

The Influence of Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury on Electric Vehicle Purchase Decision in Jakarta



THESIS

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The Influence of Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury on Electric Vehicle Purchase Decision in Jakarta

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A THESIS

**Submitted in a partial fulfilment of the requirements
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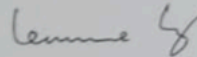
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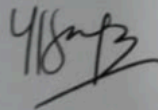
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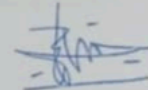
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This Thesis is a presentation of our original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions.

Also, this work is being submitted in partial fulfillment of the requirements for the Bachelor of Business Administration degree and has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Jakarta, 2026



Aditya Djoyo Prasetyo

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ABSTRACT

The increasing adoption of electric vehicles (EVs) in Indonesia has created a growing need to understand the factors influencing consumers' purchasing decisions, particularly in Jakarta. This study examines the influence of Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury on Purchase Decision toward electric vehicles in Jakarta. A quantitative approach was employed using a structured questionnaire with a five-point Likert scale, involving 154 valid respondents who met the predetermined criteria. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) through SmartPLS to evaluate the measurement and structural models. The measurement model was assessed through outer loadings, Average Variance Extracted (AVE), reliability, and discriminant validity, while the structural model was evaluated using R^2 , VIF, hypothesis testing, effect size (f^2), and Importance-Performance Map Analysis (IPMA). The results show that Charging Infrastructure Availability has a positive and significant influence on Purchase Decision, with a path coefficient of 0.251, while Environmental Awareness also has a positive and significant influence with a coefficient of 0.250. Perceived Technological Luxury demonstrates the strongest positive and significant influence, with a coefficient of 0.430. Thus, all three hypotheses were supported. The model produced an R^2 value of 0.499, indicating that the three variables explain 49.9% of the variance in Purchase Decision, while the remaining 50.1% may be explained by other factors outside the model. The f^2 results show that Perceived Technological Luxury has a medium effect ($f^2 = 0.285$), while Charging Infrastructure Availability ($f^2 = 0.109$) and Environmental Awareness ($f^2 = 0.105$) have small effects. The IPMA further identifies Perceived Technological Luxury as the most important factor, while Charging Infrastructure Availability demonstrates the highest performance. Overall, the findings indicate that EV purchase decisions in Jakarta are influenced by practical considerations, environmental values, and perceptions of technological advancement, providing useful insights for automotive companies and relevant stakeholders.

Keywords: Charging Infrastructure Availability, Environmental Awareness, Perceived Technological Luxury, Purchase Decision, Electric Vehicles, Jakarta, PLS-SEM.

CHAPTER I

INTRODUCTION

1.1 Research Background

Public awareness about climate change and environmental degradation has risen sharply over recent years across the globe. Big challenges like global warming, pollution, and uncontrollable carbon dioxide in the atmosphere have all come into the spotlight. These environmental issues are closely related to anthropogenic activities, especially those from industrialization and transportation (Testa et al., 2021; Wang et al., 2022). Transportation is identified as one of the main sectors causing environmental pollution due to high dependence on fossil fuel based vehicles (Nguyen et al., 2023).

Greenhouse gases, including carbon dioxide emitted by conventional vehicles using internal combustion engines along with those from fossil fuel power plants and industrial production, are significant contributors to global warming. Moreover, these vehicles are also a source of pollution, e.g. nitrogen oxides and particulate matter which are harmful to human health and degrade air quality, especially in urban [1] (Wang et al., 2022) areas. The emission of the environment was aggravated by a considerable increase in automobiles coupled with high traffic congestion areas such as large metropolitan cities. Consequently, there is a growing impetus for policymakers and governments to find alternative transportation alternatives that are more environmentally friendly (Testa et al., 2021).

The most well-known solution for this problem is to switch over to electric vehicles (EVs). Because they release fewer emissions and provide greater energy efficiency than conventional vehicles, electric vehicles are considered a more sustainable mode of transport (Nguyen et al., 2023; Wang et al., 2022). EVs use electricity as their main powered vehicle, which reduces the dependency on fossil fuels unlike traditional vehicles. This move to electrification has been largely advertised due to the world and its efforts in decreasing GHG emissions and meeting sustainability targets (Testa et al., 2021)

The global electric vehicle adoption trend has been consistently upwards in the last ten years. The growth is driven by growing environmental awareness, technology development, and policy incentives (Nguyen et al., 2023) But still the adoption rate is not homogeneous through countries. Compared to developing countries, developed countries show higher adoption rates because of better charging

infrastructure, strong regulatory support, and a high level of consumer awareness (Hardman et al., 2021). By contrast, developing nations like Indonesia are still plagued by structural and behavioral challenges which block more widespread adoption.

The development of electric vehicles (EV) in Indonesia, especially in Jakarta as one of the metropolis, has recharged so slowly. Jakarta suffers from problems caused by transportation, mainly traffic jams and air waste pollution making it necessary to have a greener mobility (better not cleaner). Even though we have seen significant pushes towards electric vehicles, the level of adoption is still minimal. This shows that the entry of the consumer market into EVs is still limited by certain key variables, only partly represented by policy support.

Availability of charging infrastructure is one of the key drivers for electric vehicle adoption. Availability of charging infrastructure is the most significant factor of feasibility and usability of an electric vehicle (EV) (Kumar & Alok, 2020; Peinkofer et al., 2019). The increased number of charging stations mitigates range anxiety; this is, concerns from consumers about running out of battery before finding a charging point. Research indicates that inadequate Charging Infrastructure is still a scope of concern for EV adoption as it rises uncertainty and perceived risk among prospective users (Funke et al., 2019; Hardman et al., 2021). On the other hand, more charging facilities with greater availability and accessibility reduce range anxiety and increase consumer acceptance of EVs.

Figure 1.1 : Number of SPKLU in Indonesia

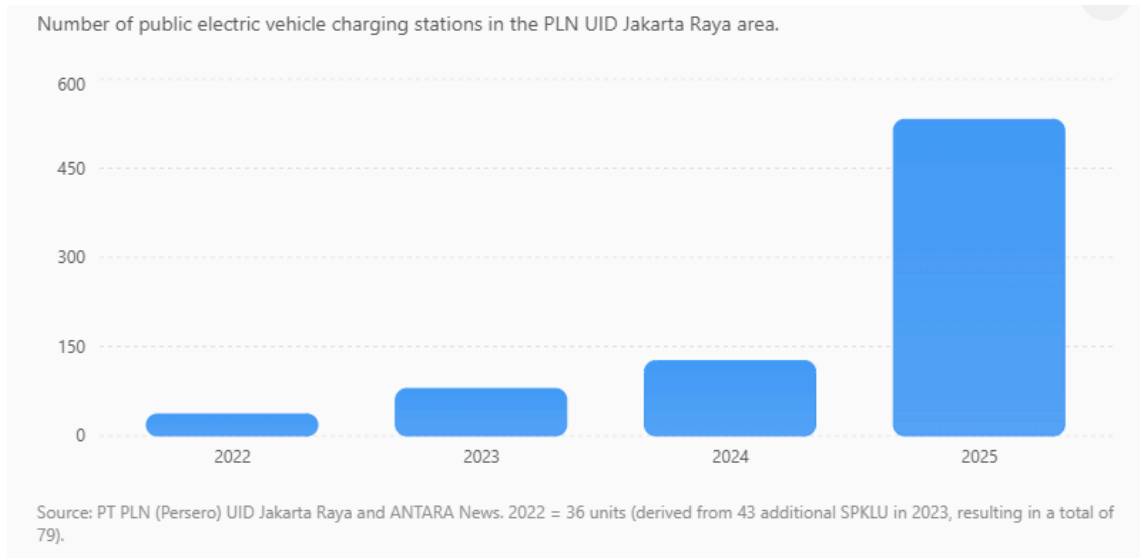


Figure 1: Number of SPKLU in Jakarta, 2022–2025

Awareness towards the environment is yet another parameter influencing consumer behavior towards electric vehicles along with infrastructure. Environmental awareness corresponds to the extent people recognize environmental problems and their willingness to adopt a sustainable behavior (Testa et al., 2021). Previous research suggests that consumers with a greater environmental consciousness are more likely to be receptive to eco-friendly technology (Nguyen et al., 2023; Wang et al., 2022), such as electric vehicles. Furthermore, Okada et al. (2019) discussed that environmental concern had a positive and significant effect on purchase intention towards electric vehicle, this implies psychology has an important role in the consumer decisions.

Another role that influences adoption is perception of technology. Electric vehicles also can enjoy a high-tech image in which consumers perceive electric vehicles as cutting-edge technology products with advanced battery systems, digital interfaces, and modern design (Huang et al., 2021; Zhang et al., 2022). This perception is only one piece of the EV appeal puzzle and could increase consumers value perception. Technological and symbolic attributes play a crucial rule in changing consumer attitudes toward electric vehicles (EVs) especially among consumers motivated by innovativeness or modernity (Axsen and Kurani 2013).

Also, perception of technology is heavily linked with product image and lifestyle affiliation. As electric vehicles are often portrayed as a driving force of technical advancement, environmental preservation and modern urban way of life, they can be made more desirable due to their social-symbolic character (Zhang et al., 2022). Which is parallel to the findings of Kim et al. (2023) that consumers will adopt products only when they are seen in a favorable mindset as both technologically advanced and desirable,

These results show that EV adoption is multi-dimensional and that the decision functions on Functional, Psychological, and Perceptual levels. Charging infrastructure is a function-oriented dimension since "charging" affects the usability and convenience of the product (Kumar & Alok, 2020). The psychological dimension is represented by environmental awareness, which refers to the values of individuals and their concern for the environment (Testa et al., 2021). On the other hand, technological perception stands for perceptual schemata sonzon(2021—specifications of consumers evaluation about product innovation and attractiveness.

With the high demand for mobility in Jakarta and constantly looming environmental issues, it is crucial to understand this. Although the interest in electric vehicles is increasing, only limited empirical evidence concurrently explores how availability, awareness and perception affect purchase decisions in this context. Research Approach Accordingly, this study is to determine the influence of factors charging infrastructure availability, environmental awareness and technological perception on consumer purchase decisions toward electric vehicle in Jakarta.



Figure 2 : Electric Vehicle Data (source: Gabungan Industri Kendaraan Bermotor Indonesia / GAIKINDO)

More, for the development of electric vehicle adoption in Indonesia, Gabungan Industri Kendaraan Bermotor Indonesia reported that EV sales have continued to grow since 2020 nationally. Electric vehicle sales have been growing rapidly (see Fig 1.2), tripling their number from 2015 to about 103,931 in 2024 (+141% as compared to the previous year). The market share of EVs in relation to all national car sales has grown from about 5% to 13%. This increase underlines the high consumer interest and greater market conditions for electric cars in Indonesia. Yet, still only a small proportion of buyers are turning to EVs over conventional vehicles.

So, purpose of this study was to find out how the awareness about charging infrastructure and environment and electric vehicles given the image of luxury or high-technology product effect consumer buying decision. This study aims to elaborate on the variables found in order to provide a complete account of stakeholders to influence EV adoption in Jakarta. The results from this research will likely provide important implications for academic literature and offer insights to policymakers and industry actors in promoting sustainable transportation.

1.2 Problem Statement

Indonesia continues to lag behind global developments in the field of electric vehicle messages or new energy vehicles (NEVs) that are slowly, but surely, breaking through the ranks of conventional cars. Although electric vehicles have been launched as an alternative to normal cars, many consumers continue to hesitate

to use them. This reluctance implies that consumer choices entail a choice architecture beneath them consisting of more manifold rather than singular challenges related to policy support and market access (Li et al., 2021; Kumar & Alok, 2020).

The second challenge is that consumers see electric cars as impractical devices. Issues such as the availability of charging infrastructure, green impact, and product-specific characteristics may shape consumer evaluation of EVs when they consider purchasing one. Earlier studies have noted that insufficient charging infrastructure tends to diminish perceived convenience (Peinkofer et al. 2019) and enhance uncertainty which in turn constrains adoption (Hardman et al., 2021). Equally, environmental awareness has been recognized as the psychological antecedent to sustainable consumption behavior (e.g., electric vehicle) (Nguyen et al. 2023; Testa et al. 2021). Moreover, the perception of technology (e.g., Innovation; Modernity) has been demonstrated to affect consumers' attitude and behavioural intentions toward new products (Huang et al., 2021; Zhang et al., 2022).

1.2.1 Empirical Gap

This literature includes studies of many different factors which influence the adoption and purchase decisions regarding electric vehicles. Many studies strengthen the relevance of charging infrastructure availability as it can reduce consumers' range anxiety and enhance the readiness to adopt electric vehicles (Peinkofer et al., 2019; Hardman et al., 2021). In addition, certain studies highlight that environmental awareness is a significant psychological factor affecting consumers' preference towards eco-friendly products (Testa et al., 2018; Nguyen et al., 2023) with these results confirmed for the electric vehicle context. Moreover, technological perception has been identified as a driver of consumer behavior that consumers are generally more attracted to products perceived as innovative and technologically advanced (Huang et al., 2021; Zhang et al., 2022).

Yet, most previous studies have analysed these variables separately without taking into consideration their interaction effect in a single setting. Past studies have largely concentrated on the availability of infrastructure as an isolated factor affecting (Peinkofer et al., 2019) EV adoption behavior, highlighted environmental awareness as the main driver for sustainable behavior (Nguyen et al., 2023), or approached technological perception in an innovation adoption context (Huang et al., 2021). As a result, little research combines simultaneously functional, psychological, and perceptual dimensions together to explain consumer purchase decisions of electric vehicles. Moreover, there is a lack of Jakarta specific studies

but not for the reason that Jakarta has one of the largest metropolitan areas in Indonesia that has high mobility demand and increasingly exposed to electric vehicle technology. This requirement suggests a certain lack of empirical work in the literature as it currently stands.

1.2.2 Evidence Gap

Beyond the empirical gap, an evidence gap is also signaled by differences in previous research findings. Many studies indicate that charging infrastructure is the primary driver of EV attractiveness since accessibility and convenience are key components impacting EV usage and range anxiety (Kumar & Alok, 2020; Funke et al., 2019). In contrast, some studies suggest that psychological factors like environmental awareness and individual environmental values have a more significant effect on sustainable consumption behaviors (Testa et al., 2021; Wang et al., 2022).

The same applies to the results of perception concerning technology. Although a number of researchers indicate that electric vehicles are providing consumers an opportunity to adopt an innovative, modern and high-technology product (Huang et al., 2021; Zhang et al., 2022), others argue that advanced technology may also lead to uncertainty among consumers who lack experience with electric vehicle systems and charging mechanisms. It highlights the continued lack of agreement over which factors have the biggest effect on EV purchasing.

Additionally, existing literature is primarily limited to developed nations which experience vastly higher infrastructure readiness, government support and user awareness than their developing nation counterparts. This leads to limited generalizability of these findings to a developing market such as Indonesia. Thus, this study aims to add more evidence from empirical studies by investigating the effect of availability of charging infrastructure, environmental awareness and technology perception on purchasing electric vehicles in Jakarta.

1.3 Research Questions

Based on the problem formulation, the research questions are as follows:

1. Does charging infrastructure availability influence electric vehicle purchase decisions in Jakarta?
2. Does environmental awareness influence electric vehicle purchase decisions?
3. Does perceived technological luxury influence electric vehicle purchase decisions in Jakarta?

1.4 Research Objectives

The objectives of this study are:

1. To analyze the influence of charging infrastructure availability on electric vehicle purchase decisions.
2. To examine the influence of environmental awareness on electric vehicle purchase decisions.
3. To analyze the influence of perceived luxury and high-technology design of electric vehicles on consumer purchase decisions.

1.5.1 Theoretical Benefits

The significance of this study contributes to the development of knowledge regarding electric vehicle adoption and consumer behavior as well as other relevant policies in particular developing countries where research on electric vehicles has not been widely investigated, such as Indonesia. Furthermore, this study demonstrates the relationships of charging infrastructure availability, environmental awareness and technology perception to purchase decisions, thus providing empirical evidence supportive of existing theories in consumer behaviour and sustainable transportation.

