

CHAPTER I

INTRODUCTION

1.1. Research Background

The global automotive industry is currently undergoing a major transformation driven by technological advancements and. One of the most significant shifts is the transition from internal combustion engine (ICE) vehicles to electric vehicles (EVs). This transformation is supported by global initiatives to reduce carbon emissions and achieve sustainability targets, making EV adoption a key focus in many countries.

Indonesia, as one of the largest automotive markets in Southeast Asia, has begun to actively participate in this transition. The government has introduced various policies to accelerate EV adoption, including tax incentives, subsidies, and the development of charging infrastructure. These efforts aim to reduce dependence on fossil fuels and support the country's commitment to environmental sustainability.

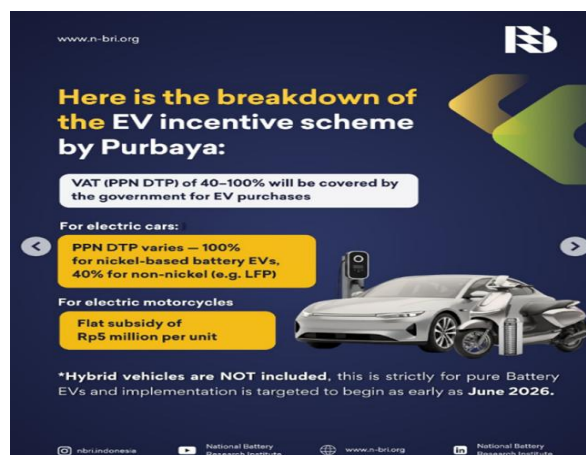


Figure 1.1 Indonesia Government EV Incentive Policies
Source: National Battery Research Institute 2025: Indonesia

Together with the adjustments to laws, the Indonesian car market has experienced new companies from China. One of the ones is BYD. This is a company that has gained a lot of traction in both markets. BYD is a company that's known for its car pricing, smart battery technology (such as the Blade Battery), and cars that feature a lot of cool, desired features today.

The Indonesian car association GAIKINDO and car industry reports indicated that the vehicle sale in Indonesia has increased rapidly. Battery-powered car sales went from under 1,000 in 2020 to around 10,000 in 2022. This would be more than a 900% increase over two years. EV sales continued to increase significantly in 2023. They reached than 17,000 to 20,000 units, which is about 70 to 80% more than the year before. Besides, initial estimates for 2024 predict that sales of electric cars may exceed 30,000 units exhibiting above 50% growth annually.

The car manufacturers electric cars have other factors to consider. Folks don't just think about the firm name, or of old concepts such as how long the vehicle will last, or what it will be worth later. Rather, they study issues such as whether the price is correct, how smart the technology is, whether there are places to charge, and whether they can rely on the company for its good environmental impact.

On the other hand, these factors can be more significant in the context of Semarang since the implementation of electric vehicles is still in development. Compared to consumers in larger cities, consumers may have varying access to charging facilities, understanding of EV technologies and confidence in newer

brands of cars. Additionally, price may also be a factor, particularly if consumers are considering BYD against other electric vehicle brands that are available in the Indonesian market. Thus, understanding the relationship between price perception, technology perception, charging infrastructure availability and brand trust toward buying an electric vehicle from BYD will gain a basis for understanding consumer perception during the decision-making process to buy an electric vehicle by BYD in Semarang.

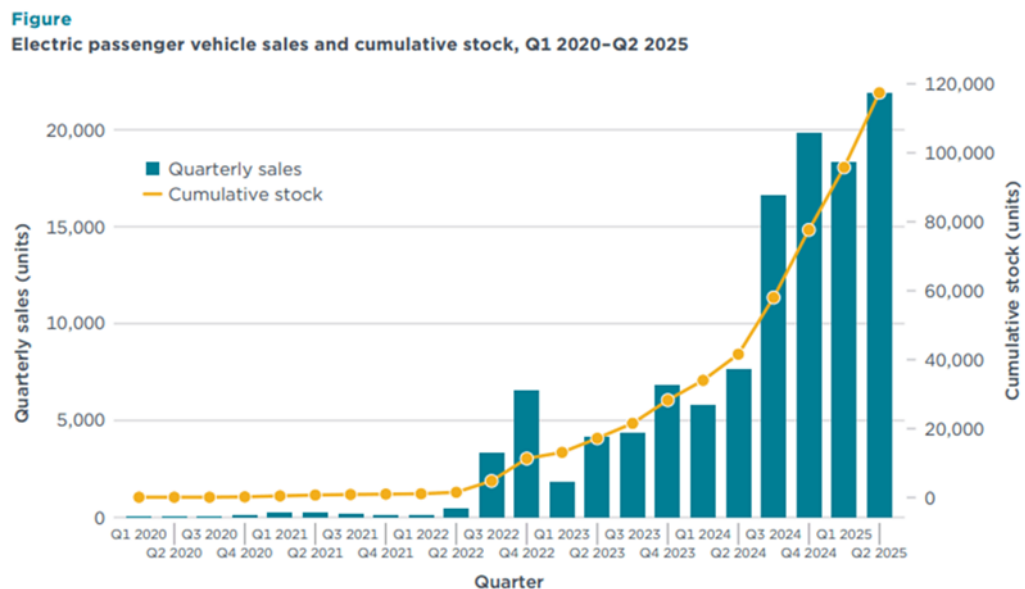


Figure 1.2 Indonesia EV Market Growth

Source: GAIKINDO Annual Sales Report (2025)

