniques | | | | | | | | | | | | | | | |
| Research instrument development | | | | | | | | | | | | | | | |
| Measurement of the variables | | | | | | | | | | | | | | | |
| Procedure for data analysis | | | | | | | | | | | | | | | |
| Summary/ Conclusion | | | | | | | | | | | | | | | |
| Chapter 4: Data Analysis and Findings | | | | | | | | | | | | | | | |
| Introduction | | | | | | | | | | | | | | | |
| Preliminary Analyis | | | | | | | | | | | | | | | |
| Demographic Profile of Respondents | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Descriptive Analysis | | | | | | | | | | � | ▪ | | | | |
| Validity and Reliability Test | | | | | | | | | | | | ▪ | | | |
| Hypothesis Testing | | | | | | | | | | | | ▪ | | | |
| Summary/ Conclusion | | | | | | | | | | | | ▪ | | | |
| Chapter 5: Discussion and Conclusion | | | | | | | | | | | | | | | |
| Introduction | | | | | | | | | | | | | ▪ | ▪ | |
| Key Findings | | | | | | | | | | | | | ▪ | ▪ | |
| Discussion | | | | | | | | | | | | | ▪ | ▪ | |
| Implications of the Study | | | | | | | | | | | | | ▪ | ▪ | |
| Limitations of the Study | | | | | | | | | | | | | ▪ | ▪ | |
| Recommendation/ Suggestion for Future Research | | | | | | | | | | | | | ▪ | ▪ | |
| Overall Conclusion of the Study | | | | | | | | | | | | | ▪ | ▪ | ▪ |

**Student's Name & Matric No:**Muhammad Wafi Bin Ahmad Nazri (A19A0382), Syazana Husna Binti Abu Samah (A19A0916), NurShamira Binti Abdul Samad (A19A0689) & Gan Wei Li (A19A0160)

**Name of Supervisor:** DR. ROSMAIZURA BINTI MOHD ZAIN

**Name of Programme:** SAL

**Research Topic:** FACTORS THAT INFLUENCE THE INTENTION OF CHOOSING ELECTRIC VEHICLE IN PENGKALAN CHEPA, KELANTAN

| NO. | CRITERIA | PERFORMANCE LEVEL | | | | WEIGHT | TOTAL |
|---|---|---|---|---|---|---|---|
| | | POOR (1 MARK) | FAIR (2 MARKS) | GOOD (3 MARKS) | EXCELLENT (4 MARKS) | | |
| 1. | **Content (10 MARKS)** (Research objective and Research Methodology in accordance to comprehensive literature review) Content of report is systematic and scientific (Systematic includes | Poorly clarified and not focused on Research objective and Research Methodology in accordance to comprehensive literature review. | Fairly defined and fairly focused on Research objective and Research Methodology in accordance to comprehensive literature review. | Good and clear of Research objective and Research Methodology in accordance to comprehensive literature review with good facts. | Strong and very clear of Research objective and Research Methodology in accordance to comprehensive literature review with very good facts. | ____ x 1.25 (Max: 5) | |

| | Background of study, Problem Statement, Research Objective, Research Question) (Scientific refers to researchable topic) | Content of report is written unsystematic that not include Background of study, Problem Statement, Research Objective, Research Question and unscientific with unsearchable topic. | Content of report is written less systematic with include fairly Background of study, Problem Statement, Research Objective, Research Question and less scientific with fairly researchable topic. | Content of report is written systematic with include good Background of study, Problem Statement, Research Objective, Research Question and scientific with good researchable topic. | Content of report is written very systematic with excellent Background of study, Problem Statement, Research Objective, Research Question and scientific with very good researchable topic. | ____x 1.25 (Max: 5) | |
|---|---|---|---|---|---|---|---|
| 2. | **Overall report format (5 MARKS)** | ***Submit according to acquired format*** | The report is not produced according to the specified time and/ or according to the format | The report is produced according to the specified time but fails to adhere to the format. | The report is produced on time, adheres to the format but with few weaknesses. | The report is produced on time, adheres to the format without any weaknesses. | ____x 0.25 (Max: 1) | |
| | | ***Writing styles (clarity, expression of ideas and coherence)*** | The report is poorly written and difficult to read. Many points are not explained well. Flow of ideas is incoherent. | The report is adequately written; Some points lack clarity. Flow of ideas is less coherent. | The report is well written and easy to read; Majority of the points is well explained, and flow of ideas is coherent. | The report is written in an excellent manner and easy to read. All of the points made are crystal clear with coherent argument. | ____x 0.25 (Max: 1) | |