Also, contributes to the literature by combining functional, psychological and perceptual determinants in a research model. Charging infrastructure is functional, environmental awareness is psychological and technological perception entails a perceptual differential of product features. Using these variables together gives a

more holistic view of how consumers make decisions around the purchase of an electric vehicle.

Furthermore, this study provides an empirical test of consumer behaviour theory and technology acceptance perspectives by illustrating the way in which factors impact on both the intention and decision to consume innovative products like electric vehicles. The study will contribute to theory and practice by closing the gap between most studies relying on theoretical models, and examining real future scenarios particularly in an increasingly growing electric vehicle market (most emerging economies).

Furthermore, this article adds to the literature on sustainable consumption by linking environmental concern with purchase intention. Its central focus is on the need to embed environmental variables into models of consumer behaviour, as a way of advancing research agendas in productive dialogues around sustainability and the uptake of green technologies.

Lastly, it can be used as a foundation for more research to further investigate the same variables or expand the model with factors like government policy, price sensitivity, utilitarianism-social power and social influence. This research provides empirical evidence and an academic framework for future work in the study of electric vehicle adoption.

1.5.2 Practical Benefits

This study is anticipated to be useful for policymakers, automotive companies, and future studies that discuss the use of electric vehicles in the context of efforts to increase adoption of electric vehicles planned by the government and car manufacturers in Indonesia.

The results of this study will benefit policymakers by identifying what drives consumer decision-making toward electric vehicles. Being aware of how charging infrastructure availability plays a role can help policymakers in determining which areas to focus on for infrastructure and where the need is greatest, so that they improve accessibility to charging stations. Additionally, environmental awareness-related insights may help to guide the design of public campaigns to raise awareness and perhaps promote pro-environmental behaviour. The results concerning perceptions of technology may help inform policy makers regarding how to promote innovation and frame EVs as next generation vehicles. In all, this

research could help form better policies and strategies to speed up electric vehicle adoption.

This study gives auto companies a clearer sense of how their customers view and prefer electric vehicles. The need to identify which technological attributes and design aspects matter enables firms to create products that meet consumer expectations, improving competitiveness in the market. Additionally, this analysis helps firms to position electric cars as green products through marketing strategies. It can lead to collaboration between automotive companies and infrastructure entities, enhancing the ecosystem around electric vehicles (EVs). This information may help businesses strategically direct product development, branding and expansion into successful markets.

This study also serves as a reliable reference for future research on electric vehicles and consumer acceptance in terms of methodology. It gives you a template that can be reproduced or expanded to another city or country. The investigators of this study may also have followed up their findings with another, including parameters like government support, pricing mechanism and mass psychology in order to explore consumer behavior further. The study also provides empirical evidence that could aid in comparative studies and further academic pursuit in sustainable transportation.

These are substantial findings that provide practitioners with continuous practical support to construct a more sustainable transportation system and explain potential consumer purchase decisions. This study, by providing a link between theory and practice of electric vehicle adoption strategies, makes both a theoretical and practical contribution.

1.6 Research Structure

Chapter I presents the introduction, including the research background, problem formulation, research questions, research objectives, and research benefits.

Chapter II discusses the literature review, including theoretical framework, previous studies, conceptual framework, and hypothesis development.

Chapter III explains the research methodology, including research design, variables, population and sample, data collection methods, and data analysis using SmartPLS.

Chapter IV presents the results of data analysis, including descriptive statistics, measurement model evaluation, structural model analysis, and hypothesis testing.

Chapter V provides conclusions and recommendations based on the findings of the study.

CHAPTER II

LITERATURE REVIEW

2.1.1 Availability (Charging Infrastructure)

As governments and industries continue to advocate for renewable transportation as a substitute for conventional internal combustion engine vehicles, the availability of charging infrastructure has become one of the most significant determinants of electric vehicle (EV) uptake. Even if technology improves enough so that electric cars have longer battery life and a bigger driving range, and charging at the station is faster, it still won't be enough to convince widespread consumer adoption. The success of electric vehicles relies, in part, on the vehicle itself but also on a suite of supporting infrastructure that will allow consumers to more easily operate a vehicle as part of their everyday lives. As a result, how often consumers will find charging infrastructure has become a critical part of understanding purchase intent for electric vehicles.

As described by Kumar and Alok (2020) charging infrastructure availability is understood as the accessibility or adequacy of all facilities that allow consumers to recharge electric vehicles at times appropriate for their standard use. According to the authors, one of the key external factors determining the adoption of Electric Vehicles for consumers who want a feasible way to evaluate owning and using an electric vehicle is charging infrastructure. Electric vehicles, on the other hand, absolutely need specialized charging stations to work optimally in many of countries around the world they're still under constant development whereas both petrol and diesel stations have built up an extensive network over many decades. That is why consumers prefer to get an idea of the maturity of charging infrastructure before deciding on buying the electric vehicle.

Similarly, Hardman et al. Charging infrastructure availability — is the extent to which charging facilities are accessible, reliable and conveniently located (Santos et al.(2021)). In their comprehensive review of consumer experiences with charging infrastructure, the authors find that consumers are typically more amenable to EV adoption when they feel that charging stations adequately cover residences, workplaces, shopping centers, and public venues. An extensive charging network not only makes it easier to own and operate such vehicles, but also soothes potential consumers' minds about keeping electric vehicles long-term.

In a supporting study, Peinkofer et al. (2019) emphasize that charging infrastructure should not be seen solely as a physical entity but rather as an enabling strategic ecosystem guiding perceptions about electric vehicle ownership convenience and practicality. Consumers, in particular, assess the charging infrastructure from multiple dimensions: accessibility (general access to charging), ease of use (convenience of plugging and unplugging vehicles), station availability (number and location of stations), recharge speed and operating reliability. Together, they inform the consumer's overall belief about whether electric vehicles can meet their daily transportation needs.

In consumer behavior terminology, availability of charging infrastructure represents a facilitating condition associated with alleviating uncertainty in the purchase decision process. Consumers assess products by looking at their intrinsic product attributes as well as supporting factors outside the product but affecting its usability (Kotler & Keller, 2016). This renders purchasing decisions as contingent not only on product quality, or technological performance but also by environmental conditions that dictate whether a product will deliver on consumers' needs. Another one of these external factors is the supporting infrastructure network which defines how customers perceive convenience and accessibility, as well as operational feasibility.

The Theory of Planned Behavior (Ajzen, 1991): The attitude toward the behavior can predict an individual's intention to meet a certain behavior, moderated by subjective norms, and perceived behavioral control. Out of these variables, perceived behavioral control is especially important in predicting electric vehicles adoption as it directly indicates the ease or difficulty for consumers to own and operate an electric vehicle. Consumers view charging stations that have "widespread availability" as making it possible to throw an electric car in the mix as a part of their daily transportation habits. Thus, sufficient charging infrastructure bolsters perceived behavioral control of the consumers, nudges higher confidence level into them and consequently improves their intention to buy EVs.

Similarly, Rogers (2003) suggests in his Diffusion of Innovation Theory that innovations adopted by consumers have to be compatible with the lifestyles and everyday routines of target consumers. Electric vehicles are a new mode of transportation that need supporting infrastructure to really work. There are very few EV charging stations available so consumers will begin to see these vehicles as unfit for their mobility needs, no matter how environmentally-friendly or technologically-advanced they might be. Consequently, the availability of charging

infrastructure is one factor that can prevent electric vehicle technology from being adopted (Shim et al., 2016).

Charging infrastructure is not only a matter of functional convenience. It further provides a psychological reassurance that lessens the consumer perceived risk. As automobiles involve significant financial commitment and long time period in purchase decision making process to evaluate all associated risks ^{다운}. Electric cars bring with them more uncertainty, since consumers have to learn a different refueling system than they are used to using for conventional vehicles. Across the infrastructure into Q3 2023 Concerns about which charging way, how long it takes to charge a vehicle and in/in nearby challenges may therefore increase functional risk perception (or decrease press copying demand) are therefore consumer one factor that influences consumers' terms of purchase decisions on electric vehicles However, the fact that we can see enough charging infrastructure alleviates this issue by suggesting electric vehicles are easily used under simple normal day-to-day conditions.

Many empirical studies confirm the positive impact of charging infrastructure availability on electric vehicle adoption. Kumar and Alok (2020) opine that among various factors affecting consumer adoption of electric vehicles, charging infrastructure is one of the strongest drivers. This implies, if consumers perceive more accessible charging facilities, they are sure to accept the electric vehicle because it becomes convenient with respect to operation but the uncertainty is reduced. Similarly, Peinkofer et al. (2019), consumer perception of the density of easy-to-access charging stations was found to have a significantly positive effect on consumers' demand for EVs. The results imply that the extent of infrastructure influences consumer assessments for practical ownership of electric vehicles.

In line with supporting this evidence, Hardman et al. (2021) found that the expansion of charging infrastructure heavily mitigates consumers' range anxiety — one of the most commonly cited constraints to EV purchasing. Range anxiety is the worry of consumers that all-electric vehicle battery power could run out prior to the vehicle traveling to a referring charging station. Battery technology has come a long way over the last few years, but many consumers still see charging infrastructure as the main barrier to adoption. Therefore, expanding the convenience and awareness of charging stations is crucial to building consumer confidence and promoting electric vehicle sales.

While conducted in different countries and research contexts, these studies all show that the availability of charging infrastructure increases consumers' acceptance with

or at least their intentions toward adopting electric vehicles. Together, the results suggest that charging infrastructure encourages electrical vehicle adoption through operational convenience but also through increased psychological certainty about owning this mode of transport. Thus, charging infrastructure should not be regarded just as a physical infrastructure also but would rather need to be marketed a strategic asset that drives consumer perception of the practicality, viability and reliability of EV ownership.

In Java Indonesia, especially in Jakarta, the availability of charging infrastructure becomes more critical than any other places due to transportation characteristics. Jakarta suffers from some of the worst traffic congestion in Southeast Asia, leading to long commuting times and a significant reliance on private transport. With the government strongly pushing for electric vehicles (EVs) by developing associated infrastructure and policy support, consumers are increasingly questioning whether or not charging stations can adequately facilitate their day-to-day travel requirements. This means that the way charging stations are located and dispersed throughout residential neighbourhoods, business districts, shopping centres and municipal parking lots will become a major factor before consumers take the plunge in purchasing an EV.

Moreover, Jakarta is also one of Indonesia's most significant electric vehicle markets owing to a higher standard of living, more exposure to technology and greater environmental awareness amongst urban consumers. However, while governments continue to pour money into expanding charging infrastructure, many potential buyers will still judge the network as inadequate when pitted against the plethora of traditional filling stations. These perceptions may dissuade consumers from making the environmental and technological leap to an electric vehicle. As a consequence, the importance of perceptions relating to charging infrastructure availability remain relevant in terms of explaining electric vehicle purchase decisions within Jakarta.

As a result of the theoretical discussion and empirical findings presented above, charging infrastructure availability can be characterized as a consumers' perception about how available, sufficient, convenient, and reliable access to charging facilities is provided to them in order for electric vehicle ownership. As repeatedly shown in the literature, charging infrastructure lowers functional obstacles, increases (perceived) behavioral control and (perceived) risk and trust consumers to adopt electric mobility. Hence, the availability of charging infrastructure is anticipated to affect consumers' purchase decisions positively toward electric vehicles in Jakarta and has therefore been chosen as one of the independent variables collide in this study.

2.1.2 Environmental Awareness

The study of environmental awareness is one of the key factors that influences consumers to explain their purchasing behavior towards eco-friendly items. Global environmental crises including climate change, air pollution and excessive carbon emissions are continuing to rise, making consumers increasingly aware about the impact of their consumption choices on the environment. Such awareness has prompted consumers to assess products at least in terms of their functional performance and economic worth, but also with an eye toward what they may offer as net assets for environmental sustainability. This has resulted in environmental concern becoming a central construct in explaining consumer acceptance of sustainable innovations, whereby electric vehicles are among them.

According to Testa et al. According to the theory of environmental awareness (2021), it refers to an individual knowledge and attitude concerning the environment and issues affecting it that leads them to responsible behavior towards this area. The authors infer that environmental awareness is more than just awareness of the environment problems, but also represents a willingness towards adapting their lifestyle or purchase decisions to incorporate with considered environmental factors. People aware about the environment tend to favour products and technologies that help in conservation of the environment and ensure sustainable development.

Similarly, Nguyen et al. According to Bae & Noh (2023) environmental awareness is the knowledge of the consumer regarding environmental issues and willingness for sustainable consumption behaviors. Because the environmentally conscious consumer seeks to assess products more holistically, judging not only product performance but also the environmental effects of product manufacture, use and end-of-life disposal. With the increasing importance of environmental problems in society, Environmentally-Concerned (E-C) is being one of the most important psychological factors for consumer choice.

To support this point of view, Wang et al. (2022) Chivite-Matiz et al. explain that environmental awareness motivates consumers to use environmentally friendly technology by acknowledging that they are aware of the need to mitigate environmental degradation through sound purchasing decisions. The higher the awareness of consumer environment, the more they are willing to choose products that have a lower negative impact on the environment at a higher financial cost or change their behavior. Thus, environmental awareness acts as a significant internal motivation that drives sustainable consumption behavior.

Environmental awareness influences the information that is processed by consumers and how they assess different alternative products preceding a purchase-centric decision from a consumer behavior perspective. As per Kotler and Keller (2016), purchase behaviour is affected by number of psychological factors such as beliefs, attitudes, perception and motivation. Environmental consciousness is one of these psychological traits as it illustrates consumer consideration of environmental issues and relates to how that perspective shapes how consumers evaluate green products. Consumers with a greater understanding of environmental issues are generally more inclined to form positive attitudes towards eco-friendly products.

In contrast with the traditional buying decisions that focus more on price, quality and functionality, green product purchasing behavior tends to have additional relevant affinities with environmental concern. Consumers have become more aware that their purchasing decisions impact something bigger. As a result, environmentally-aware consumers find products that are perceived to prevent pollution or promote sustainable development particularly appealing. This change proves that public awareness of environmental issues not just develops consumers' understanding of the problems but it also affects the features on which products are evaluated.

The automotive area is the main target of environmental awareness when it comes to transportation, since it has an excessive contribution to adverse environmental impacts. Conventional vehicles with internal combustion engines are responsible for a large part of greenhouse gas emissions, fossil fuel use and urban air pollution. While on the other hand, electric vehicles are heralded as a cleaner alternative as they generate fewer direct emissions at use and contribute positively to long term environmental sustainability. As consumers learn more about these environmental differences, it is easier for them to understand that electric vehicles provide responsible and sustainable transportation.

A multitude of empirical evidence supports the claim that one's environmental concern is significantly associated with consumers' intentions to buy electric vehicles. Nguyen et al. (2023) found that more environmentally conscious consumers show stronger preferences for sustainable goods because environmental issues become an intrinsic part of their purchasing decisions. Their results show that environmental consciousness motivates consumers to value environmental benefits along with traditional product attributes, such as quality, performance and price.

Similarly, Testa et al. Jrsan et al (n.d.) found sulphur dioxide -2 releasing to evaluate socially responsible purchasing behaviour was heavily dependant on environmental

awareness. People who have a better understanding of environmental challenges tend to be more supportive of purchasing environmentally friendly innovations because they feel that these purchases are steps towards conserving the environment. These results imply that a greater awareness of environmental issues facilitates the intrinsic motivation of consumers in their choice to adopt sustainable technologies, such as electric vehicles.

In accordance with these findings, Wang et al. A study by Wang et al. (2022) indicates that environmental awareness leads to a strong favourable evaluation of pro-environmental beliefs which not only help consumers learn about the many benefits of electric vehicles but also strengthen their positive intention to purchase them. Likewise, Okada et al. Consumers with a higher concern for the environment were more likely to purchase an electric vehicle as they believed it was more than simply a consumption item, but rather that it is a practical solution for domestic pollutant emissions (Steinert et al. When taken together, these studies consistently show that environmental awareness is a significant psychological factor in electric vehicle adoption.