In the big cities, such as Semarang, the number of motor vehicles purchased by middle-class citizens is increasing, the quality of roads and buildings is improving, and people are being educated on the use of environmentally-friendly vehicles, which are an important driver of increased EV uptake. Central Java capital city Semarang has emerged as one of the main cities in Indonesia for the distribution of electric vehicles. The changes in the attitude of the people in Semarang's toward new technology also make it a good and

untapped opportunity for electric vehicle companies.

Meanwhile, the Indonesian car market has also witnessed the entry of new international companies, particularly from China, into the market amid the rapid growth. BYD is one of the largest companies, and it has been rapidly expanding in Southeast Asia, particularly in Indonesia. One of the reasons BYD is recognized is for the reason that it is offering reasonably priced cars, advanced battery systems and a lot of features, which makes it an excellent option when compared to conventional car brands.



Figure 1.3 BYD Fabrication in Indonesia
 Source: GoodStats (2026)

Buying an electric car requires planning about more things than just buying a regular car. These days, people don't just look at a brand's name or how long a product lasts. They also check things like how much it costs, how advanced the technology is, whether it's easy to charge, how good it is for the environment, and if they can believe the brand. These are factors that have been identified in

various scientific research journals, such as Energy Policy and Transportation Research, as being important in determining the adoption of EVs, especially in developing countries.

One of the most critical factors is the price perception; particularly in developing nations where people are extremely "value-conscious. Outside of that, the other aspects of the technology battery range, range, and cool features, play a big role in what consumers are interested in purchasing the car. The availability of charging stations remains a significant concern as an inadequate number of charging stations can deter EV adoption.

Perception Variable	Key Factors & Metrics	Key Findings & Empirical Data
Price Perception	• Upfront purchase cost • Battery replacement costs • Total Cost of Ownership (TCO)	• Battery Cost: Accounts for ~40%-50% of total vehicle manufacturing cost. • Purchase Barriers: Upfront price remains highest initial deterrent in developing economies. • Subsidies Impact: Government tax breaks reduce price sensitivity by 20%-30%.
Technology Perception	• Range anxiety • Battery degradation & lifespan • Charging speed & safety	• Range Anxiety: Consistently identified as top cognitive barrier. • Progress: Battery capacity grew ~73% & range ~36% (2016-2024), but perception lags. • Lifespan: Consumer confidence relies on 5-8 yr (100k-160k km) battery warranties.
Charging Infrastructure	• Public charger density • Geographic accessibility • Grid reliability & wait times	• Adoption Bottleneck: Charger density acts as a stronger long-term constraint than initial price. • Urban Disparity: >60% of chargers are concentrated in primary metro regions. • Grid Stability: Power grid unreliability acts as key operational deterrent.

Figure 1.4 PP, TP, and CI Data

Source: Global EV Outlook & World Energy Outlook (2013) ,
Transportation Research Part D (1996), BloombergNEF (2012) & World
Development Report (1978), McKinsey Mobility Insights (2011).

Brand trust is also very important, especially for newer companies like BYD. Since BYD is a new brand in Indonesia, it needs to establish trust and lower

the concerns people might have about using new technology. Trust in the quality, safety, and support after buying a product plays a big role in helping people decide to make a purchase.

Even though more people in Indonesia are starting to use electric vehicles, there isn't much research looking into why people buy BYD electric cars, especially in the Semarang area. So, this study wants to look at the things that affect people's choices when buying BYD electric cars in Semarang. It will focus on how people see the price, the technology, how easy it is to charge the cars, and how much they trust the brand.

1.2. Research Problem

The auto-segment in Indonesia is in for a big choice now. It is stuck between a familiar culture of patronizing traditional gasoline-powered vehicles and the rapid growth of electric cars, particularly Chinese-made by new companies. Nowadays new companies are coming into the market with lower cost, better technology and products which are full of features. They are complicating the traditional car companies' task on maintaining their typical value appeals.

Over the last few years, the automotive sector and car owners have become aware that traditional automotive brands may not be delivering the value for money that is expected. Although prices for cars have increased, that increase in price is not typically accompanied by significant changes in the features and technology that are provided. There's a trend emerging that some regular cars are over-priced relative to their value, and you're hearing it more often than you used to, whether it's in the car ads or social media posts or in industry reports.