| | | Technicality (Grammar, theory, logic and reasoning) | The report is grammatically, theoretically, technically and logically incorrect. | There are many errors in the report, grammatically, theoretically, technically and logically. | The report is grammatically, theoretically, technically and logically correct in most of the chapters with few weaknesses. | The report is grammatically, theoretically, technically, and logically perfect in all chapters without any weaknesses. | ____x 0.25 (Max: 1) | |
|---|---|---|---|---|---|---|---|---|
| | | Reference list (APA Format) | No or incomplete reference list. | Incomplete reference list and/ or is not according to the format. | Complete reference list with few mistakes in format adherence. | Complete reference list according to format. | ____x 0.25 (Max: 1) | |
| | | Format organizing (cover page, spacing, alignment, format structure, etc.) | Writing is disorganized and underdeveloped with no transitions or closure. | Writing is confused and loosely organized. Transitions are weak and closure is ineffective. | Uses correct writing format. Incorporates a coherent closure. | Writing include a strong beginning, middle, and end with clear transitions and a focused closure. | ____x 0.25 (Max: 1) | |

| 3. | Research Findingsand Discussion (20 MARKS) | Data is not adequate and irrelevant. | Data is fairly adequate and irrelevant. | Data is adequate and relevant. | Data is adequate and very relevant. | ____x 1 (Max: 4) | |
|---|---|---|---|---|---|---|---|
| | | Measurement is wrong and irrelevant | Measurement is suitable and relevant but need major adjustment. | Measurement is suitable and relevant but need minor adjustment. | Measurement is excellent and very relevant. | ____x 1 (Max: 4) | |

| | | Data analysis is inaccurate | Data analysis is fairly done but needs major modification. | Data analysis is satisfactory but needs minor modification. | Data analysis is correct and accurate. | ____ x 1 (Max: 4) | |
|---|---|---|---|---|---|---|---|
| | | Data analysis is not supported with relevant output/figures/tables and etc. | Data analysis is fairly supported with relevant output/figures/tables and etc. | Data analysis is adequately supported with relevant output/figures/table and etc. | Data analysis is strongly supported with relevant output/figures/table and etc. | ____ x 1 (Max: 4) | |
| | | Interpretation on analyzed data is wrong. | Interpretation on analyzed data is weak. | Interpretation on analyzed data is satisfactory. | Interpretation on analyzed data is excellent | ____ x 1 (Max: 4) | |
| 4. | **Conclusion and Recommendations (15 MARKS)** | Implication of study is not stated. | Implication of study is weak. | Implication of study is good. | Implication of study is excellent | ____ x 1.25 (Max: 5) | |
| | | Conclusion is not stated | Conclusion is weakly explained. | Conclusion is satisfactorily explained. | Conclusion is well explained. | ____ x 1.25 (Max:5) | |
| | | Recommendation is not adequate and irrelevant. | Recommendation is fairly adequate and irrelevant. | Recommendation is adequate and relevant. | Recommendation is adequate and very relevant. | ____ x 1.25 (Max:5) | |
| | | | | | **TOTAL (50 MARKS)** | | |

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**Research Topic: FACTORS INFLUENCING THE STUDENTS' ACCEPTANCE OF E-LEARNING AT UNIVERSITI MALAYSIA KELANTAN, CITY CAMPUS**

**Student's Name: MUHAMMAD WAFI BIN AHMAD NAZRI (A19A382), SYAZANA HUSNA BINTI ABU SAMAH (A19A0916), NURSHAMIRA BINTI ABDUL SAMAD (A19A0689), GAN WE LI (A19A0160)**

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**Tajuk Penyelidikan: FACTORS INFLUENCING THE INTENTION OF CHOOSING ELECTRIC VEHICLE IN PENGKALAN CHEPA, KELANTAN**

Sekian, terima kasih

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