These studies were conducted in various countries and research settings, but the common findings are that environmental awareness prompts consumers to integrate environmental criteria into their purchasing behavior. Global trend: Instead of assessing products through their economic or functional properties, environmentally conscious customers increasingly take into account the long-term environmental consequences related to the consumption of goods. This indicates that environmental sensitivity leads to more sustainable purchasing behavior across various cultural and geographical contexts.

The context of Jakarta has made environmental awareness more needed in line with public concern that is becoming higher about traffic jams, declining air quality and transportation emissions. Here is an example: Jakarta, the capital of Indonesia and its largest metropolitan area, has many problems related to rapid population growth and a high level of private vehicle use. Government incentives for electric vehicles, as well as growing concerns among the public regarding environmental sustainability, have helped to educate consumers about more sustainable modes of transport. This causes consumers who live in Jakarta to be able to view electric vehicles not only as modern products, but also as environmentally friendly goods that can contribute to reducing the negative impact of conventional transportation on the environment.

Environmental awareness based on the theoretical discussion and the empirical findings discussed above, defined as consumers' understanding, concern, and sense of responsibility towards environmental sustainability, provides a pre-eminent basis for evaluating (better still purchasing) environmentally friendly products. Literature on that subject shows consistently that environmental awareness enhances the primacy of consumers' liking for sustainable technologies in such a way that consumers also take into account environmental implications alongside functional and economic product attributes. So that environmental concern will affect consumers purchase decisions to electric vehicle in Jakarta positively and also become one of the independent variables in this study.

2.1.3 Technological Perception

Perceived Technological Luxury is the degree to which consumers perceive a product or service as possessing high-tech functionality along with luxury and exclusivity, the latter which can increase overall consumer value. Specifically in the field of electric vehicles, consumers are no longer strictly considering their cars as just transportation tools, but rather innovative product representations of technological advancement, new lifestyles and social class. As a matter of fact, this explanation has led to the fact that the impression of advanced technology and luxury as arising from Tesla have become major factors in consumers' purchase decisions for products marketed as premium innovations like electric vehicles.

The perceptions of technological superiority that define evaluation by consumers hold a certain level of significance, since more technologically sophisticated products are typically perceived to be higher quality, more innovative and better performing (Konuk, 2019). Products that are seen as being based on high technology create greater consumer confidence because technological innovation is interpreted as a signal of continuous product improvement and added customer value. Technological perception plays a role in both the functional valuation of each subject and the global evaluation of product attractiveness by consumers.

Similarly, Huang et al. According to (2021), consumers develop positive attitudes toward technology-oriented products. Technological innovation allows consumers to differentiate new products from traditional ones by offering additional functional benefits, greater efficiency and user experiences. For this reason, consumers often perceive technologically superior products as being of higher quality, more reliable, and more relevant in the future. In the car market, technological innovation has arisen as one of the key identifiers of electric vehicles fundamentally from normal inward ignition motor vehicles.

Supporting this view, Kim et al. (2023) contend that perceptions in consumers significantly affect early adoption of emerging technologies. This study shows that perceived innovativeness leads to greater consumer acceptance, because innovation decreases the feelings of product obsolescence and increases confidence regarding future usefulness. Thus, according to this similarity, consumers who will hold electric vehicles as useful and advanced technology tend to be more attracted by consideration of purchasing them.

Consumers not only evaluate based on what the technology can accomplish but also look at symbolic meanings (which go beyond functional performance). Consumers do not buy products just for utilitarian needs; they also will use products to signify identity, morals, lifestyle and social image (Kotler & Keller 2016). Thus, certain products have symbolic value that allow consumers to communicate prestige and achievement as well as modernity. Such symbolic motivations are increasingly salient when consumers are considering the purchase of premium or luxury goods.

In automotive, luxury is not about linens (they've long been out), exquisite design or heritage marquees. The fast development of technology has made luxury a multi-faceted term meaning something else as well, namely technological sophistication. High-end technologies such as intelligent driving, digital connectivity, autonomous features, artificial intelligence integration, over-the-air software updates and new battery technology are more frequently seen by consumers as attributes that will elevate a vehicle's premium image. Hence, the luxury part of that dynamic between vehicle and technology remains nearly inseparable.

Thus, Perceived Technological Luxury embodies consumers' holistic assessment of sophisticated technology and high-end brand image. Instead of considering technology and luxury as distinct attributes, consumers operate under the assumption that technological innovation itself is a luxury characteristic because upscale technology enriches exclusivity, distinctiveness and product desirability. When electric vehicles come with much more cutting-edge technological and features, they are often seen as the future – one that is better than previous generations or even their equivalents in traditional ICE car properties, making them prestigious among consumers.

Few previous empirical studies support the vital role played by perceived technological luxury on consumer purchase behavior. Huang et al. (2021), who have studied consumers' perception of technological innovation, conclude that innovative technologies improve perceived product attractiveness and therefore strengthen

purchase intention for electric vehicles. Their results indicate that progress in technology acts as an advantage to the industrial rivalry capable of distinguishing EV from gas-powered cars.

Similarly, Zhang et al. (2022) measured consumer perception of technological innovation in relation to their intention to use an electric vehicle and their findings showed that perception significantly influenced adoption. Consumers who view electric vehicles as more technologically advanced will be more likely to purchase them because perceptions of technology (more) increase perceived quality, reliability and future use. The authors add that innovation builds consumer confidence in cutting-edge technology by alleviating uncertainty about how the product will perform.

Furthermore, to corroborate these observations, Kim et al. Consumers' perceptions of technological innovation have been found to impact technology acceptance positively as well since the perceived product value improves while stimulating consumers' willingness to adopt new technologies (Yu et al. (2023). Similarly, Konuk (2019) determined that the products seen as more technologically advanced are overall rated higher since technology allows consumers to perceive higher quality, differentiation and value of their purchases.

While these papers tend to focus on technology, how we think about it, and bring it forward, together they suggest that consumers now associate the premium with good technology. Continuous innovation, mature digital competences and technological sophistication contribute to a vintage image of the product that is more desirable than conventional counterparts. This provides evidence that technological innovation helps underpin not just functional evaluations, but also symbolic ones that affect consumers' purchasing decisions.

Perceived technological luxury is a particularly pertinent attribute for electric vehicles since they are often positioned in the market as cutting-edge, futuristic mobility solutions. Electric cars have become synonymously associated with cutting-edge batteries, connectedness, driver assistance (ie, autonomous car), digital user interfaces and green engineering. The technological features distinguish it from traditional cars, while at the same time forming an aura of exclusivity, sophistication and modernity.

To support the urban market in Jakarta, people's perception toward luxurious technology may be increasingly important as larger segments of residents become influenced by premium technologies and innovative living styles. Jakarta is the

biggest metropolitan area in Indonesia, a largest purchasing power and digital transformation happen here with more consumer wants to try something new and innovative. As consumers want to be more familiar with electric vehicle technology through means such as government regulations, automotive expos, social media and international automobile brands, technological perceptions may deviate individuals' assessments of the car. This could lead consumers to see electric cars not just as greener means of transport, but elevated products that signal tech-savvy and socially progressive living.

From the above theoretical discussion and empirical findings, perceived technological luxury is defined as the perceptions of consumers that electric vehicles integrates high-tech innovation with superior quality and exclusive properties which augments overall value of the products. Studies consistently show that products framed as innovative and upscale are rated more favorably by consumers through higher perceived quality, product appeal, and symbolic value. Perceived technology luxury is posited to have a positive impact on consumers' buying decision towards electric cars in Jakartaw and therefore, serves as an independent variable within this research.

2.1.4 Purchase Decision

Purchase decision is the most fundamental and critical aspect in consumer behavior because it shows the final outcome of evaluating process consumers before having a product or services. Especially when it comes to making a high-stake and long-term purchase such as an automobile, consumers rarely make the decision on a whim. Rather, before making a purchase decision, consumers are actually likely to engage in a series of cognitive and psychological comparisons that entail juxtaposing available sets of alternatives, reflecting on product characteristics, weighing risks and assessing an offering against their needs and preferences. As a result, purchase decision acts as the ending point of concrete internal and external factors that together lead to consumer behavior.

As stated by Kotler and Keller (2016) purchase decision is a process that consumers follow on order to choose one of the products and only one brand available from all information recovered related with this. It claims that the most common framework is based on the idea that consumers typically go through a number of steps prior to arriving at an ultimate decision to purchase and includes stages but not limited to problem recognition, information search, evaluation of alternatives, purchase decision (also referred to as conversion) and post-purchase evaluation [6]. Consumers are constantly evaluating if a product merits the investment with value

based on consumer satisfaction primarily revolving around whether it is worth the cost which is especially important when considering products requiring significant financial outlay including automobiles. As a result, purchase decision is the outcome of an overall evaluation in which consumers weigh perceived benefits against perceived costs and uncertainties.

In the same way, a combination of internal and external factors influence consumer purchasing decisions. The internal factors consist of consumers beliefs, attitudes & perceptions, personal preferences and behavioural pattern whereas external factors comprise of product characteristics along with its price, social influences, marketing activities, technological development and environmental conditions (Kotler & Keller 2016). All these factors have an interplay during the process of decision-making and basically decide, if the consumer proceeds with a purchase or postponed it. As a result, in order to comprehend purchase decision, we have to look beyond the purchasing act itself and consider the determinants that influence consumers' evaluations before they make their buying decision.

When it comes to automotive, purchase decisions are so much more complex than your average consumer goods. Because buying a vehicle saves to be expensive, long-term, and costly in ongoing costs of ownership comparison shopping will last much longer than in other categories. Before a consumer decides what vehicle serves them best, they will usually compare how the car performs, if it is safe, if it gets good gas mileage and other technical aspects of features in-fields like environmental; maintenance cost & supportive infrastructure. Consequently, purchase decisions in the automotive market are generally high-involvement consumer decision making situations which involve extensive information processing.

Electric vehicles have complicated the purchase decisions for consumers even more. Electric vehicles, on the other hand, incorporate new technologies (eg batteries), different functioning systems (eg electric motors instead of internal combustion engines) and infrastructure requirements that consumers must consider when purchasing. Therefore, a car buyer has a purchase to make that consists not only of the usual elements -- price and quality of the product-- but also elements such as availability of charging infrastructure, sustainability electrics, battery performance and possibilities for advancement in technology. Thus consumers conduct wider evaluations prior to concluding whether or not electric vehicles are a viable replacement for standard automobiles.

Empirical studies consistently reveal that consumer choice to buy an electric vehicle is influenced by several interrelated factors. Li et al. through a meta-analysis, Cernaian et al. Their review suggests that electric vehicle consumers are multi-dimensional decision makers, not just traditional product attribute buyers based on price or performance. Thus, the understanding of electric vehicle purchase decisions needs to be multi-dimensional covering both product-related and consumer-related dimensions.

Similarly, Kumar and Alok (2020) found that perceptions about infrastructure readiness, technological advancement, environmental responsibility, and government support significantly affect consumers' willingness to purchase electric vehicles. According to their findings, when consumers are perceived with sufficient supporting conditions that minimize uncertainty and develop confidence in owning such vehicles, they are more likely to adopt electric vehicles. So when you make any purchase decision, the Product per se is not everything - It is also how the ecosystem of volt-up vehicles works around this vehicle.

Consistent with these findings, Hardman et al. Charging facility availability is well known to influence consumers' decisions about electric vehicle purchase, with (2021) contribute to this literature by highlighting that grandchildren of charging infrastructure can ease operational worries and facilitate positive consumer perceptions around convenience. Likewise, Nguyen et al. (2023) and Testa et al. In line with that, Mullee et al. (2021) show that environmental awareness can enhance consumers' purchasing behavior by prompting them to consider the sustainability of the product more carefully when evaluating its benefits and pricing. Consumers hold more green consciousness are typically more inclined to back eco-friendly innovations, including electric automobiles.

Furthermore, Huang et al. (2021), Kim et al. (2023), and Zhang et al. This finding highlights the centrality of perceptions of technological innovation in explaining consumers preference for electric vehicles (Park et al. 2022). Because consumers strongly associate technological sophistication with quality and reliability, products viewed as more technologically advanced tend to be perceived as better (Algoe et al., 2010) and even have the potential for a higher value in the future. As a result, the technology perception indirectly assists consumers to buy new products such as electric vehicles

These studies, while analyzing different determinants of consumer behavior, reveal that purchase decisions are multi-faceted and driven by the interdependence of various functional, psychological and perceptual factors. Practical obstacles to

electric vehicle ownership are lower because of functional considerations like charging infrastructure availability. Psychological engagement, like greater awareness of the environment, urges consumers to include sustainable items in their searches. On the other hand, perceptual factors such as technological luxury perceptions improve consumers' evaluations (e.g., perceived innovativeness, perceived exclusivity and value of products). Combined, these factors inform consumers about whether buying an electric vehicle is a rational and worthwhile decision.

Recent developments on sustainable transportation policies and increasing public interest in transition to environmentally friendly mobility solutions make electric vehicle purchase decisions relevant within the context of Jakarta. With Jakarta's high traffic density and environmental problems, the city has focused on increasing investment to develop new electric vehicle infrastructure that has opened up a flexible market to electric vehicles technology for consumers. However, buying into electric vehicles is still a somewhat tricky decision considering that the drivers are still deciding if supporting infrastructure is adequately built out, if environmental benefits warrant the investment, and whether electric vehicles deliver enough technological value to outweigh those trade-offs. These and other considerations emphasize the need to understand what may influence consumers who are deciding whether or not to make a purchase in Jakarta, Indonesia.

Drawing on the theoretical discussion and empirical evidence presented previously, purchase decision is conceptualised as consumers finally deciding to buy an electric vehicle after weighing all product attributes, supporting conditions and self-image. The literature reaction also suggests that multiple interrelated factors (not a singular determinant) shape purchasing decisions. As a result, this research analyzes purchase decision as the dependent variable that is impacted by availability of charging infrastructures, environmental awareness and perceived technological luxury. This study aims to investigate three independent variables in the same research framework and fill the gap of knowledge by examining how these factors collectively affect consumers' purchase and behavioral decisions toward electric vehicles in Jakarta.

2.2 Previous Studies

Related research has looked at some of the determinants impacting EV uptake. These studies serve as important backgrounds into the associations of a variety of variables and consumer behavior.

A number of studies have analyzed the impact of charging infrastructure on the transition towards EV ownership. There are a variety of factors that can affect consumer perception toward adopting electric cars and we know how important the availability of charging stations is. Consumers may be more willing to use EVs when charging infrastructure is available, while a lack of infrastructure raises concerns in the eyes of consumers about convenience.

Several other studies have studied the impact of environmental awareness on consumer behaviour. However eco-friendliness refers to the ability of an environmental awareness to tend towards environmentally friendly products. People who are more environmentally conscious may be drawn to electric vehicles because they have lower emissions.

Furthermore, a few studies have examined product perception such as technology and design. Electric cars are known as innovative and so-called modern products and this perception could influence the consumer choice. Consumers who appreciate innovation and product design may gravitate towards products tied to advanced technology.

While previous studies have looked at these factors, they most often analyze the impact of individual variables rather than considering their collective influence. Furthermore, there is a scarcity of studies that investigate these variables specifically for Jakarta. Hence, the present study focuses on conducting an integrated examination of charging station infrastructure, pro-environmental behavior, and perceptions towards technology and their collective impact on purchase intention.

No .	Author(s)	Research Objective	Variables	Research Findings	Research Gap / Relevance to This Study
1	Peinkofer, Schwens, & Kabst (2019)	To examine the influence of charging infrastructure on consumers' adoption of electric vehicles.	Charging Infrastructure → EV Adoption	Charging infrastructure availability positively influences electric vehicle adoption by improving accessibility and reducing operational concerns.	Supports the importance of Charging Infrastructure Availability . However, the study focuses solely on infrastructure and does not incorporate consumers' environmental awareness or perceptions of technological luxury.