Voice of customers on forums and online groups reveals more and more customers are unhappy. In general, older brands tend to have less features in basic cars, while newer brands particularly Chinese ones have higher tech and luxurious features, more attractive designs, and better technology at a lower price. The comparison illustrates that people's desires have shifted. Now, not everything has to be done for a long duration, and not everything has to be associated with a big-name brand. It also involves newness and improvement of the technology and the user experience.

This shift is especially relevant to electric vehicles (EVs). When considering an EV, consumers do not only look at how well the car performs. They may also consider its environmental impact, the technology it offers, and whether the vehicle can provide reliable value in the long term. As a result, brand reputation is not necessarily the only factor involved in the purchase decision. Consumers may also look at several practical aspects before deciding whether an EV is suitable for them.

Companies such as BYD have become part of this change by offering electric vehicles that combine relatively affordable prices with new technology and lower emissions during use. This development raises an important question about how consumers actually view these vehicles and which factors influence their decision to purchase them.

EV adoption in Indonesia has continued to develop, but consumer considerations when purchasing an electric vehicle are still different from those associated with conventional cars. Factors such as price, technology, charging

availability, and trust in the brand can become part of the decision-making process. For some consumers, the initial price and the costs associated with owning an EV may also be important considerations.

These factors are relevant when examining consumer purchase decisions in Semarang, which is one of the cities where the use and availability of electric vehicles have been developing. By looking at price perception, technology perception, charging infrastructure availability, and brand trust, this study aims to provide a clearer understanding of the factors that are related to consumers' decisions to purchase BYD electric vehicles in Semarang.

Based on this background, the research questions are formulated as follows:

1. Does price perception significantly influence consumer purchase decisions for BYD electric vehicles in Semarang?
2. Does technology perception significantly influence consumer purchase decisions?
3. Does charging infrastructure availability influence consumer purchase decisions?
4. Does brand trust influence consumer purchase decisions?

1.3. Research Objectives

1.3.1. General Objectives

This research aims to understand the factors that are related to consumers' decisions to purchase BYD electric vehicles in Semarang. It focuses on four factors: price perception, technology perception, charging infrastructure availability, and brand trust. The results of this study are expected to give BYD

Indonesia a better understanding of what consumers consider when choosing an electric vehicle and can be used as a reference when developing its marketing and sales strategies in the Indonesian EV market.

The special objectives for this study are as follows:

1. To evaluate the impact of price perception on consumer purchase decisions for BYD electric vehicles in Semarang.
2. To assess the role of technology perception in shaping consumer purchase decisions for BYD electric vehicles in Semarang.
3. To examine how charging infrastructure availability affects consumer purchase decisions for BYD electric vehicles in Semarang.
4. To determine the effect of brand trust on consumer purchase decisions for BYD electric vehicles in Semarang.

1.4. Research Benefits

The findings of this research are expected to provide contributions in the following areas such as:

1.4.1. Theoretical Benefits

This study contributes to the development of marketing and consumer behaviour theories by enriching the academic literature on factors influencing consumer purchase decisions in emerging EV markets and by providing an integrated model that combines economic, technological, and psychological factors to better understand electric vehicle adoption.

1.4.2. Practical Benefits

This study provides insights into consumer preferences and key decision-

making factors when purchasing electric vehicles, helping automotive companies such as BYD design more effective marketing strategies, pricing approaches, and product positioning in the Indonesian market, while also offering the broader automotive industry a reference for understanding how brand image affects Indonesian consumers' purchasing decisions and guidance for strategic responses to cross-country competition particularly from new players offering aggressive pricing and features through marketing strategies built around brand perception and value

1.5. Theoretical Study

1.5.1. Consumer Behaviour Theory

Consumer behaviour theory explains how individuals make decisions in purchasing products or services based on their needs, preferences, and external influences; according to Kotler and Keller (2016), consumer purchase decisions are influenced by a combination of economic, psychological, social, and technological factors. In the context of electric vehicles, consumer behaviour becomes more complex compared to conventional vehicles, as consumers must evaluate not only traditional factors such as price and brand but also new considerations such as technology and infrastructure readiness; therefore, understanding consumer behaviour is essential to identify the factors influencing the decision to purchase electric vehicles, particularly those offered by BYD.

1.5.2. Technology Acceptance Model (TAM)

Oliver (1999) claimed that loyalty doesn't just mean purchasing the same thing over and over again. It also means having a sense of belonging to a brand

and being a willing ambassador for it. Loyalty happens when customers are happy and have a strong emotional bond with a brand. Engaging in CSR can help develop trust and foster a stronger connection with customers as it demonstrates the brand's commitment to values that customer care about.

