

A Study on Customer Perception towards Purchase Intention of Electric Cars in Bandar Lampung

^{1st} Mujuni Kenneth Nyakairu

Management Study Program
Faculty of Economics and Business
Institute of Informatics and Business Darmajaya
Bandar Lampung, Indonesia
mujunikennethnyakairu@gmail.com

^{2nd} Viola De Yusa

Management Study Program
Faculty of Economics and Business
Institute of Informatics and Business Darmajaya
Bandar Lampung, Indonesia
violadeyusa@darmajaya.ac.id

Abstract-Electric vehicles (EVs) are one of a prominent solution for the sustainability issues needing dire attention like global warming, depleting fossil fuel reserves, and greenhouse gas (GHG) Emissions. Conversely, EVs are shown to emit higher emissions (measured from source to tailpipe) for the fossil fuel-based countries, which necessitates renewable energy sources (RES) for maximizing EV benefits. EVs can also act as a storage system, to mitigate the challenges associated with RES and to provide the grid with ancillary services, such as voltage regulation, frequency regulation, spinning reserve,

Despite the fact that quick progress of worldwide economy and new edge technology advanced human civilization, it has also prompted the notable harm to the ecological surroundings. So, now the time has come to think seriously to save the environment and sustainable development. The new energy vehicles (electric vehicles) are one of the solutions. This paper focuses on the customer perception towards purchase intention of consumer, their interest and other influencing factors towards electric cars by analyzing the variables that impact individual expectations for adopting Electric Cars. What makes consumers adopt energy-sustainable innovations? Drawing from psychological research on environmental behaviors, we propose a model integrating attitudinal factors, normative factors and self-control to explain the purchase of electric vehicle

This study offers insights into the development of marketing program for EV in bandar Lampung the findings will help EV manufacturers to facilitate EV purchases.

Keywords-Customer perception, Purchase intention, Electronic cars

I. INTRODUCTION

E-Vehicles have been there from the beginning of the automotive industry

It's hard to pinpoint the invention of the electric car to one inventor or country. Instead it was a series of breakthroughs -- from the battery to the electric motor -- in the 1800s that led to the first electric vehicle on

the road. In the early part of the century, innovators in Hungary, the Netherlands and the United States -- including a blacksmith from Vermont -- began toying with the concept of a battery-powered vehicle and created some of the first small-scale electric cars. And while Robert Anderson, a British inventor, developed the first crude electric carriage around this same time, it wasn't until the second half of the 19th century that French and English inventors built some of the first practical electric cars.

The history of electric cars can be broken up into five distinct periods: the early pioneers of electric mobility (1830-1880), the transition to motorized transport (1880-1914), the rise of the internal combustion engine (1914-1970), the return of electric vehicles (1970-2003), the electric revolution (2003-2020), and the tipping point (2021 and beyond)

For the past few years, the environmental concern increased and the price of crude oil is increasing constantly, the interest has intensified in Electric vehicles. Government and policymakers are implementing policies so that they can promote E-vehicles, which is the best alternative that we have for now to fuel cars. They are the future and soon they can replace the conventional diesel, petrol and CNG engine installed cars. All the leading OEMs started developing and manufacturing new models of EVs. It is a different scenario that Indonesia is still behind in adopting electrification completely but the country's journey for electrification has started and in some parts of Indonesia like Bandar Lampung several institutions have started on learning how to produce run and maintain these electronic cars. Most results from different researches show that people aren't adopting to these Electric cars due to their cost and maintenance difficulties and in this research we shall find out if it's true or not, this issue was highly raised in the research carried out by Piyush Sharma 'A study of purchase

intention towards electric cars' in 2020 at Amity international business school India..

also, most people say electric cars aren't durable compared to other gasoline powered cars such as Toyota and Chevrolet, and by this research we shall find out how true or false these claims or acquisitions are.

In this research the researcher shall find out if the relationship between the variables has a significant effect or not where by the variables are customer perception {dependent variable} and purchase intention [independent variable] where by the customer's purchase intention can influence their perception in away that if their desire to purchase is high it tends to rise their perception positively and if their desire to purchase lowers their perception lowers too.

The research study takes electric cars as a product. The electric cars are the next generation cars which are replacing our conventional cars because of various reasons like increasing the prices of fuel, pollution level and many other reasons. Governments across the world, Manufacturers, environmentalists and consumers all are focusing to create sustainable environment by bringing ecofriendly electric cars on the roads by replacing the conventional cars. Cars involve high product involvement and before buying evaluation because of high cost purchasing decision. Customers evaluate various factors before making their mind of final purchasing and evaluate the product on different criteria and basis.