2	Kumar & Alok (2020)	To review determinants influencing electric vehicle adoption and future sustainability prospects.	Charging Infrastructure, Government Support → EV Adoption	Charging infrastructure and government support are among the strongest determinants influencing electric vehicle adoption.	Reinforces the significance of infrastructure availability. Nevertheless, the study emphasizes macro-level determinants and does not simultaneously examine psychological and perceptual factors affecting purchase decisions.
3	Hardman et al. (2021)	To review consumers' preferences and interactions with charging infrastructure.	Charging Infrastructure → Consumer Preference	Adequate charging infrastructure reduces range anxiety, increases convenience, and improves consumers' willingness to	Provides strong empirical evidence regarding infrastructure availability but does not investigate how technological perceptions or environmental

				purchase electric vehicles.	awareness contribute to purchase decisions.
4	Testa et al. (2021)	To investigate determinants of environmentally responsible consumer behavior.	Environmental Awareness → Environmental Responsibility Responsible Behavior	Environmental awareness significantly encourages environmentally responsible purchasing behavior and sustainable consumption.	Strengthens the theoretical foundation of Environmental Awareness , although the study is not specifically conducted within the electric vehicle industry.
5	Nguyen, Lobo, & Greenland (2023)	To examine the influence of environmental awareness on sustainable consumption behavior.	Environmental Awareness → Sustainable Consumption	Consumers with higher environmental awareness demonstrate stronger intentions to purchase environmentally	Supports Environmental Awareness as a psychological determinant but does not integrate technological perception and charging infrastructure

				friendly products.	within one research model.
6	Wang et al. (2022)	To investigate determinants influencing consumers' adoption of electric vehicles.	Environmental Awareness → EV Purchase Intention	Environmental awareness positively influences consumers' willingness to adopt electric vehicles due to perceived environmental benefits.	Provides direct evidence supporting Environmental Awareness, yet the study does not consider perceived technological luxury as an explanatory variable.
7	Konuk (2019)	To examine the influence of technological perception on consumer purchasing behavior.	Technological Perception → Purchase Behavior	Positive technological perception enhances consumers' evaluation of product quality and purchase behavior.	Establishes the importance of technological perception; however, it does not specifically examine electric vehicles or technological luxury.

8	Huang, Ge, & Wang (2021)	To investigate the influence of technological perception and environmental concern on electric vehicle adoption.	Technological Perception, Environmental Concern → EV Adoption	Technological perception significantly enhances consumers' acceptance and evaluation of electric vehicles.	Supports the technological dimension of this study but focuses on technological perception rather than perceived technological luxury.
9	Zhang, Wang, & Hao (2022)	To examine the influence of technological innovation perception on consumers' intention to adopt electric vehicles.	Technological Innovation Perception → EV Purchase Intention	Consumers who perceive electric vehicles as technologically innovative exhibit stronger purchase intentions.	Demonstrates the positive role of technological innovation; however, symbolic perceptions associated with luxury and prestige are not discussed.

10	Kim, Rasouli, & Timmermans (2023)	To examine the role of perceived innovation and technology acceptance in electric vehicle adoption.	Perceived Innovation, Technology Acceptance → EV Adoption	Perceived innovation significantly increases consumers' confidence and willingness to adopt electric vehicles.	Strengthens the theoretical basis for technological evaluation, yet the study emphasizes innovation adoption rather than consumers' perception of technological luxury.
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Previous research on electric vehicle adoption and sustainable consumer behaviour: Findings summary (table 2.1) In general, past research shows that consumers make purchase decisions depending on many functional, psychological and perceptual factors. The availability of charging infrastructure is another important functional determinant that increases convenience by reducing operational uncertainty (Peinkofer et al., 2019; Kumar & Alok, 2020; Hardman et al., 2021). Similarly, environmental awareness has been proved to attract consumers to promote environmental sustainability in making purchasing decisions (Testa et al., 2021; Nguyen et al., 2023; Wang et al., 2022). Research has also shown that technological perception can positively impact consumers' evaluations of electric vehicles by increasing perceived innovation, product quality and attractiveness (Konuk 2019; Huang et al. 2021; Zhang et al. 2022; Kim et al.

These findings, however, were not without limitations; various gaps can be identified in the methodologies. First, most of the previous studies about charging infrastructure availability, environmental awareness or technological perception are mainly explored individually without combining them in a common research model. The second is on the one hand, prior studies have focused almost exclusively on developed countries where electric vehicle ecosystems are advanced enough for findings to be applied to developing countries like Indonesia. Even when focused on Jakarta, few are the studies that have honed in on consumers, as Jakarta is one of the most pivotal markets within Indonesia for electric vehicle uptake. Finally, although most studies may examine technological perception – earlier studies have examined limited work on Perceived Technological Luxury which emphasizes consumer's impression of electric vehicles as advanced technology while at the same time is also an indication of luxury product that designates premium (because no brand wants to be associated with, or use the word luxury), exclusive and prestigious.

Based on the previous explanation, this research aims to fill these gaps in research by analyzing how Charging Infrastructure Availability, Environmental Awareness and Perceived Technological Luxury influence Purchase Decision of electric vehicles in Jakarta simultaneously. The integration of these three determinants in one conceptual framework is expected to provide a comprehensive view of consumers' buying behaviour and potentially fill the literature on electric vehicle adoption in Indonesia.

2.3 Theoretical Framework

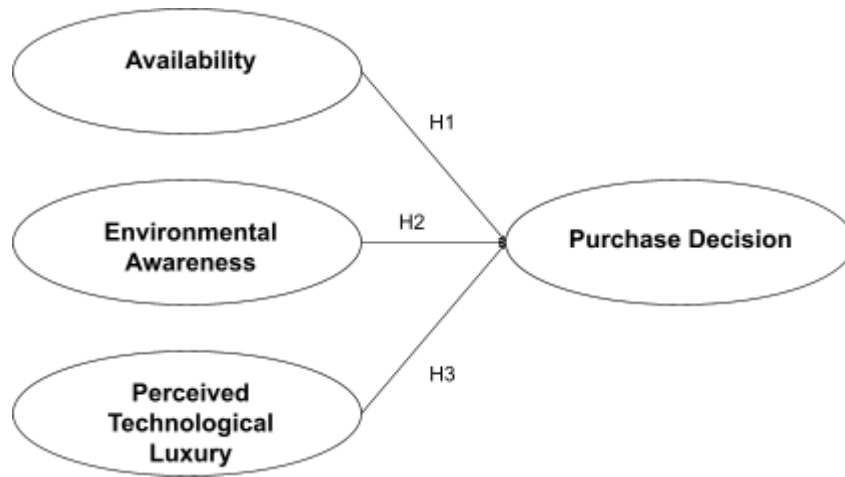


Figure 2 : Research Model

2.4 Conceptual Framework

We assume in this study that the decisions affecting an electric vehicle purchase are multidimensional. The charging infrastructure carries a practical aspect whereas environmental awareness pertains to its psychological aspect and technological perception let consumers measure the tangible of product.

These variables are likely related to consumer decision-making. Figure 1: Study Conceptual Framework This conceptual framework shows the independent variables charging infrastructure environmental awareness and technological perception that provide impact to the dependent variable purchase decision.

2.5 Hypothesis Development

2.5.1 Charging Infrastructure Availability and Purchase Decision

The availability of charging infrastructure has been repeatedly identified as one of the most significant drivers on electric vehicle purchase decisions. In contrast to conventional vehicles which are an extensive network of fuel stations, the electric vehicle relies on dedicated charging facilities for their routine operation. Consequently, potential consumers assess the availability, accessibility, and dependability of EV charging infrastructure before determining whether electric vehicles can serve their transportation needs. The more widespread and conveniently located consumers believe charging is, the more confident they are about using their vehicle without worrying that operational limits will be reached.

Consumer behaviour-wise, supportive infrastructure increases the certainty about using a product and fortifies consumers evaluation of a convenience in that product. As consumers do not buy a vehicle in trivial amounts and usually for non-zero time periods, they tend to ensure that the enabling ecosystem is mature before making buying decisions. Thus, sufficient charging infrastructure improves consumers relatively confidence in practicality, convenience and is seen as a supplement value with overall perception of electric vehicles as transportation substitutes.

Empirical studies conducted in the past all consistently confirm that availability of charging infrastructure positively affects electric vehicle adoption. Peinkofer et al. (2019) noted that if charging infrastructure is both accessible and reliable because it addresses convenience and reduces operational concerns, therefore making consumers more willing to adopt electric vehicles. In a similar vein, Kumar and Alok (2020) ranked charging infrastructure as one of the top external drivers affecting consumers' adoption decisions, where increased availability of charging influenced confidence in longterm vehicle ownership. In line with Hardman et al. Findings from (2021) showed that extensive charging infrastructure significantly

alleviates range anxiety, enhances the perception of convenience and positively affects consumers' purchase intention toward electric vehicles.

These studies were all conducted in different geographic contexts, but they reveal that availability of charging infrastructure encourages people to buy electric vehicles. In the case of Jakarta, where traffic jam, distance to commute and dependency on motor vehicles are still high, consumers may prioritize charging infrastructure availability when contemplating electric vehicles. With charging infrastructure continuing to grow across Jakarta, perhaps car buyers may start to see EVs as a more practical and viable option when it comes to getting from A to B. Consequently, consumers whose perception of charging infrastructure is sufficient will be more likely to purchase electric vehicles.

Following this theoretical discourse and empirical evidence the following hypothesis is proposed:

H1: Charging Infrastructure Availability has a positive and significant influence on Purchase Decision toward electric vehicles in Jakarta.

2.5.2 Environmental Awareness and Purchase Decision

More and more, the psychological factor of environmentalism has begun to have an influence on consumer purchases, especially in relation to environmentally friendly products or sustainable technologies. Consumers with higher levels of awareness regarding environmental issues are able to recognize that traditional consumption patterns generally have significant negative implications for the environment, and are likely therefore to prefer sustainable products. As it pertains to electric vehicles, environmental consciousness leads consumers towards considering transportation alternatives based not just upon economics and functional qualities but also on their potential impact on pollution and greenhouse gas emissions.

According to the consumer behavior literature, consumers' purchasing choices hinge not only on functional characteristics of a product (this is what they are) but also on beliefs and values that may be personal to them. More environmentally concerned people will include the environmental aspect in their assessment process before deciding to purchase. Thus, environmentally conscious consumers are typically a lot more receptive for sustainable innovations considering that they view these items as aligned with their personal duty toward environmental stewardship.

Earlier empirical studies show a positive effect of environmental concern on consumers' buying behavior consistently. Testa et al. (2021) reported that environmental consciousness is a major promoter of pro-environmental buying behavior, serving as a behavioral motivator when consumers are selecting products with lower quantum of environmental damage. Similarly, Nguyen et al. Consequently, Thoguluva and Ahn (2023) indicated that the environmental consciousness has a positive impact on sustainable consumption behavior, because consumers focused more on environmental dimension when evaluating products. Furthermore, Wang et al. that environmental concern has a strong impact on intention to purchase electric vehicles, while Okada et al. The third sign is from (2019) who, based on an opinion essay about environmental concern for consumers with higher purchase intentions for electric vehicles because they are perceived as low emission.

As a whole, these studies appear to suggest that consumers with higher levels of environmental awareness are more likely to support green technologies. Jakarta: Where air pollution, carbon emissions, and traffic congestion are still at the forefront of mass public discourse, we expect environmental awareness will grow to be an important multiplier fuelling consumers' purchasing decisions. With growing consciousness of damage towards the surroundings via way of means of from common vehicles, shoppers may start to transition into electric cars as an environmentally pleasant transport option. Accordingly, those consumers with higher environmental consciousness tend to show more intention to buy an electric vehicle.

The following hypothesis on the basis of theoretical discussion and empirical evidence above:

H2: Environmental Awareness has a positive and significant influence on Purchase Decision toward electric vehicles in Jakarta.

2.5.3 Perceived Technological Luxury and Purchase Decision

Perceived Technological Luxury embodies the consumers notion that electric vehicles combines pioneering technological abstraction with luxury, elitism, and prestige. In the modern car market more and more people are judging cars not only on performance or functionality but also of their level of techno-intelligence and symbolism. Electric vehicles with intelligent drive systems, high-tech batteries, data connections and new designs are often seen as a symbol of modernity and progress in technology. Thus, consumers who regard electric vehicles as cutting-edge and high-end might form more positive attitudes that drive their purchasing choices.

From a consumer behaviour perspective, technology often leads consumers to believe that it produces higher quality products with better innovation, reliability and value for the future. Technologically advanced products, which also offer premium features, come across as even more exclusive and differentiated, or less easily available in a competitive market. In addition, perceived technological luxury adds both functional and symbolic value to electric vehicles, increasing consumers' likelihood of considering purchasing them.

Several empirical investigations validate the positive effect of tech perception on consumer buying behavior. According to Konuk (2019), consumer behavior, perception of physical products about the influence of technology: consumers believed that advanced technological features in physical goods due to positive impact on new product evaluation and purchase intention because it positively affect Perceived Quality. Likewise, Huang et al. The study (2021) also stated that consumers' negative or positive perceptions of technology can directly affect their

acceptance of EVs by increasing the perception of innovation and technological superiority. Abstract: The aim of this research is to better understand smart connectivity in electric vehicles (EVs) security functionality. In line with these findings, Zhang et al. (2022) showed that consumers who regard electric vehicles as technologically advanced have higher purchase intentions, and Kim et al. Perceived innovation is greatly increasing the tendency to adopt electric vehicles (Wang et al.

While past studies typically centre on technology perception and innovation, the results all confirm that aspects of technological progress lead to better assessments of EVs by consumers. As the urban consumer environment in Jakarta becomes more intertwined with digital innovation, premium automotive technology, and smart mobility solutions, considerations surrounding technological luxury may play a significant role prior to an EV purchase. A result in which consumers who see electric vehicles as advanced technology and extensions of a high-end lifestyle will likely make even more decisive purchases.

Drawing on the theoretical elaboration and empirical evidence offered above, we hypothesize that:

H3: Perceived Technological Luxury has a positive and significant influence on Purchase Decision toward electric vehicles in Jakarta.

CHAPTER III

RESEARCH METHOD

3.1 Research Design

This paper is a quantitative research used to examine the relationship between availability of charging infrastructure, environmental awareness, perceived technological luxuries on purchase decisions toward electric vehicles in Jakarta. This research is considered quantitative because it tests hypotheses and analyses causal relationships between variables using numerical data that can be statistically processed and interpreted. Quantitative research allows the researcher to objectively quantify variables and statistically test relations hypothesized theoretically (Creswell, 2014), however quantitative approaches is considered more preferable in explanatory studies.

Using this method, the research can test for the strength, direction and size of relationships between independent and dependent factors in systematic ways. Moreover, quantitative methods give us the option of generalising findings to a specific population (when sampling techniques are used)—overall, with sufficient sample size (Hair et al., 2021) and when sampling methods have been correctly executed. Quantitative researches are research when quantitative studies the relationship between two or more variables and tests hypotheses by using measurable data (Sekaran & Bougie, 2016).

Method This study uses explanatory research design. Explanatory research is a research design that aims to identify and explain the nature of causality between variables, ideally drawing upon theory as well as empirical evidence. This may include the study which aims in explaining how the availability of charging infrastructure, environmental attitude or techno-experience influence buy behaviour towards electric vehicles. This is an appropriate design because prior research has identified such variables as crucial determinants for consumer behavior (Li et al.,

2021; Nguyen et al., 2023; Zhang et al., 2022) while the interplay of these factors in Jakarta is still relatively unknown.

Importantly, this study adopts a cross-sectional design, meaning at the moment data is collected in that particular time not anticipating to check whether or not things will be different some other times. This method enables the researcher to record respondents' perception, attitude and intention regarding electric vehicles during a specific period. Due to efficiency, cross-sectional designs are preferred in consumer behavior studies by analyzing the relationship between variables without necessarily observing them over a prolonged period of time (Sekaran & Bougie 2016). Furthermore, the opportunity to carry out studies with perception-based variables like environmental awareness and technological evaluation (Hair et al., 2021) makes cross-sectional data apposite.