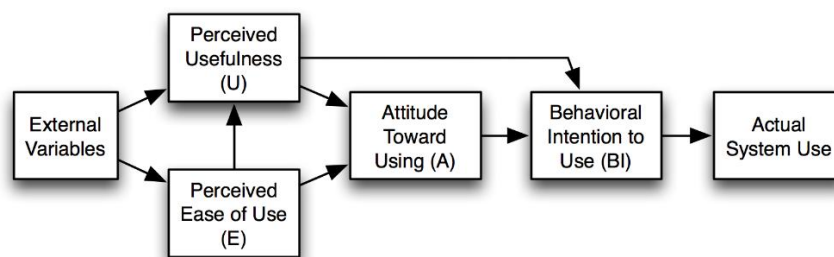


Figure 1.5 TAM Model

Source: Smart Insights

Davis (1989) introduced a new model called the Technology Acceptance Model (TAM) that explains the acceptance and usage of new technologies. The model highlights two key, explains how users accept and use new technologies. The model emphasizes two main factors:

1. Perceived Usefulness The extent to which one thinks that the use of a technology will help them to accomplish a task.
2. Perceived Ease of Use the extent to which a person thinks that using a technology will not require much effort.

The Advanced technology is exemplified in the EV sector and TAM is relevant for this study. They consider things such as the battery life, distance the car can cover on a single charge, charging convenience, and smart functions of the car. The technology perception variable is reflected in these views and is believed to influence buying decisions, levels of interest in the technology and willingness

to recommend the technology. Loyalty occurs when consumers are satisfied and have a strong emotional connection to a brand. Increased trust and an ethical match of values between the brand and the customer can strengthen this connection by joining in CSR activities.

1.5.3. Theory Of Planned Behaviour

Developed by Ajzen (1991), explains that human behaviour is driven by three main components:

First one is Attitude toward the behaviour, subjective norms, and perceived behavioural control. In EV adoption, these factors help explain how consumers' attitudes, social influences, and perceptions of control, such as the availability of charging infrastructure, can affect their purchase decisions.

1.5.4. Price Perception

Proposed by Ajzen (1991), states that there are three main components to human behaviour:

First one is Attitude towards the behaviour, subjective norms, perceived behavioural control. These factors contribute to understanding the attitude, social influences, and perceptions of control that consumers may have regarding EV adoption, such as the availability of charging stations.

1.5.5. Brand Trust

As per Alam et al. (2022) and other studies found in Journal of Retailing and Consumer Services, Brand trust is the consumer's confidence in the reliability and quality of the product of a company. Brand trust is particularly important when consumers are considering high-involvement products such as electric vehicles

(EVs). Since EVs involve relatively new technology, consumers may have concerns about battery life, safety, maintenance, and long-term reliability. A higher level of trust in a brand can help reduce these concerns and the risks perceived by consumers.

For a relatively new automotive brand such as BYD, establishing consumer trust is also important when competing with more established car manufacturers. Consumers may form their level of trust based on factors such as product reliability, the brand's reputation in different markets, customer reviews and experiences, as well as the quality of after-sales service and support. These factors can influence how confident consumers feel when considering a BYD electric vehicle.

In this study, brand trust is looked at as a key mental factor that directly affects how likely someone is to buy a BYD electric vehicle.

1.6. Previous Research

For Previous Studies have found that several things affect how people decide to buy electric cars, like cost, the technology used, how easy it is to charge them, and how much they trust the brand. These results help choose the factors looked at in this study and show the importance of looking more into how they affect people's choices when buying BYD electric cars in Semarang.

Table 1.1 Previous Research

No	Researcher	Variable	Sample and Analysis Method	Research Results
1	Egbue & Long (2012)	Cost, Infrastructure, Awareness EV Adoption	150 university faculty, staff, and students at Missouri University of	Vehicle cost and lack of charging infrastructure are the main barriers to EV adoption.

No	Researcher	Variable	Sample and Analysis Method	Research Results
			Science and Technology. PCA.	
2	Liet et al. (2017)	Price, Technology, Policy Incentives to Purchase Intention.	Meta-analysis of multi-country survey datasets, comparative meta-analysis	Price and government incentives strongly affect EV purchase intention.
3	Wang, Tang, & Pan (2018)	Price, Technology, Infrastructure Acceptance Purchase Intention.	400 respondents in Shanghai, China (SEM).	Technology performance and charging availability significantly increase adoption.
4	Alam et al. (2022)	Brand Trust, Technology. Purchase Decision	342 valid survey respondents, Structural Equation Modeling (SEM).	Trust in brand and perceived technological advancement strongly affect purchase intention.

Source: Egbue and Long (2012); Liao, Molin, and van Wee (2017); Wang, Tang, and Pan (2018); Alam et al. (2022).