II. THEORETICAL BASIS

a. Electronic car or E-vehicle

Electric vehicle is an automobile that is propelled by one or more electronic motors. (EVs) have a battery instead of a gasoline tank, and an electric motor instead of an internal combustion engine[1]

b. Customer perception.

Customer perception is the opinions, feelings, and beliefs customers have about your brand.

c. Purchase intention

Purchase intention also called customer or buyer' intent, is a measure of each shopper's propensity to buy a product or service.

d. Customer perception

This is the feeling or thought people or a person has towards your product it can be both positive or negative perception thou if the perception is good or positive it eases the business's job to market its products and the reverse is true.

e. Hypothesis development

This is a form of statistical inference that uses data from a sample to draw conclusions about a population parameter or a population probability distribution

With the hypothesis we shall determine the effect of customer perception on their intention to buy electronic cars in Bandar Lampung.

Ho= the customer perception has no significant effect on their purchase intention

Ha= the customer perception has a significant effect on their purchase intention.

THEORIES

Purchase intention

According to Kotler & Keller (2016: 194) states that purchase intentions are consumer decisions in regards to their preferences between brands in a collection of choices. And indicators of purchase intentions are;

- Introduction of problems.
- Information seeking.
- Alternative evaluation.
- Buying decision.
- Post-purchase behavior

Customer perception

According to Robbins (2004), perception can be defined as 'a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment.

Customer perception indicators can be;

- Feelings
- Attitude
- Beliefs
- Opinions

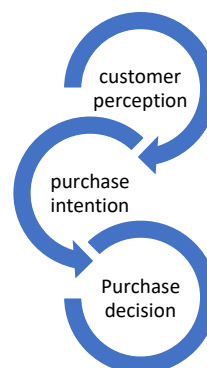


Figure 1. Customer Perception

III. METHODOLOGY.

a. *Research type.*

This research is a qualitative research. Qualitative research is the exploring and understanding the meaning individuals or groups ascribe to a social human problem[2]

In this research aims to examine the customer perception and their intention to buy electronic cars.

b. *Variables*

▪ *Dependent variable*

Dependent variable is the variable being tested and measured in an experiment, and is 'dependent' on the independent variable [3] and in this research the dependent variable is "customer perception" to buy"

▪ *Independent variable*

This is the variable the experimenter manipulates or changes, and is assumed to have a direct effect on the dependent variable.[3] In this research the independent variable is "Purchase Intention"

c. *Data Collection*

Data collection comprises the techniques and instruments and procedures employed in the research. this research the researcher will use these data collection methods as used in qualitative research are observation, interview, and google forms.[4]

• *Observation*

The researcher will move around the city of bandar Lampung and observe silently taking notes how many people are driving electric cars per 10 minutes he spends on each street.

• *Interview.*

After sampling the researcher shall carry out interviews on the sample.

• *Google forms.*

The researcher shall develop a set of questions for his target population and by use of google forms the researcher shall share the forms to the (100 Darmajaya lectures and 50 other bandar Lampung residents who own vehicles (cars)) sample to answer them accordingly.

d. *Population and sample.*

Population is a group of individuals who have the same characteristic while as sample is a group of people, objects, or items that are taken from a larger population for measurement[5]

For this research the population will be the people of bandar Lampung who own or wish to own cars and the sample will be the Darmajaya university lecturers.

Sample is a small portion from the big group of people being studied that will be used to represent the entire group.

For this research the sample will be 30 people and of those 20 people 5 will be ibi Darmajaya lectures and the 5 will be the locals around the Bandar Lampung city.

And for this research the researcher shall use a purposive sampling technique where by the sample will be grouped into different groups where they have similarities like lecturers who drive latest cars, those who drive electric or hybrid cars and other categories.

e. *Data analysis.*

This is a process of inspecting, cleansing, transforming and modeling data with a goal of discovering useful information. This process includes grouping data based on variables and all respondents [6]

▪ *Correlation*

Correlation is a measure of the extent to which two variables are related.[7] There are three possible results of a correlational study. The main result of a correlation is called the correlation coefficient (or "r"). It ranges from -1.0 to +1.0. The closer r is to +1 or -1, the more closely the two variables are related. If r is close to 0, it means there is no relationship between the variables.

• *A positive correlation*

is a relationship between two variables in which both variables move in the same [8]direction? when one variable increases as the other variable increases too. E.g. height and weight the tall people tend to be heavier.