The choice of variables in this analysis is based on past empirical research. Availability of charging infrastructure has proved to be a key driver in consumer behaviour towards electric vehicles through lowering uncertainty regarding charging and augmenting perceived convenience (Kumar & Alok, 2020; Peinkofer et al., 2019; Hardman et al., 2021). Environmental awareness is another important psychological factor affecting sustainable consumption, where individuals who are more concerned about the environment are more likely to prefer eco-friendly products and technologies (Nguyen et al., 2023; Testa et al., 2021; Wang et al., 2022). Third, a luxury perception of technology is also important because products that are able to maintain modernity, innovation, premium content and technological advances generally have higher attractiveness for consumers (Konuk, 2019; Huang et al., 2021; Zhang et al., 2022). These results offer significant theoretical and empirical evidence for the research model of this work.

3.2 Source Type and Data Analysis Technique

This is a cross case study based on primary and secondary data collated from various sources to help support the findings. The primary data is obtained from the respondents directly via a structured questionnaire. This is such important data because it shows you real world understanding, beliefs and intent towards EVs. While Sekaran and Bougie (2016) emphasize that researchers can collect data in the manner most specific to their interest using primary data.

Secondary data are collected from existing sources like journals, books, government reports and research papers. Secondary data is important for the development of theoretical framework, it supports hypothesis formulation and aids to contextualize findings. The combination of primary and secondary data lends validity and reliability to the study, establishing a foundation in both empirical evidence as well as theoretical perspectives (Hair et al., 2021).

From a data analysis standpoint, the present study applies two main statistical techniques on SmartPLS software. Structural Equation Modeling (Partial Least Squares approach) will be conducted using SmartPLS. That is why this method is most convenient, given that it allows for the study of complex relationships among multiple independent and dependent variables. It also includes latent constructs such as perception, awareness, etc. Hair et al. As hypothesized by Hair et al. (2021), PLS-SEM is well-established for predictive and exploratory models particularly when the tasks are engaged on multiple constructs full of indicators.

In addition, PLS-SEM technique does not impose stricter assumptions with regard to data normality and can be used for relatively smaller to medium sample sizes¹¹; hence is suitable in this research context (Hair et al. 2021; Henseler et al. 2015). Such flexibility has enabled its popularity in marketing and consumer behaviour research, particularly with respect to perception based variables.

3.3 Population and Samples

The study population includes everyone who resides in Jakarta, knows about electric vehicles and has the capability of purchasing a vehicle. This study focusses on Jakarta as the research setting which is a major urban area that has excessive mobility demand, rising environmental issues and increased exposure to electric vehicle technology. Moreover, Jakarta has been one of the most prominent university centre for bridging electric vehicle infrastructure and promotion programs in Indonesia. All these traits seem to give Jakarta асына context for understanding consumer behaviour in the uptake of electric vehicles.

This research uses non-probability sampling techniques (purposive sampling). Because respondents are selected on the basis of criteria that comply with the objectives of research purposive sampling is used. Sekaran and Bougie (2016) stated that purposive sampling is found suitable for this study where researchers need certain respondents who have knowledge, experience or other relevant characteristics relating to the nature of research. This sampling method helps respondents who are believed to be well positioned to provide quality input about electric vehicles, serving as a way of focusing your data.

Respondents were selected based on the following criteria: aged 17 years and above, either possessing knowledge or awareness of electric vehicles, or having financial means or potential to buy a vehicle. Respondents need to at least be somewhat familiar with electric vehicle products, either through own experience, seeing media about it or general public knowledge [85]. Ensure the respondents belong in the relevant target market and are able to make rational purchase decisions around electric vehicles.

The study sample size adheres to common recommendations for PLS-SEM According to Hair et al. According to Memon et al. A sample size of 30-100 respondents is usually well accepted, but a larger sample size is better for increasing statistical reliability, predictive accuracy and robustness of model estimation.

As a result, this study aims at approximately 100 respondents to increase statistical power and promote stable model construction. Moreover, the sample size also respects the "10-times rule" in PLS-SEM, meaning that a minimum number of observations should equal at least ten times the maximum number of structural paths directed at a particular construct in the model (Hair et al., 2021). Considering this is a model with 3 structural paths coming to the dependent variable, then our targeted sample exceeds the minimum requirement and is large enough for PLS-SEM analysis.

3.4 Data Collection Method

This study collected data using an online structured questionnaire through Google Forms. This allows the researcher to conveniently do a survey from larger scale in a short while period in accessing more respondents around Jakarta. Online distribution is conceived as suitable too because it allows respondents flexibility and comfort in completing the questionnaire. As stated by Sekaran and bougie (2016), questionnaires are good tools to be used for quantitative research because it serves standardized data collection from a large number of respondents.

There have two major parts in the questionnaire. The first part gathers demographic data such as age, gender, occupation, and level of familiarity with electric vehicles. This detail is useful for interpreting respondent demographics and helping to identify trends between different segments of the population. Furthermore, the demographic data could be used to give other insights about the consumers who prefer electric vehicles over others when looking for a purchase.

The second part is statements concerning the research variables, covering charging infrastructure availability, environmental consciousness, perceived technological luxury, and purchase intention. To ensure the content validity and fit with the theoretical framework, these statements were adapted from indicators and measurement items based on prior studies (Konuk, 2019; Nguyen et al., 2023;

Huang et al., 2021). This study intends to enhance reliability and validity of the instrument by adapting indicators from the existing literature.

Respondents' answers are measured using a five-point Likert (1 = strongly disagree-5 = strongly agree). They are trained on data up to the October of 2023 and this is extensively used in behaviour and consumer research because it allows respondents to report their level of agreement in a structured, measurable scale. According to Hair et al. According to (2021), Likert scales are suitable methods for measuring perceptions, attitudes, opinions and behavioral intentions mainly in studies involving latent variables such as awareness and perception.

The instrument is then evaluated for the clarity, relevance, and appropriateness of the statements used to measure each variable before being disseminated on a larger scale. 26, 27 The study design and relevant processes need to be outlined during this process of development, so that previously collected data can best inform how methods were executed; this is particularly necessary when attempting to address potential misinterpretation by researchers on the part of respondents. In addition, the collected data is processed and analyzed with SmartPLS for variable relationships and hypotheses.

3.5 Operational Variables

This research is constructed of four variables comprising three independent variables and a dependent variable. The dependent variable is purchase decision and the independent variables are charging infrastructure availability, environmental awareness and technological perception. The indicators were adapted from the literature, as discussed in more detail later in this section; good practice indicates that key variables should be identified and measured through multiple indicators (Aronson et al. 2010).

Charging infrastructure availability concerns coverage and convenience of access to EV charging stations, which shape the perception of practicality and functional use

in consumers (Peinkofer et al., 2019; Hardman et al., 2021). Environmental awareness is defined as the degree of concern and understanding that individuals have about environmental issues, such as their willingness to use sustainable products (Nguyen et al., 2023; Testa et al., 2021). Technological perception indicated the consideration of consumers about electric vehicles in terms of innovations, modernity, and technology, which may influence the attractiveness of products (Huang et al., 2021; Zhang et al., 2022). Purchase decision is the intention and desire of consumer to choose electric vehicles after comparison with alternatives (Kotler & Keller, 2016)

The various variables and their specific definitions and measurement indicators are provided in Table 3.1.

Table 3.1 Operational Definition of Variables

Variable	Operational Definition	Indicator	Code	Measurement Item	Adapted from
Charging Infrastructure Availability	Consumers' perception regarding the accessibility, adequacy, convenience, and reliability of EV charging infrastructure in Jakarta.	Accessibility	CIA 1	Charging stations for electric vehicles are easily accessible in Jakarta.	Peinkofer et al. (2019); Hardman et al. (2021)
		Availability	CIA 2	There are sufficient charging stations to support the daily use of electric vehicles.	Kumar & Alok (2020); Hardman et al. (2021)
		Convenience	CIA 3	The availability of charging stations makes owning an	Hardman et al. (2021)

				electric vehicle more convenient.	
		Reliability	CIA 4	I believe charging facilities in Jakarta are reliable for everyday use.	Peinkofer et al. (2019)
		Ownership Support	CIA 5	The existing charging infrastructure increases my confidence in purchasing an electric vehicle.	Kumar & Alok (2020)

Variable	Operational Definition	Indicator	Code	Measurement Item	Adapted from
Environmental Awareness	Consumers' awareness of environmental issues and their responsibility toward environmental sustainability.	Environmental Concern	EA1	Environmental pollution is an issue that concerns me.	Testa et al. (2021); Nguyen et al. (2023)
		Environmental Responsibility	EA2	I believe individuals have a responsibility to protect the environment.	Nguyen et al. (2023)
		Sustainable Consumption	EA3	I prefer products that have less negative impact on the environment.	Wang et al. (2022); Testa et al. (2021)

		Environmental Consideration	EA4	Environmental impact is one of my considerations when purchasing a vehicle.	Nguyen et al. (2023)
		Green Transportation Support	EA5	I believe using electric vehicles contributes to environmental sustainability.	Wang et al. (2022)

Variable	Operational Definition	Indicator	Code	Measurement Item	Adapted from
Perceived Technological Luxury	Consumers' perception that electric vehicles represent advanced technology while simultaneously reflecting premium value and prestige.	Technological Sophistication	PTL 1	Electric vehicles are equipped with more advanced technology than conventional vehicles.	Huang et al. (2021); Kim et al. (2023)
		Innovation	PTL 2	Electric vehicles represent the latest technological innovation in the automotive industry.	Kim et al. (2023); Zhang et al. (2022)
		Premium Image	PTL 3	I perceive electric vehicles as premium products.	Konuk (2019)

		Prestige	PTL 4	Owning an electric vehicle reflects a modern and prestigious lifestyle.	Zhang et al. (2022)
		Technological Excellence	PTL 5	The technological sophistication of electric vehicles increases their attractiveness.	Huang et al. (2021)

Variable	Operational Definition	Indicator	Code	Measurement Item	Adapted from
Purchase Decision	Consumers' final decision to purchase an electric vehicle after evaluating relevant product attributes and personal considerations.	Purchase Consideration	PD1	I would consider purchasing an electric vehicle in the future.	Kotler & Keller (2016)
		Purchase Preference	PD2	Electric vehicles would be my preferred choice if I were to purchase a vehicle.	Kotler & Keller (2016)
		Purchase Confidence	PD3	I feel confident about deciding to purchase an electric vehicle.	Kotler & Keller (2016)
		Purchase Likelihood	PD4	I am likely to purchase an electric vehicle when I need	Kotler & Keller (2016)

				to buy a new vehicle.	
		Final Decision	PD5	Based on my overall evaluation, purchasing an electric vehicle would be the right decision.	Kotler & Keller (2016)

3.6 Data Analysis Method

SmartPLS software is used to analyze the data collected from this study. This down-to-earth process methodology will be helpful for him in flexibly calculating that statistical tools used to assist the quantitative research approach and being validated in a systematic manner. As explained by Sekaran and Bougie (2016) statistical analysis is an important part of quantitative research because it allows researchers to interpret numerical data impartially and to explore if one or more factors impact another certain variable.

The analysis then continues with the use of Structural Equation Modeling (PLS-SEM) implemented in SmartPLS software. PLS-SEM was chosen because it is an appropriate method for predictive and exploratory research with many latent variables and indicators (Hair et al., 2021). Moreover, relative medium to small studies have no strict assumption with data normality, so PLS-SEM is well fit for this research context.

Stage 1: Measurement model evaluation (outer model) in PLS-SEM analysis

Measurement model The measurement model is evaluated specifically to determine whether the indicators used to measure each construct have adequate validity and reliability. Convergent validity was analysed based on the outer loading values (values above 0.70 represent acceptable validity (Hair et al., 2021). Discriminant validity is assessed as well ensuring that each construct in the model represents a unique aspect of the data. Also, the assessment of internal consistency expressed by Cronbach's Alpha and Composite Reliability values must be higher than 0.70 denoting internal consistency and Clarity of establishment This instrument allow for other 70%) within its accuracy.

Second stage: estimation of inner model(structural) The structural model is examined to understand the relationship between independent and dependent variables. Results from the analysis include path coefficients, which indicate the strength and direction of the relationships between variables, and R-square values to measure how explanatory power of the model in predicting a dependent variable. In addition, predictive relevance (Q-square) is measured to check the predictive validity and general applicability of the model (Henseler et al., 2015).

Last but not least will be bootstrapping method and hypothesis testing in SmartPLS. Using bootstrapping we can learn the statistical significance of the relationships between our variables, t-statistics, p-values. According to Hair et al. As per the guidelines of (2021), t-statistic > 1.96 and $p < 0.05$ are considered as statistically significant at a 5 percent level of significance. Based on these criteria, conclusions are made from the influences of charging infrastructure availability, environmental awareness, and perception of technological luxury towards electric vehicle purchase in Jakarta.

CHAPTER IV

DATA ANALYSIS AND RESULTS

4.1 Overview

This chapter presents the results obtained from the data collection process and provides a comprehensive discussion of the characteristics of the respondents involved in the study. The analysis is based on a total of 154 respondents who completed the questionnaire and satisfied the initial screening criteria established for the research. The collected data were subsequently organized and analyzed to provide an understanding of the demographic composition of the respondents and their relevance to the research context.

The questionnaire was designed to investigate factors associated with consumers' purchase decisions toward electric vehicles. Before proceeding to the main questionnaire, respondents were subjected to several screening questions to ensure that the collected responses were relevant to the objectives of the study. The screening criteria shown in the questionnaire data indicate that all 154 respondents were above 18 years old, were familiar with electric vehicles, and had considered purchasing an electric vehicle. Therefore, the entire sample of 154 respondents was retained for subsequent analysis.

The use of these screening criteria is important because the research concerns consumer perceptions and purchase decisions regarding electric vehicles. Respondents who have no familiarity with electric vehicles may not possess sufficient knowledge to provide meaningful assessments of factors such as charging infrastructure availability, environmental awareness, perceived technological luxury, and purchase decision. Similarly, respondents who have never considered purchasing an electric vehicle may have limited relevance to a study examining the factors associated with consumers' purchase decisions.

The screening results indicate that 154 respondents, representing 100% of the sample, reported that they were above 18 years old. This confirms that all respondents fulfilled the minimum age requirement established for participation in the study. The age criterion is particularly relevant because the research investigates individual consumer perceptions and purchase-related considerations, meaning that

respondents should possess sufficient maturity and independence to provide meaningful responses regarding their consumption decisions.

The questionnaire also indicates that all 154 respondents were familiar with electric vehicles. This means that 100% of the respondents reported familiarity with the subject being investigated. This result strengthens the relevance of the sample because the constructs examined in this research require respondents to have at least a basic awareness of electric vehicles and their associated characteristics. The respondents' familiarity provides an appropriate foundation for evaluating their perceptions regarding electric vehicle-related infrastructure, environmental considerations, technological characteristics, and purchase decisions.

Furthermore, all 154 respondents indicated that they had considered purchasing an electric vehicle. Consequently, 100% of the respondents met the purchase consideration criterion. This screening outcome is particularly important because the dependent variable of the study is Purchase Decision. Since every respondent had considered purchasing an electric vehicle, the responses are derived from individuals who have at least some degree of consumer relevance to the product category under investigation. The sample therefore does not consist predominantly of individuals who are completely disconnected from the electric vehicle market.

Taken together, the screening results demonstrate that the final sample consists entirely of respondents who fulfilled the fundamental requirements of the study. The absence of respondents who failed the screening criteria means that all 154 collected responses could be incorporated into the subsequent analysis. Therefore, the demographic analysis presented in the following sections is based on a final sample size of $N = 154$.