1.7. Influence Between Research Variables

The connection between the variables in this research is based on well-known ideas about how people behave as consumers and how they take up new technologies. For instance, when it comes to price perception, you will find out how your clients think about the price of the product and how much it means to them both in terms of actual value and emotional value. So, when they are purchasing something important, such as an electric vehicle, they make a careful calculation of the cost that they will have to pay in the beginning, and the advantages they will receive over time. People feel much more confident in purchasing a brand when they estimate that the price of the brand is good and fair when compared to the regular gas-powered car or other electric vehicles.

The Technology Acceptance Model (TAM), developed by Davis (1989),

has a significant impact on individuals' attitudes towards technology. This model assumes that individuals are more likely to adopt a new technology when they believe that it is extremely useful and safe. The LFP Blade Battery, smart connectivity and other technologies are psychological drivers for BYD. Once buyers understand and value these new attributes, they're less hesitant, and they make a decisive decision to purchase.

According to Ajzen's 1991 study, the availability of charging stations will impact consumer sense of control over their behaviour. One of the top mental and physical challenges that people encounter in thinking about EVs is range anxiety. Therefore, the presence of public charging stations (SPKLU) in and around Semarang as a facilitator is an important factor that affects the risk perceptions of those who want to purchase electric cars, so that those who are only interested in purchasing electric cars can be persuaded to buy them.

Lastly, the brand trust demonstrates the extent to which a customer will trust a company, depending on their perception of its credibility, reliability and commitment (Morgan & Hunt, 1994). As BYD is a new brand in the Indonesian passenger car segment, gaining customer trust is essential before customers begin purchasing their vehicles. Building brand trust reduces the mental pressure and concerns associated with the financial transition from traditional automotive brands to a new EV brand.

The presence of charging stations affects how much control a consumer feels they have over their behaviour, according to Ajzen's 1991 research. Range anxiety is still one of the biggest physical and mental obstacles people face when

considering switching to electric vehicles. Therefore, the existence of public charging stations (SPKLU) in and around Semarang is very important to overcome the sense of risk and to encourage people to make the next step, which is to make a decision to buy. Last but not least, brand trust reveals the degree to which a customer will rely on a business, depending on their perception of its credibility, reliability, and commitment. As a new company in Indonesia's passenger car market, it's crucial for BYD to gain consumer confidence before they begin purchasing its vehicles. When switching from old car brands to a new electric vehicle brand, people will have less anxiety about their money when they gain brand trust.

Based on these theoretical foundations and empirical evidence, this research suggests:

- Consumers' price and technology perceptions contribute to a good sense of value for BYD vehicles, which encourages them to make significant purchases.
- Visible charging infrastructure and strong brand trust alleviate the inherent risks of adopting new automotive technology, acting as the final push needed to secure a consumer's purchase decision.

1.8. Hypotheses

Based on the literature review and theoretical framework, the following hypotheses are proposed:

- H1: Price perception has a positive and significant influence on consumer purchase decisions for BYD electric vehicles in Semarang.

- H2: Technology perception has a positive and significant influence on consumer purchase decisions for BYD electric vehicles in Semarang.
- H3: Charging infrastructure availability has a positive and significant influence on consumer purchase decisions for BYD electric vehicles in Semarang.
- H4: Brand trust has a positive and significant influence on consumer purchase decisions for BYD electric vehicles in Semarang.

The hypotheses are structured into five hypotheses (H1–H5) to reflect both This study investigates how both individual and grouped independent variables impact the choices consumers make when buying products. Hypotheses 1 through 4 examine the individual effect of each independent variable price perception, technology perception, availability of charging infrastructure and brand trust on the consumer's purchase decision; H5, in the other hand, examines the combined impact of the aforementioned variables on the dependent variable. Such a structure is based on the theory provided by the study. The Technology Acceptance Model (TAM) serves as a theoretical basis for understanding how consumers view the electric vehicle technology. The Theory of Planned Behaviour (TPB) is used to explain the role attitudes, perceived ability to control behaviour, and social factors play in making a decision to purchase something. The broader way consumers assess both internal and external factors before making a purchasing decision can also be explained by Consumer Behaviour Theory. These theories form the foundation of understanding how the variables are connected, while the empirical model only tests the four independent variables and one

dependent variable which are clearly defined in the questionnaire. Consequently, since H5 only evaluates the effect of the four independent variables on the consumers' purchase decision altogether, no new variables need to be introduced or the questionnaire needs to be changed to account for H5.