• *A negative correlation*

is a relationship between two variables in which an increase in one variable is associated with a decrease in the other. An example is height above sea level and temperature. The higher you get on a mountain the cooler it gets.[9]

• *A zero correlation*

exists when there is no relationship between two variables. An example is, no relationship between the amount of water drunk and level of intelligence.

▪ *Regression analysis*

Regression is a statistical tool used to model the relationship between a dependent variable and one or more independent variables.[10]

For this research the researcher will use simple linear regression.

▪ *Simple liner regression*

Simple linear regression is a regression model that estimates the relationship between one independent variable and one dependent variable using a straight line. The formula for simple linear regression is $Y = mX + b$, where Y is the response (dependent) variable, X is the predictor (independent) variable, m is the estimated slope, and b is the estimated intercept.[11]

• *Hypothesis test*

This is a form of statistical inference that uses data from a sample to draw conclusions about a population parameter or a population probability distribution.[12] With the hypothesis we shall determine the effect of customer perception on their intention to buy electronic cars in Bandar Lampung.

Ho= the customer perception has no significant effect on their purchase intention. [13]

Ha= the customer perception has a significant effect on their purchase intention.[12]

IV. RESULTS AND DISCUSSION.

The following is the measurement of the independent variable and the dependent variable that will be measured in this study as follows.

TABLE 1. PERCEPTION TOWARDS ELECTRONIC CARS.

No.	Question Statement.	No of Respondents		
		1 No	2 Maybe	3 Yes
1.	To what extent do you think E-Vs are the best option for the future	3	7	20
2.	How much do you prefer EV's	1	10	19
3.	Do you prefer EV's to gasoline power cars	10	0	20

For the perceptions is the results will be measured in away that (1) represents poor or negative perception (2) for moderate or fair perception while as (3) will represent a good or positive perception thus meaning the respondent with response 1 will not have purchase intentions and one with response 2 may or may not have or develop purchase intentions it will only depend on his/her need for electric car thou respondents will response 3 are highly predicted to have high levels of

purchase intentions which are influenced by their perceptions

TABLE 2. PURCHASE INTENTION

No.	Question statement	Yes	Not sure.	No.
1	Are you willing to buy an EV	22	4	4
2.	Do you prefer EV's to gasoline power cars.	10	0	10

For the purchase intention results will be analyzed in a way that if a respondent answers with “yes” it means they are willing to buy electric cars and those who respond with “not sure” it means there are other factors affecting their purchase intentions while those who respond will “no” it means they have no purchase intentions for electric cars.

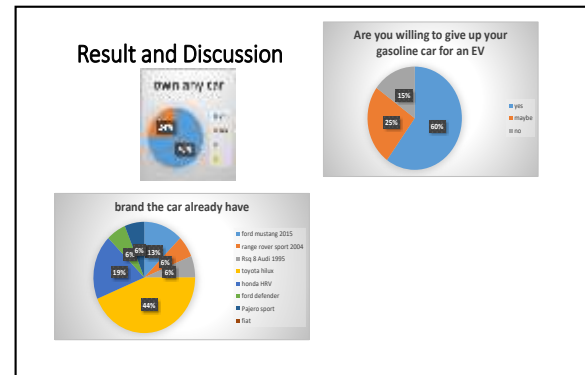


Figure 2. Result and Discussion

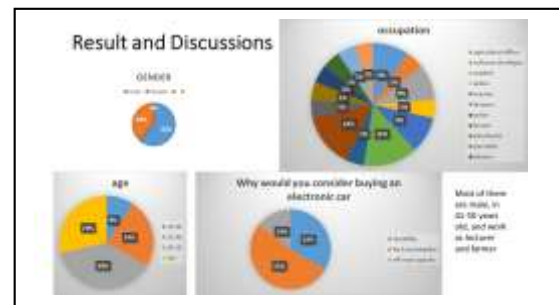


Figure 3. Result and Discussion

V. CONCLUSION.

Electric vehicles and renewable energy-based generation are a promising solution to rising GHG emissions. Further, EVs can act as a dynamic energy

storage system through the technology of V2G, thereby, facilitating RES integration in the smart grid. Also, well to wheel emissions from EVs depend upon the charging source. Therefore, RES based EV charging is desired for the overall reduction in emissions and getting the best of both technologies. This paper presents a state-of-the-art comprehensive review and According to the research results we shall determine if the customer perception has a significant effect on customers purchase intention towards buying electronic cars. Electronic vehicles are said to be the solution for the increased pollution caused by the gasoline power Engines [14]

Due to increased technology studies and development of electric Aircraft is ongoing to archive a complete pollution free environment by 2050 [15]

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