The respondent profile is subsequently analyzed according to gender, age, and occupation. These demographic characteristics provide an overview of the composition of the sample and assist in establishing the background of the individuals whose perceptions were analyzed in the study. Understanding the respondent profile is important because demographic characteristics can provide contextual information regarding the population represented by the sample. However, the demographic findings are interpreted primarily as descriptive characteristics of the sample and are not automatically treated as evidence of causal relationships with the research variables.

4.2 Respondent's Profile

The respondent profile describes the demographic characteristics of the 154 individuals who participated in the research. The demographic variables examined in this study include gender, age, and occupation. These characteristics were selected to provide a clear description of the respondents and to establish the composition of the sample used for the subsequent statistical analysis.

The total number of respondents was 154 individuals, and the frequency of each demographic category was calculated based on this total. The results show that the sample contains respondents from different genders, age groups, and occupational backgrounds. This variation provides a relatively diverse respondent composition and allows the study to capture perceptions from individuals with different demographic and socioeconomic backgrounds.

The following subsections present the demographic characteristics of the respondents in greater detail.

4.2.1 Gender

Gender represents one of the demographic characteristics collected in this study. Based on the questionnaire results, the sample consisted of 106 male respondents, 47 female respondents, and 1 respondent who preferred not to disclose their gender. With a total sample of 154 respondents, male respondents constituted the largest proportion of the sample.

Gender	Frequency	Percentage
Male	106	68.83%
Female	47	30.52%
Prefer not to say	1	0.65%
Total	154	100.00%

The results demonstrate that 106 respondents, or 68.83% of the total sample, were male. This indicates that approximately two-thirds of the respondents participating in

the study were male. Male respondents therefore represent the dominant gender category within the collected sample.

Female respondents accounted for 47 individuals, equivalent to 30.52% of the total sample. Although the number of female respondents was lower than the number of male respondents, females still represented almost one-third of the total sample. This indicates that the study did not consist exclusively or almost exclusively of male respondents, but included a substantial proportion of female participants.

Meanwhile, one respondent, representing 0.65% of the sample, selected the "Prefer not to say" category. The inclusion of this category allows respondents to maintain their privacy regarding gender identification. Although the number of respondents selecting this option was very small, the response remains part of the total sample and therefore contributes to the overall frequency distribution.

The gender distribution indicates that the sample is male-dominated, with males representing more than twice the number of female respondents. This composition should be acknowledged when interpreting the findings of the research. The results obtained from the sample primarily reflect the perceptions of the respondents included in the study, and because males constitute the majority, the overall descriptive pattern may reflect the larger representation of male participants.

At the same time, the presence of 47 female respondents provides meaningful representation of female consumers within the sample. The difference between the number of male and female respondents does not invalidate the sample, particularly because the purpose of this demographic analysis is to describe the respondents rather than to establish an equal gender distribution. The gender results therefore provide important contextual information regarding the composition of the participants from whom the research data were obtained.

In relation to the research context, the gender distribution indicates that the respondents who participated in the study were predominantly male. This characteristic should be considered when discussing the general profile of the sample and when interpreting the broader implications of the research findings. The findings from the subsequent PLS-SEM analysis should consequently be understood as representing the relationships observed within this particular sample of 154 respondents.

Overall, the gender profile confirms that the study successfully obtained responses from both male and female participants, while the largest proportion consisted of

male respondents. The distribution of 68.83% male, 30.52% female, and 0.65% prefer not to say provides a transparent representation of the demographic structure of the sample.

4.2.2 Age

Age represents another important demographic characteristic in this study. The questionnaire divided respondents into five age categories: 18–24 years, 25–34 years, 35–44 years, 45–54 years, and 55 years or above. The distribution demonstrates that respondents were represented across all five age categories, although the size of each group differed.

Age Group	Frequency	Percentage
18–24 years	35	22.73%
25–34 years	26	16.88%
35–44 years	30	19.48%
45–54 years	39	25.32%
55 years or above	24	15.58%
Total	154	100.00%

The largest age group in the sample was respondents aged 45–54 years, consisting of 39 respondents or 25.32% of the total sample. This indicates that approximately one-quarter of all participants belonged to this age category. The relatively high representation of respondents in this age range means that this group forms an important part of the demographic composition of the research sample.

The second-largest age group consisted of respondents aged 18–24 years, with 35 respondents or 22.73% of the total sample. This group represents almost one-quarter of the sample and demonstrates that younger adult consumers were also substantially represented in the research.

Respondents aged 35–44 years accounted for 30 individuals, representing 19.48% of the sample. This group constitutes nearly one-fifth of the respondents and provides representation from consumers in the middle-adult age category.

The 25–34-year-old group consisted of 26 respondents, equivalent to 16.88% of the total sample. Although this was not the largest age category, respondents within this group still represented a meaningful proportion of the sample.

Finally, respondents aged 55 years or above consisted of 24 individuals or 15.58% of the sample. This was the smallest age category in terms of frequency, although the number remains sufficiently represented within the descriptive profile of the sample.

The age distribution demonstrates that the study did not concentrate exclusively on one particular age group. Instead, the sample included respondents ranging from younger adults between 18 and 24 years old to respondents aged 55 years or above. This provides a broad demographic spread and allows the study to capture responses from individuals at different stages of adulthood.

An important characteristic of the distribution is that the respondents are relatively spread across the five age categories. The difference between the largest category, 45–54 years with 39 respondents, and the smallest category, 55 years or above with 24 respondents, is only 15 respondents. This indicates that although the sample has a dominant age group, there is no single category that overwhelmingly represents the entire sample.

The presence of 35 respondents aged 18–24 years is particularly relevant to understanding the younger consumer segment in the study. These respondents represent individuals at an early stage of adulthood and may have different experiences, expectations, and perceptions concerning technology and vehicle ownership compared with older respondents. However, the current descriptive data alone do not establish that age causes differences in perceptions or purchase decisions. Such conclusions would require an appropriate statistical analysis specifically examining demographic differences.

The representation of respondents aged 25–34 years and 35–44 years, comprising 26 and 30 respondents respectively, further strengthens the demographic diversity of the sample. These respondents occupy stages of adulthood that may involve different personal and professional circumstances. Their inclusion allows the research to avoid relying entirely on responses from either younger or older consumers.

The relatively high representation of respondents aged 45–54 years is also an important characteristic of the sample. Since this group represents the largest

proportion of respondents, the overall findings of the study should be interpreted with awareness that the sample contains a substantial number of participants from this age category.

The presence of 24 respondents aged 55 years or above demonstrates that older consumers were also included in the research. This is relevant because the research concerns electric vehicle purchase decisions and therefore benefits from having respondents from different age groups rather than restricting the analysis to a narrow demographic segment.

Overall, the age distribution shows that the sample is demographically diverse in terms of age, with all five predefined age categories represented. The largest group was 45–54 years at 25.32%, followed by 18–24 years at 22.73%, 35–44 years at 19.48%, 25–34 years at 16.88%, and 55 years or above at 15.58%. The relatively balanced distribution across the age categories provides a broad descriptive representation of the respondents included in the study.

4.2.3 Occupations

Occupation provides information regarding the professional and socioeconomic background of the respondents. In this study, respondents were classified into seven occupational categories: student/pelajar atau mahasiswa, private employee/karyawan swasta, government employee/pegawai negeri sipil, entrepreneur/wirausaha, professional, housewife, and retirement.

The distribution of respondents according to occupation is presented below.

Occupation	Frequency	Percentage
Student / Pelajar atau Mahasiswa	32	20.78%
Private Employee / Karyawan Swasta	38	24.68%
Government Employee / Pegawai Negeri Sipil	14	9.09%
Entrepreneur / Wirausaha	47	30.52%
Professional	20	12.99%
Housewife	1	0.65%

Retirement	2	1.30%
Total	154	100.00%

Respondents were also classified according to their occupation. The majority were entrepreneurs, comprising 47 respondents (30.5%). This was followed by private employees, with 38 respondents (24.7%), and students, with 32 respondents (20.8%). Meanwhile, professionals accounted for 20 respondents (13.0%), government employees represented 14 respondents (9.1%), and the remaining respondents consisted of 2 retired respondents (1.3%) and 1 housewife (0.6%). The dominance of entrepreneurs, private employees, and students indicates that the respondents came from diverse occupational backgrounds, with a large proportion being economically active or currently pursuing their education. The inclusion of respondents from different occupational backgrounds provides a broader perspective on their perceptions and purchase decisions toward electric vehicles, as occupation may influence financial capability, lifestyle, and considerations when evaluating electric vehicle ownership.

4.3 Descriptive Statistics

Descriptive statistics were conducted to provide an overview of respondents' responses to each measurement indicator in this study. The analysis presents the mean and standard deviation of the indicators for each research variable.

Table 4.1 Descriptive Statistics of Research Variables

Variable	Indicator	Mean	Standard Deviation	Interpretation
Charging Infrastructure Availability (CIA)	CIA1	3.701	1.026	High
	CIA2	3.545	1.070	Moderate
	CIA3	4.344	0.809	High
	CIA4	3.896	1.046	High
	CIA5	4.013	0.993	High
Environmental Awareness (EA)	EA1	3.727	1.059	High

	EA2	3.987	1.019	High
	EA3	3.916	1.025	High
	EA4	3.701	1.007	High
	EA5	3.727	1.002	High
Perceived Technological Luxury (PTL)	PTL1	4.084	0.967	High
	PTL2	4.097	1.005	High
	PTL3	3.870	0.978	High
	PTL4	3.500	1.015	Moderate
	PTL5	4.071	0.968	High
Purchase Decision (PD)	PD1	4.175	0.838	High
	PD2	4.006	0.818	High
	PD3	4.013	0.822	High
	PD4	4.071	0.815	High
	PD5	4.052	0.851	High

Note: Classification of mean values is based on the following interpretation: 1.00–1.80 = Very Low; 1.81–2.60 = Low; 2.61–3.40 = Moderate; 3.41–4.20 = High; 4.21–5.00 = Very High. The research instrument uses a five-point Likert scale, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Table 4.1 presents the descriptive statistics of the four research variables, namely Charging Infrastructure Availability (CIA), Environmental Awareness (EA), Perceived Technological Luxury (PTL), and Purchase Decision (PD), based on responses from 154 respondents. Overall, the results show that the majority of indicators were categorized as high, indicating that respondents generally agreed with the statements presented in the questionnaire. For CIA, the mean values ranged from 3.545 to 4.344, with CIA3 obtaining the highest mean of 4.344, while CIA2 recorded the lowest mean of 3.545 and was categorized as moderate. For EA, all

indicators were categorized as high, with mean values ranging from 3.701 to 3.987. Meanwhile, PTL recorded mean values between 3.500 and 4.097, with PTL4 being the only indicator categorized as moderate, while the remaining indicators were high.

The Purchase Decision variable demonstrated consistently high results across all five indicators, with mean values ranging from 4.006 to 4.175. PD1 recorded the highest mean at 4.175, indicating a strong tendency among respondents to consider purchasing an electric vehicle in the future. Across all 20 indicators, CIA3 had the highest mean of 4.344, while PTL4 had the lowest mean of 3.500. The standard deviation values ranged from 0.809 to 1.070, indicating that although respondents' answers varied to some extent, the overall responses remained relatively concentrated around their respective mean values. These descriptive results provide an initial overview of respondents' perceptions and serve as a foundation for the subsequent measurement model and structural model analysis.

4.4 PLS-SEM Results

The research model was examined using Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the relationships between Charging Infrastructure Availability, Environmental Awareness, Perceived Technological Luxury, and Purchase Decision. The analysis was conducted in two main stages. First, the measurement model (outer model) was evaluated to determine whether the indicators adequately measured their respective constructs through assessments of convergent validity, construct reliability, and discriminant validity. Following the evaluation of the measurement model, the structural model (inner model) was assessed to examine the relationships between the constructs. The structural model evaluation included the coefficient of determination (R^2), variance inflation factor (VIF), hypothesis testing, effect size (f^2), and Importance-Performance Map Analysis (IPMA).

4.4.1 Outer Model

The outer model evaluation was conducted to determine whether the measurement instruments used in this research adequately represent the four latent constructs. Before examining the relationships between the constructs, the quality of the measurement model must first be established. Therefore, the outer model was assessed through convergent validity, construct reliability, and discriminant validity to ensure that the indicators demonstrate appropriate validity and consistency in measuring their respective variables.

4.4.1.2 Convergent Validity

Convergent validity was examined to determine whether the indicators associated with the same construct demonstrate sufficient consistency in measuring the intended concept. In this study, convergent validity was assessed using outer loading values and Average Variance Extracted (AVE). These measures were used to determine whether the indicators of Charging Infrastructure Availability, Environmental Awareness, Perceived Technological Luxury, and Purchase Decision adequately represented their respective constructs.

4.4.1.2.1 Outer Loading

Outer loading represents the strength of the association between an observed indicator and the latent construct that it is intended to measure. A higher loading indicates that a greater proportion of the indicator's variance is associated with the corresponding construct. Following the commonly applied PLS-SEM assessment criteria proposed by Hair et al. (2019), an outer loading of 0.70 or above is generally considered satisfactory, as it indicates that the indicator provides an adequate representation of its construct. Indicators with loading values between 0.40 and 0.70 may be considered for retention when removing the indicator does not result in an improvement in the construct's reliability or Average Variance Extracted (AVE). Therefore, the outer loading results in this study were examined to determine whether each indicator provided an adequate measurement of its respective construct before proceeding to the subsequent analysis.

Table 4.2: Outer Loading

Variable	Questionnaire Item	Outer Loading	Assessment
Charging Infrastructure Availability	Charging stations for electric vehicles are easily accessible in Jakarta.	0.820	Accepted
	There are sufficient charging stations to support the daily use of electric vehicles.	0.788	Accepted
	The availability of charging stations makes owning an electric vehicle more convenient.	0.688	Retained
	I believe charging facilities in Jakarta are reliable for everyday use.	0.848	Accepted
	The existing charging infrastructure increases my confidence in purchasing an electric vehicle.	0.853	Accepted
Environmental Awareness	Environmental pollution is an issue that concerns me.	0.865	Accepted
	I believe individuals have a responsibility to protect the environment.	0.884	Accepted

	I prefer products that have less negative impact on the environment.	0.908	Accepted
	Environmental impact is one of my considerations when purchasing a vehicle.	0.859	Accepted
	I believe using electric vehicles contributes to environmental sustainability.	0.815	Accepted
Perceived Technological Luxury	Electric vehicles are equipped with more advanced technology than conventional vehicles.	0.905	Accepted
	Electric vehicles represent the latest technological innovation in the automotive industry.	0.902	Accepted
	I perceive electric vehicles as premium products.	0.828	Accepted
	Owning an electric vehicle reflects a modern and prestigious lifestyle.	0.786	Accepted
	The technological sophistication of electric vehicles increases their attractiveness.	0.902	Accepted

Purchase Decision	I would consider purchasing an electric vehicle in the future.	0.860	Accepted
	Electric vehicles would be my preferred choice if I were to purchase a vehicle.	0.874	Accepted
	I feel confident about deciding to purchase an electric vehicle.	0.907	Accepted
	I am likely to purchase an electric vehicle when I need to purchase a new vehicle.	0.870	Accepted
	Based on my overall evaluation, purchasing an electric vehicle would be the right decision.	0.933	Accepted

Table 4.2 shows that the outer loading values of the indicators range from 0.688 to 0.933. Almost all indicators exceeded the recommended threshold of 0.70, indicating that they adequately represent their respective constructs. The lowest loading was found for “*The availability of charging stations makes owning an electric vehicle more convenient*” at 0.688, while the highest loading was recorded for “*Based on my overall evaluation, purchasing an electric vehicle would be the right decision*” at 0.933. Overall, the results indicate that the indicators demonstrate satisfactory measurement quality and can be retained for further PLS-SEM analysis.

4.4.1.2.2 Average Variance Extracted (AVE)

Average Variance Extracted (AVE) was examined to assess the convergent validity of each construct. AVE indicates the proportion of variance in the indicators that can be explained by their respective latent construct. A value of 0.50 or higher indicates that the construct explains at least half of the variance of its indicators and therefore demonstrates acceptable convergent validity.