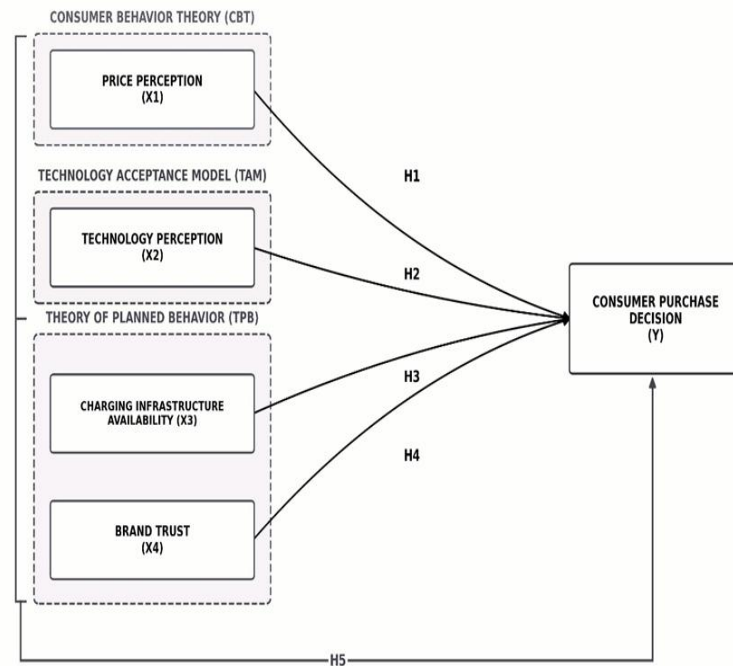


Figure 1.6 Hypotheses Model

1.9. Conceptual Definition

The concepts used and referred to in this research are based of established theories and definitions formulated from esteemed researches former studies. The purpose of defining these concepts is to provide and lay the groundwork of the variables that form the foundation of this research.

Table 1.2 Conceptual Definition

No	Variable	Conceptual Definition	Sources
1	Price Perception	How consumers evaluate whether the price of a product is reasonable and appropriate compared to the benefits received.	Kottler & Keller (2016)

No	Variable	Conceptual Definition	Sources
2	Technology Perception	Consumers perceptions regarding the sophistication, usefulness, ease of use, and reliability of the technology embedded in a product.	Davis, 1989; Venkatesh et al., (2003) Huang et al., (2021)
3	Charging Infrastructure Availability	The accessibility, convenience, and adequacy of EV charging facilities available to consumers, heavily influencing adoption readiness.	Sierzechula et al., (2014) Egbue & Long (2012) Liao et al (2017)
4	Consumer Purchase Decision	The process through which consumers identify their needs, evaluate available alternatives, and choose a product or service that best satisfies those needs.	Kotler & Keller, 2016 Schiffman & Wisenblit (2015) Engel et al (1995)
5	Brand Trust	The process through which consumers identify their needs, evaluate available alternatives, and choose a product or service that best satisfies those needs.	Kotler & Keller (2016) Schiffman & Wisenblit (2015) Engel et al (1995)

Source: Kotler and Keller (2016); Davis (1989); Venkatesh et al. (2003); Huang et al. (2021); Sierzechula et al. (2014); Egbue and Long (2012); Liao et al. (2017); Schiffman and Wisenblit (2015); Engel et al. (1995).

1.10. Operational Definition

To examine what influences consumers in Semarang to choose BYD electric vehicles, all variables in this study are operationalized by employing proven frameworks and measures derived from past studies. This ensures that the concepts are measurable, consistent and directly related to the automotive industry in Indonesia and to the electric vehicle market, respectively. Unless otherwise specified, the indicators for these variables are measured on a 5-point Likert scale, which allows consumers to reflect their perceptions and intentions.

1.10.1. Price Perception

Translating to price perception, we are examining consumers' thoughts on whether an electric vehicle is fairly priced and if the benefits of owning one outweigh the

cost. Based on the work of Kotler and Keller (2016) and Lichtenstein et al. (1993), there are four elements on which this can be measured for a brand such as BYD. The first one is the affordability, that is, whether buyers think the BYD cost is reasonable compared to regular gas-powered cars. Second, the promise of future savings, whether or not customers actually think that owning the EV will save them money over the long term in fuel and maintenance costs. Third, value for money is simple value for money, if the technology and features of the car make the sticker price seem like good business. Finally, there's a general perception of fairness, which just means whether or not customers consider BYD's pricing approach to be of perfect value for the market today.

1.10.2. Technology Perception

Technology Perception refers to how consumers view the sophistication, usefulness, and reliability of the technology used in BYD electric vehicles. This variable is based on the Technology Acceptance Model (TAM) developed by Davis (1989), with further development by Venkatesh et al. (2003). In this study, Technology Perception is measured through four main indicators. The first is consumers' acceptance of the vehicle's smart features and digital connectivity. The second is their confidence in battery performance and driving range. The third is the ease of using the vehicle's technology, including how easily drivers can understand and operate its technological features. Lastly, the fourth shows how reliable the vehicle's safety equipment is.