Table 4.3: Average Variance Extracted (AVE)

Construct	Average Variance Extracted (AVE)	Assessment
Charging Infrastructure Availability	0.643	Accepted
Environmental Awareness	0.752	Accepted
Perceived Technological Luxury	0.750	Accepted
Purchase Decision	0.790	Accepted

Table 4.3 shows that all four constructs obtained AVE values above the recommended minimum of 0.50. The AVE values ranged from 0.643 to 0.790, with Purchase Decision recording the highest value of 0.790 and Charging Infrastructure Availability recording the lowest value of 0.643. Therefore, all constructs demonstrate satisfactory convergent validity, indicating that their indicators adequately explain the variance of their respective constructs.

4.4.1.2.3 Reliability

Construct reliability was evaluated using Cronbach's Alpha and Composite Reliability (CR). Cronbach's Alpha assesses the internal consistency of the indicators within each construct, while Composite Reliability provides an additional assessment of the consistency of the measurement items. Values of 0.70 or above are generally considered acceptable for establishing satisfactory reliability.

Table 4.4: Cronbach's Alpha and Composite Reliability

Construct	Cronbach's Alpha	Composite Reliability	Assessment
Charging Infrastructure Availability	0.860	0.899	Reliable
Environmental Awareness	0.918	0.938	Reliable
Perceived Technological Luxury	0.916	0.937	Reliable
Purchase Decision	0.934	0.950	Reliable

Table 4.4 indicates that all constructs achieved Cronbach's Alpha and Composite Reliability values above 0.70. Cronbach's Alpha values ranged from 0.860 to 0.934, while Composite Reliability values ranged from 0.899 to 0.950. These results demonstrate a high level of internal consistency among the indicators used to measure Charging Infrastructure Availability, Environmental Awareness, Perceived Technological Luxury, and Purchase Decision. Therefore, all four constructs meet the required reliability criteria and are suitable for further structural model analysis.

4.4.1.3 Discriminant Validity

Discriminant validity was assessed to determine whether each construct represents a concept that is sufficiently distinct from the other constructs in the research model. In this study, discriminant validity was evaluated using the Heterotrait-Monotrait (HTMT) ratio. HTMT values below the recommended threshold indicate that the constructs are sufficiently different from one another and that the indicators are not measuring the same underlying concept.

Table 4.5: Heterotrait-Monotrait (HTMT) Ratio

Constructs	HTMT	Results
Charging Infrastructure Availability – Environmental Awareness	0.242	Valid
Charging Infrastructure Availability – Perceived Technological Luxury	0.385	Valid
Charging Infrastructure Availability – Purchase Decision	0.499	Valid
Environmental Awareness – Perceived Technological Luxury	0.410	Valid
Environmental Awareness – Purchase Decision	0.488	Valid
Perceived Technological Luxury – Purchase Decision	0.655	Valid

Table 4.5 shows that all HTMT values are below the commonly accepted threshold of 0.90. The highest HTMT value was observed between Perceived Technological Luxury and Purchase Decision (0.655), while the lowest value was between Charging Infrastructure Availability and Environmental Awareness (0.242). Since all values remain below the recommended threshold, the results indicate that the four constructs demonstrate adequate discriminant validity and are empirically distinguishable from one another.

4.4.2 Inner Model

After establishing the validity and reliability of the measurement model, the analysis proceeded to the evaluation of the inner model. The inner model assessment examines the relationships between the latent constructs and determines how well the proposed

research model explains the dependent variable. In this study, the structural model was evaluated through the coefficient of determination (R^2), followed by the assessment of collinearity, hypothesis testing, and effect size.

4.4.2.1 R-Square

The coefficient of determination (R^2) was examined to determine the explanatory power of the structural model. R^2 represents the proportion of variance in an endogenous construct that can be explained by its predictor constructs. A higher R^2 value indicates greater explanatory power of the model.

Table 4.6: Coefficient of Determination (R^2)

Endogenous Construct	R^2	Explanation
Purchase Decision	0.499	49.9%

The results show that the R^2 value for Purchase Decision is 0.499, indicating that 49.9% of the variance in respondents' Purchase Decision toward electric vehicles can be explained by Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury within the proposed research model. The remaining 50.1% of the variance is attributable to other factors that are not included in this research model. Therefore, the model demonstrates a meaningful level of explanatory power in explaining consumers' purchase decisions toward electric vehicles in Jakarta.

4.4.2.2 VIF Collinearity

Variance Inflation Factor (VIF) was examined to assess whether collinearity exists among the predictors in the structural and measurement models. A VIF value below 5.00 is generally considered acceptable, indicating that collinearity is not at a problematic level. Therefore, the VIF results were examined for both the inner and outer models before proceeding with the structural model interpretation.

Table 4.7: Inner Model VIF

Constructs	VIF	Results
Charging Infrastructure Availability → Purchase Decision	1.159	Accepted
Environmental Awareness → Purchase Decision	1.186	Accepted
Perceived Technological Luxury → Purchase Decision	1.293	Accepted

The inner model VIF results show that all predictor constructs have VIF values ranging from 1.159 to 1.293, which are substantially below the threshold of 5.00. This indicates that there is no problematic collinearity among Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury in predicting Purchase Decision. The relatively low VIF values also suggest that the three predictors provide sufficiently distinct information within the structural model.

Table 4.8: Outer Model VIF

Indicator	VIF	Results
Charging stations for electric vehicles are easily accessible in Jakarta.	2.549	Accepted
There are sufficient charging stations to support the daily use of electric vehicles.	2.344	Accepted
The availability of charging stations makes owning an electric vehicle more convenient.	1.411	Accepted
I believe charging facilities in Jakarta are reliable for everyday use.	2.577	Accepted
The existing charging infrastructure increases my confidence in purchasing an electric vehicle.	2.228	Accepted
Environmental pollution is an issue that concerns me.	2.895	Accepted
I believe individuals have a responsibility to protect the environment.	3.724	Accepted
I prefer products that have less negative impact on the environment.	4.378	Accepted
Environmental impact is one of my considerations when purchasing a vehicle.	2.620	Accepted

I believe using electric vehicles contributes to environmental sustainability.	1.847	Accepted
I would consider purchasing an electric vehicle in the future.	2.580	Accepted
Electric vehicles would be my preferred choice if I were to purchase a vehicle.	2.982	Accepted
I feel confident about deciding to purchase an electric vehicle.	3.698	Accepted
I am likely to purchase an electric vehicle when I need to purchase a new vehicle.	3.229	Accepted
Based on my overall evaluation, purchasing an electric vehicle would be the right decision.	4.866	Accepted
Electric vehicles are equipped with more advanced technology than conventional vehicles.	4.035	Accepted
Electric vehicles represent the latest technological innovation in the automotive industry.	3.882	Accepted
I perceive electric vehicles as premium products.	2.405	Accepted
Owning an electric vehicle reflects a modern and prestigious lifestyle.	1.951	Accepted
The technological sophistication of electric vehicles increases their attractiveness.	3.468	Accepted

The outer model VIF values range from 1.411 to 4.866. Although some indicators have relatively higher VIF values, particularly the item concerning the overall evaluation of purchasing an electric vehicle (4.866), all values remain below the 5.00 threshold. Therefore, the indicators do not demonstrate problematic collinearity, and all indicators can be retained for subsequent analysis.

4.4.2.3 Hypothesis Testing

Hypothesis testing was conducted to determine whether the proposed relationships between the independent variables and Purchase Decision were statistically supported. The analysis was performed using the bootstrapping procedure in SmartPLS. The assessment was based on the path coefficient, t-statistic, and p-value obtained from the bootstrapping results. A hypothesis is considered supported when

the relationship demonstrates statistical significance, with a p-value below 0.05 and a t-statistic exceeding the critical value of 1.96 for a two-tailed test.

Table 4.9: Hypothesis Testing

Hypothesis	Relationship	Path Coefficient (β)	T-Statistics	P-Value	Decision
H1	Charging Infrastructure Availability $\rightarrow$ Purchase Decision	0.251	3.583	0.000	Accepted
H2	Environmental Awareness $\rightarrow$ Purchase Decision	0.250	4.027	0.000	Accepted
H3	Perceived Technological Luxury $\rightarrow$ Purchase Decision	0.430	6.212	0.000	Accepted

Hypothesis testing was conducted using the bootstrapping results to determine whether the proposed relationships between the independent variables and Purchase Decision are statistically significant. The results show that Charging Infrastructure Availability has a positive and significant effect on Purchase Decision ($\beta = 0.251$, $t = 3.583$, $p < 0.001$). Environmental Awareness also has a positive and significant effect on Purchase Decision ($\beta = 0.250$, $t = 4.027$, $p < 0.001$). Meanwhile, Perceived Technological Luxury demonstrates the strongest positive effect on Purchase Decision ($\beta = 0.430$, $t = 6.212$, $p < 0.001$). Since all three relationships have p-values below 0.05, H1, H2, and H3 are supported.

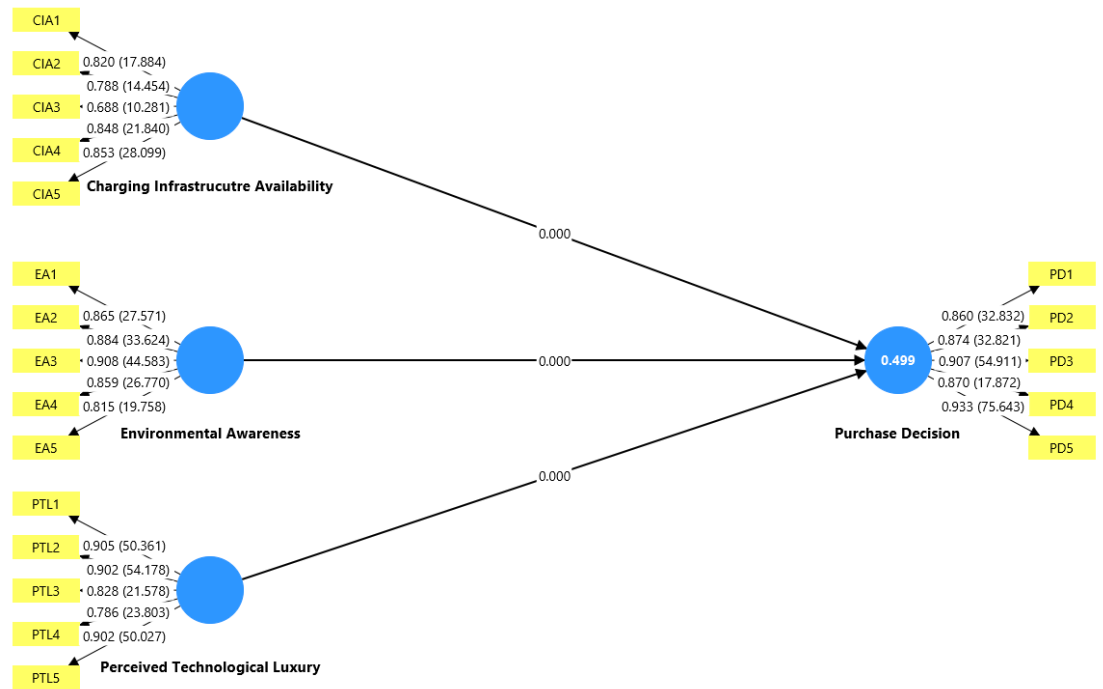


Figure 4.1: P-Value

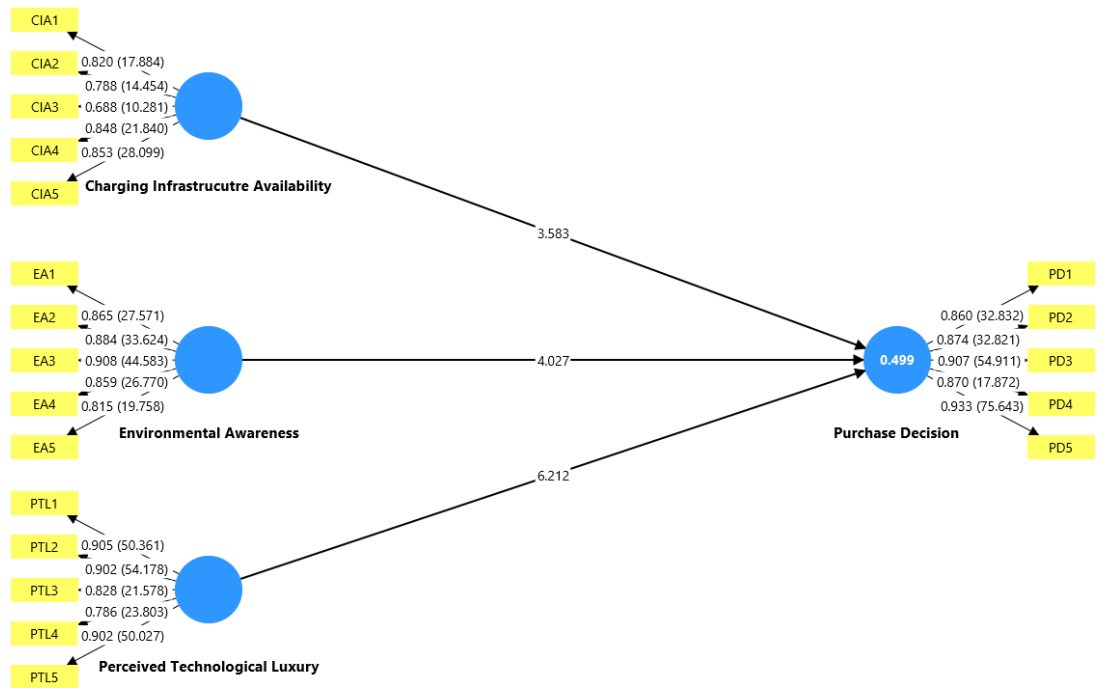


Figure 4.2: T-Value

4.4.2.4 Effect Size (F-Square)

Table 4.10: F-Square

Relationship	(f ²)	Effect Size
Charging Infrastructure Availability → Purchase Decision	0.109	Small
Environmental Awareness → Purchase Decision	0.105	Small
Perceived Technological Luxury → Purchase Decision	0.285	Medium

Note: (f²) values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively.

Table 4.10 shows that Perceived Technological Luxury has the strongest effect on Purchase Decision, with an (f²) value of 0.285, indicating a medium effect. Charging Infrastructure Availability and Environmental Awareness have (f²) values of 0.109 and 0.105, respectively, indicating small effects.

4.4.2.5 Importance-Performance Map Analysis (IPMA)

The Importance-Performance Map Analysis (IPMA) was conducted to provide additional insight into the relative importance and performance of the independent variables in explaining Purchase Decision. The analysis considers both the importance of each construct in predicting the target construct and its performance level.

Table 4.11: Importance-Performance Map Analysis

Construct	Importance	Performance
Charging Infrastructure Availability	0.251	73.951
Environmental Awareness	0.250	70.140
Perceived Technological Luxury	0.430	73.531

Table 4.11 indicates that Perceived Technological Luxury has the highest importance value at 0.430, meaning that it provides the strongest contribution to Purchase Decision among the three predictors. Charging Infrastructure Availability has an importance value of 0.251, while Environmental Awareness has an importance value of 0.250. In terms of performance, Charging Infrastructure Availability records the highest value at 73.951, followed by Perceived Technological Luxury at 73.531 and Environmental Awareness at 70.140.

4.5.1 Charging Infrastructure Availability and Purchase Decision

The first hypothesis proposed that Charging Infrastructure Availability has a positive and significant influence on Purchase Decision toward electric vehicles in Jakarta. The PLS-SEM results support this hypothesis, with a path coefficient of 0.251, a t-value of 3.583, and a p-value of < 0.001 . Since the p-value is below 0.05, the relationship is statistically significant. Therefore, H1 is accepted.

The result indicates that respondents who perceive charging infrastructure as more accessible, sufficient, convenient, and reliable are more likely to have a positive Purchase Decision toward electric vehicles. This finding shows that consumers consider not only the characteristics of the vehicle itself but also the supporting infrastructure required for its daily use. If charging facilities are perceived as accessible and convenient, consumers may feel more confident about using an electric vehicle as part of their regular transportation.