1.10.3. Infrastructure Availability

Infrastructure availability is assessed based on consumer perceptions of the

availability, convenience, and overall quality of EV charging infrastructure. Based on the previous research on EV adoption readiness (Sierzchula et al., 2014; Liao et al., 2017), this study adopts four indicators to assess the EV adoption readiness of infrastructure perception. The first deals with the ease with which drivers feel they can find public charging stations in the Semarang area. The first indicator relates to how easily consumers can access public charging stations in the Semarang area. The second focuses on the convenience and practicality of installing a home charging station. The third measures consumers' perceptions of the available charging speed and whether it meets their expectations. Finally, the fourth indicator looks at consumers' confidence in the existing charging infrastructure to support their daily travel needs without causing concerns about running out of battery, commonly referred to as range anxiety.

1.10.4. Brand Trust

Brand trust means how much a customer believes in BYD's reliability, safety and dedication to quality over time. According to Chaudhuri and Holbrook (2001). Alam et al. (2022) This trust is measured through four points. First there is confidence in the brand's ability to keep delivering vehicle quality year after year. Second trust is built around the durability and long life of BYD batteries. Third customers rely on BYD's after-sales service, how easy it is to get parts and how strong the warranty promises are. Fourth there is a feeling of security and credibility when driving a BYD car especially since it is still a newer brand, in the Indonesian market.

1.10.5. Consumer Purchase Decision

The decision to buy is the result of what a person does after thinking about their needs and looking at choices. This is, about whether they decide to get a BYD electric vehicle. According to Kotler and Keller (2016) and Schiffman and Wisenblit (2015) this idea is measured in four ways. First the strong desire to pick a BYD vehicle of other brands. Second, putting BYD at the top of the list when someone is thinking about buying a car. Third, making sure that the features of BYD match what the person needs for transportation. Fourth being sure to take action and actually buy a BYD vehicle.

1.11. Research Method

1.11.1. Types of Research

This study uses Quantitative research. It is used to look into a group of people or a selected group. The way to choose the group is usually done by chance. To collect the information researchers, use tools. The way to look at the data is by using numbers or statistics. The goal is to check if the ideas that were already made are correct (Sugiyono, 2017). The data from the research shows the steps needed to get the information that helps solve the research problem. The plan, for the research includes the group being studied, the selected group, the tools used and how the data is analyzed.

The study includes consumers from Semarang who have taken active steps in interacting with BYD electric vehicles, such as conducting online research, visiting showrooms, participating in test drives, and owning the vehicles. Because the study needs particular information, a purposeful sampling method is employed. This ensures that all the participants selected have personal knowledge

or experience with BYD so they can properly evaluate the study's variables. The sample size is determined using the guidelines from Hair et al. (2010) Not a standard population formula. For a linear regression model with four independent variables, they recommend at least 50 data points and 100 is seen as the ideal number. The 91 valid responses collected in this research are considered enough. Reliable, for performing the required data analysis. These responses are thought to represent the population of this study.

1.11.2. Sampling Techniques

Using a questionnaire as the primary data collection method, purposive sampling is utilized for this study. The questionnaire will target respondents who fit specific criteria, divided into the following parts:

- Demographic information (e.g., age, gender, monthly income, location, and current vehicle ownership status),
- Aware of or actively considering the adoption of Electric Vehicles (EVs),
- Likert-scale questions measuring price perception, technology perception, charging infrastructure availability, brand trust, and consumer purchase decision.

The questionnaire items will be adapted from validated scales used in previous research (Kotler & Keller, 2016; Davis, 1989; Ajzen, 1991).

1.11.3. Types of Data and Data Sources

For data an online questionnaire will be shared via social media, email and Facebook Community to collect initial information. For data online sources such as published literature reviews and data, from BYD will be used.

1.11.4. Measurement Scale

The questionnaire is divided into sections and uses a 5-point Likert scale. The scale ranges from 1 = Strongly Disagree to 5 = Strongly Agree. This design helps capture consumer attitudes

- **Section 1: Demographics and Profiling**

This section collects background information. It also categorizes how much the respondent interacts with BYD EVs.

- **Section 2: Price Perception**

This section evaluates the respondent's views on affordability. It also examines how competitive BYD EVs are in the market. The section considers value for money compared to traditional internal combustion vehicles.

- **Section 3: Technology Perception**

This section assesses confidence in BYD's Blade Battery performance. It also asks about driving range features and how easy it is to use.

- **Section 4: Charging Infrastructure Availability**

This section measures perceptions of how adequate the EV charging facilities. It asks about accessibility and charging speed across Semarang.

- **Section 5: Brand Trust**

This section evaluates trust in BYD's baseline vehicle safety. It also evaluates product durability and the reliability of after-sales service.

- **Section 6: Consumer Purchase Decision**

This section assesses the respondent's interest in BYD vehicles. It also

looks at preference, over competitors and actual intention to purchase a BYD vehicle.

1.11.5. Data Collection Techniques

Data for this study is gathered through primary and secondary sources:

1. Questionnaire Survey: Survey is conducted using a structured Google Form distributed online to respondents who own BYD electric vehicles, do test drives, visit the showrooms, and are considering purchasing a BYD electric vehicle. The survey is comprised of a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).
2. Interview: One of the senior members of a BYD community in Semarang was interviewed. The interview provided practical insights into consumers' day-to-day experiences and perceptions of BYD electric vehicles. The discussion covered several aspects related to the research, including consumers' views on price, the performance and usefulness of BYD's technology, the condition and availability of charging infrastructure in the local area, and their level of trust in the brand.
3. Documentation: Secondary data were also collected to provide additional context for the primary data. The information was obtained from several relevant sources, including the official GAIKINDO website, the BYD Indonesia corporate website, and automotive publications. These sources were used to understand the broader electric vehicle market, national EV sales, industry developments, and information about BYD's products and technology.

1.11.6. Data Processing Techniques

After gathering all the necessary data, research will commence. Use the subsequent steps to analyze the information by examining these important points.

Steps, mainly:

a. Editing

Completed questionnaires were reviewed for errors, logical inconsistencies, and duplicate entries. Questionnaires that were incomplete, or that showed signs of careless answering, were removed to keep the dataset sound.

b. Coding

After the editing stage, each answer was given a numerical value. Likert-scale responses were coded from 1 to 5, with "Strongly Disagree" scored as 1 and "Strongly Agree" as 5. Each questionnaire item was also given its own variable code so the data could be entered into the statistical software accurately.

c. Scoring

Each respondent's ratings on the questionnaire items were combined into one score per variable, giving five scores per respondent: price perception, technology perception, charging infrastructure availability, brand trust, and purchase decision.

1.11.7. Research Instruments

The main source of data in this research is an electronic questionnaire which is available on Google Forms. The questionnaire was sent by online media (e-mail) to EV users and potential EV customers in Semarang. It included a total of 25 questions across five variables: price perception, technology perception, charging infrastructure availability, brand trust, and consumer purchase decision.

There were five questions in each of the variables. The respondents were asked to rate their response to each statement on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The responses were then used as the main data for the analysis. The questionnaire was designed based on the reference of questionnaires used in previous studies related to consumer behavior and electric vehicle acceptance which Davis (1989), Kotler and Keller (2016) and Alam et al. (2022) used. The questions were adapted to the context of BYD electric vehicles and the situation in the Semarang market. A pilot test was first undertaken on 30 respondents with similar characteristics with the target respondents prior to the actual data collection. This test was carried out to see if the questions are clear and understandable before giving the questionnaire to main sample.

The pilot test included validity and reliability testing. Validity was tested using the Pearson Product Moment correlation, where an item was considered valid when its correlation value exceeded the critical value at a significance level of $\alpha = 0.05$. Reliability was tested using Cronbach's Alpha, with a value above 0.60 considered reliable (Sugiyono, 2019; Ghozali, 2018). The results of the pilot test showed that all 25 questionnaire items met the required validity and reliability criteria. Therefore, no items were removed or revised before the questionnaire was distributed to the 91 respondents in the main study.

1.11.8. Validity and Reliability

The questionnaire was tested for validity and reliability. Validity was tested using Pearson Product Moment correlation, which shows whether each item measures

the construct it is meant to measure. An item was considered valid when its r-count was higher than the r-table value ($df = n - 2$, $\alpha = 0.05$). Reliability was tested using Cronbach's Alpha, which shows whether the instrument gives consistent results. A variable was considered reliable when its alpha was at least 0.60 (Sugiyono, 2019; Ghazali, 2018). Both tests were carried out on the pilot study data, before the main data collection began.

1.11.9. Data Analysis Techniques

The data were analyzed with multiple linear regression in SPSS. The technique fits this study because it tests two things: the effect of all four independent variables together on the dependent variable, and the effect of each variable on its own. The regression model used is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where: Y = Consumer Purchase Decision; X_1 = Price Perception; X_2 = Technology Perception; X_3 = Charging Infrastructure Availability; X_4 = Brand Trust; α = constant; β_1 – β_4 = regression coefficients; e = error term.

Before conducting the regression analysis, several classical assumption tests are performed to make sure that the data meet the requirements of the analysis. These tests consist of three stages. First, the normality test is conducted using the Kolmogorov-Smirnov method to determine whether the residuals are normally distributed. Second, the multicollinearity test is performed using the Variance Inflation Factor (VIF), where a VIF value below 10 indicates that there is no serious multicollinearity problem among the independent variables. Third, the heteroscedasticity test is conducted using the Glejser test to determine whether

the residual variance is consistent across observations.

After completing the assumption tests, the research continues with hypothesis testing. Three types of analysis are used. The partial test examines whether each independent variable has an individual effect on the dependent variable. The simultaneous test examines whether the four independent variables have a significant effect on the dependent variable when considered together. Finally, the coefficient of determination (R^2) is used to indicate how much of the variation in consumer purchase decisions can be explained by the four independent variables.