This finding is consistent with Peinkofer, Schwens, and Kabst (2019), who found that charging infrastructure availability positively influences electric vehicle adoption by improving accessibility and reducing operational concerns. The present study supports this finding by showing that Charging Infrastructure Availability has a statistically significant influence on Purchase Decision among respondents in Jakarta. Similarly, Kumar and Alok (2020) identified charging infrastructure as one of the important determinants of electric vehicle adoption. Their findings reinforce the idea that the availability of supporting infrastructure can affect consumers' willingness to adopt electric vehicles.

The result is also in line with Hardman et al. (2021), who found that adequate charging infrastructure can reduce range anxiety, improve convenience, and increase consumers' willingness to purchase electric vehicles. This is particularly relevant to the current research because concerns about charging availability can directly affect how practical consumers perceive electric vehicle ownership to be. Therefore, the findings of this study further support the existing literature by demonstrating that infrastructure remains an important consideration in the Jakarta market.

However, the (f^2) value of 0.109 indicates a small effect size. This means that Charging Infrastructure Availability contributes to Purchase Decision, but its individual contribution is relatively smaller than Perceived Technological Luxury. Therefore, while infrastructure remains significant, it does not appear to be the strongest factor influencing the respondents' purchase decisions within the current research model.

Overall, the findings are consistent with the previous studies and provide further evidence that charging infrastructure is an important factor in electric vehicle purchasing decisions. Therefore, H1 is accepted.

4.5.2 Environmental Awareness and Purchase Decision

The second hypothesis proposed that Environmental Awareness has a positive and significant influence on Purchase Decision toward electric vehicles in Jakarta. The results support this hypothesis, with a path coefficient of 0.250, a t-value of 4.027, and a p-value of < 0.001 . Since the p-value is below the 0.05 significance level, the relationship is statistically significant. Therefore, H2 is accepted.

The positive relationship indicates that respondents with stronger environmental awareness tend to demonstrate stronger Purchase Decision toward electric vehicles. Consumers who are concerned about pollution, environmental damage, and

sustainability may perceive electric vehicles as a more responsible transportation alternative. As a result, their environmental values can become part of the decision-making process when evaluating whether an electric vehicle is suitable for them.

The finding is consistent with Testa et al. (2021), who found that environmental awareness encourages environmentally responsible purchasing behavior and sustainable consumption. Although their study was not specifically focused on electric vehicles, its findings provide a relevant theoretical foundation for the current research because they demonstrate how environmental awareness can influence consumers' purchasing behavior.

The result is also supported by Nguyen, Lobo, and Greenland (2023), who found that consumers with greater environmental awareness tend to demonstrate stronger intentions to purchase environmentally friendly products. This supports the present finding that environmental considerations can translate into a stronger willingness to choose electric vehicles. More directly, Wang et al. (2022) found that environmental awareness positively influences consumers' intention to adopt electric vehicles because consumers recognize the environmental benefits associated with them. The current study therefore produces a similar result within the Jakarta context.

However, the (f^2) value of 0.105 indicates a small effect. This suggests that although Environmental Awareness significantly influences Purchase Decision, it is not sufficient by itself to become the dominant determinant of the decision. Consumers may care about environmental sustainability while still considering other factors such as technology, convenience, infrastructure, price, and overall vehicle characteristics.

This result is useful because it shows that environmental awareness is relevant to electric vehicle purchasing behavior, but it works alongside other considerations. In the current study, its path coefficient is very similar to Charging Infrastructure Availability, while both remain weaker than Perceived Technological Luxury.

Overall, the finding is consistent with the previous research of Testa et al. (2021), Nguyen et al. (2023), and Wang et al. (2022), which generally demonstrate a positive connection between environmental awareness and sustainable purchasing or electric vehicle adoption. Therefore, H2 is accepted.

4.5.3 Perceived Technological Luxury and Purchase Decision

The third hypothesis proposed that Perceived Technological Luxury has a positive and significant influence on Purchase Decision toward electric vehicles in Jakarta. The results provide the strongest support among the three hypotheses. The relationship has a path coefficient of 0.430, a t-value of 6.212, and a p-value of < 0.001 . Since the p-value is below 0.05, the relationship is statistically significant. Therefore, H3 is accepted.

The result indicates that respondents who perceive electric vehicles as technologically advanced, innovative, modern, premium, and sophisticated tend to have stronger Purchase Decisions. This suggests that consumers do not evaluate electric vehicles purely based on their transportation function. The technological characteristics and modern image associated with electric vehicles can also contribute to their attractiveness.

This finding is consistent with Konuk (2019), who found that positive technological perceptions can improve consumers' evaluation of products and influence their purchasing behavior. Although Konuk's research was not specifically focused on electric vehicles, it provides support for the general relationship between technological perception and purchase behavior. The present study extends this idea to electric vehicles by examining technological perception through the broader concept of Perceived Technological Luxury.

The result is also supported by Huang, Ge, and Wang (2021), who found that technological perception significantly contributes to consumers' acceptance and evaluation of electric vehicles. This is particularly relevant to the current study because both studies recognize technological characteristics as an important part of consumers' evaluation of electric vehicles.

Furthermore, Zhang, Wang, and Hao (2022) found that consumers who perceive electric vehicles as technologically innovative demonstrate stronger intentions to adopt them. The findings of the present research follow the same direction. However, this study goes beyond technological innovation alone by incorporating perceptions related to premium characteristics, modern lifestyle, prestige, and technological sophistication through the Perceived Technological Luxury construct.

The (f^2) result further emphasizes the importance of this relationship. Perceived Technological Luxury has an (f^2) value of 0.285, which represents a medium effect. This is considerably higher than the effect sizes of Charging Infrastructure Availability and Environmental Awareness. Therefore, Perceived Technological

Luxury not only has the strongest path coefficient but also makes the largest contribution to explaining Purchase Decision within the model.

The IPMA results provide further support for this finding. Perceived Technological Luxury has an importance value of 0.430, the highest among all independent variables. Its performance value is 73.531, indicating that respondents also evaluate this construct relatively positively. The combination of high importance and relatively high performance suggests that technological characteristics are particularly relevant to respondents when considering whether to purchase an electric vehicle.

Overall, the results are consistent with the previous research of Konuk (2019), Huang et al. (2021), and Zhang et al. (2022). At the same time, the present study adds another perspective by showing that the technological appeal of electric vehicles can extend beyond perceptions of innovation and include a sense of modernity, premium quality, and technological luxury. Therefore, H3 is accepted.

4.5.4 Overall Discussion

When the three hypotheses are considered together, the results show that all proposed relationships are supported. Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury all have positive and significant influences on Purchase Decision toward electric vehicles in Jakarta. However, the strength of these relationships is not equal.

The strongest relationship is found between Perceived Technological Luxury and Purchase Decision, with a path coefficient of 0.430, followed by Charging Infrastructure Availability at 0.251 and Environmental Awareness at 0.250. The (f^2) results show a similar pattern, with Perceived Technological Luxury producing a medium effect of 0.285, while the other two variables demonstrate small effects.

The findings generally agree with the previous studies included in this research. Peinkofer et al. (2019), Kumar and Alok (2020), and Hardman et al. (2021) support the importance of charging infrastructure, while Testa et al. (2021), Nguyen et al. (2023), and Wang et al. (2022) support the role of environmental awareness. Meanwhile, Konuk (2019), Huang et al. (2021), and Zhang et al. (2022) provide support for the positive role of technological perceptions in consumer behavior and electric vehicle adoption.

What makes the present study different is that these factors are considered together within one research model. The results suggest that Jakarta consumers' Purchase

Decision is influenced by a combination of practical needs, environmental considerations, and perceptions of technological value. More importantly, the findings indicate that Perceived Technological Luxury is the strongest factor among the three variables examined. This suggests that the attractiveness of electric vehicles may not come only from their environmental benefits or the availability of charging facilities, but also from their image as modern and technologically sophisticated products.

CHAPTER V

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This study was conducted to examine the factors that influence consumers' Purchase Decision toward electric vehicles in Jakarta. Three independent variables were examined in this research, namely Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury. The research used a quantitative approach and analyzed the collected data using Partial Least Squares Structural Equation Modeling (PLS-SEM). Based on the results of the measurement and structural model analysis, all three proposed hypotheses were supported.

The first finding shows that Charging Infrastructure Availability has a positive and significant influence on Purchase Decision. The relationship produced a path coefficient of 0.251, with a t-value of 3.583 and a p-value below 0.001. This means that respondents who have a more positive perception of charging infrastructure tend to have a stronger tendency to consider purchasing an electric vehicle. The result shows that the availability, accessibility, convenience, and reliability of charging facilities remain relevant when consumers evaluate electric vehicles. Although the effect size was relatively small, the relationship was statistically significant, confirming that infrastructure is still an important part of the purchasing consideration.

The second finding shows that Environmental Awareness also has a positive and significant influence on Purchase Decision. The path coefficient was 0.250, with a t-value of 4.027 and a p-value below 0.001. This indicates that respondents who are more concerned about environmental issues tend to demonstrate stronger Purchase Decision toward electric vehicles. The finding supports the idea that consumers' environmental values can influence their willingness to consider sustainable transportation alternatives. However, the relatively small effect size indicates that environmental awareness alone does not determine the purchasing decision and is likely considered together with other product and practical factors.

The third finding shows that Perceived Technological Luxury has the strongest positive and significant influence on Purchase Decision. The relationship produced a path coefficient of 0.430, a t-value of 6.212, and a p-value below 0.001. Its effect size of 0.285 was also higher than the effect sizes of the other two independent variables. This indicates that respondents' perceptions of electric vehicles as technologically

advanced, innovative, modern, and premium have an important role in shaping their purchasing decisions. The IPMA results support this finding, as Perceived Technological Luxury recorded the highest importance value among the three independent variables.

Overall, the findings show that consumers' decisions toward electric vehicles are not based on only one consideration. Practical factors such as charging infrastructure, personal environmental concerns, and perceptions of technological advancement all contribute to the decision. However, among the variables examined in this study, Perceived Technological Luxury appears to be the most influential factor. The three variables together explain a substantial proportion of the variation in Purchase Decision, with an (R^2) value of 0.499. Therefore, the proposed research model provides a meaningful explanation of the factors associated with electric vehicle Purchase Decision among the respondents in Jakarta.

5.2 Recommendation

Based on the results of this study, several recommendations can be provided for parties involved in the development of the electric vehicle market, particularly manufacturers, marketers, charging infrastructure providers, policymakers, and future researchers. The recommendations are based on the findings of the structural model, which show that Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury all have a positive and significant influence on consumers' Purchase Decision toward electric vehicles in Jakarta.

However, the results also show that the influence of these variables is not equal. Perceived Technological Luxury has the strongest influence on Purchase Decision, with a path coefficient of 0.430. Charging Infrastructure Availability and Environmental Awareness have relatively similar effects, with path coefficients of 0.251 and 0.250, respectively. A similar pattern can also be seen from the effect size results. Perceived Technological Luxury has a medium effect size of 0.285, while Charging Infrastructure Availability and Environmental Awareness have small effect sizes of 0.109 and 0.105.

These findings are important because they show that consumers do not make decisions about purchasing an electric vehicle based on only one factor. Practical concerns are still relevant, particularly whether charging facilities are available and convenient to use. Environmental concerns also play a role in encouraging consumers to consider electric vehicles as a more sustainable transportation option. At the same time, the strongest factor in this study is how consumers perceive electric vehicles

themselves, particularly whether they are seen as technologically advanced, modern, innovative, and premium products.

The overall model also explains 49.9% of the variance in Purchase Decision. This means that the three variables included in this research provide a meaningful explanation of consumers' decisions toward electric vehicles. Nevertheless, the remaining 50.1% suggests that other factors may also influence the decision to purchase an electric vehicle. For this reason, the recommendations from this study should not only focus on improving the three variables examined but should also recognize that consumer decision-making in the electric vehicle market is more complex and may involve financial, social, technological, and personal considerations.

The following sections discuss the theoretical implications, managerial implications, and limitations of the study, together with recommendations for future research.

5.2.1 Theoretical Implication

This study provides several theoretical implications for research on consumer behavior and electric vehicle adoption. One of the main contributions of this study is the combination of Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury within one research model. These three variables represent different aspects of consumer decision-making.

Availability of Charging Infrastructure is a practical consideration.” Before they buy an electric vehicle, consumers might consider whether they can easily charge the vehicle and whether the existing infrastructure can accommodate their daily activities. Environmental Awareness is an alternative aspect of consumer behavior related to personal values and concern about environmental issues. In contrast, Perceived Technological Luxury is more concentrated on the consumers' view of electric vehicles as a product that is modern, innovative, technologically advanced and possibly associated with a premium lifestyle.

By examining these three variables together, this study shows that the decision to purchase an electric vehicle cannot be explained only from one perspective. Consumers may consider practical issues, personal values, and product perceptions at the same time. This is relevant because purchasing a vehicle is generally a high-involvement decision. Consumers may spend more time evaluating the product and comparing different benefits before deciding whether to make a purchase.

The positive and significant result of Charging Infrastructure Availability supports the importance of practical readiness in electric vehicle adoption. The path coefficient of 0.251 indicates that respondents who have more positive perceptions regarding charging infrastructure tend to have a stronger Purchase Decision toward electric vehicles. This means that factors such as accessibility, availability, convenience, and reliability of charging facilities remain relevant when consumers consider purchasing an electric vehicle.

At the same time, the effect size of Charging Infrastructure Availability is classified as small, with an f^2 value of 0.109. This is an interesting finding because it suggests that infrastructure is important, but it is not the only or strongest factor influencing consumers' Purchase Decision in this study. From a theoretical perspective, this may indicate that consumers do not evaluate charging infrastructure independently. Their perception of infrastructure may be considered together with other factors, such as how attractive the vehicle is, what benefits it offers, and whether the product fits their lifestyle.

Future research could explore this issue in more detail by separating the objective condition of charging infrastructure from consumers' perceptions of charging infrastructure. For example, the actual number of charging stations in a particular area may not necessarily be interpreted in the same way by all consumers. Some consumers may feel that the available infrastructure is sufficient, while others may still feel uncertain about charging their vehicles. Future studies could therefore examine whether actual infrastructure availability and perceived infrastructure availability have different effects on electric vehicle adoption.

The findings regarding Environmental Awareness also provide theoretical implications for research on sustainable consumer behavior. Environmental Awareness has a positive and significant influence on Purchase Decision, with a path coefficient of 0.250. The result shows that consumers who are more aware of environmental issues tend to demonstrate a stronger tendency toward purchasing an electric vehicle.

This result gives support to the idea that personal environmental values may impact consumer decisions. “Consumers might be more open to products that are perceived as more sustainable due to environmental concerns. In this study, electric vehicles can be considered not only as a transport product but also as an alternative related to broader issues about sustainability and the environmental impact of transport.

However, the effect size of Environmental Awareness is also relatively small with a f^2 value of 0.105. Therefore, an environmentally conscious consumer does not necessarily buy an electric vehicle. You might care about the environment but also worry about price, convenience, infrastructure, vehicle performance or other issues. Therefore, environmental concern may be an important part of the decision making process, but may not be sufficient by itself to explain the final purchase decision.

This finding gives an opening for future research to investigate the relationship between environmental values and actual consumer behavior in more depth. Future research could look at how variables such as perceived value, attitude toward electric vehicle, social influence or financial capability affect the relationship between Environmental Awareness and Purchase Decision. For example, environmental awareness may lead to a positive attitude toward electric vehicles, but the final purchase decision may be influenced by whether the consumer perceives the vehicle as affordable and practical.

The strongest theoretical implication of this study is related to Perceived Technological Luxury. Among the three independent variables, this variable has the strongest positive influence on Purchase Decision, with a path coefficient of 0.430. Its effect size of 0.285 is also classified as medium, which is considerably higher than the effect sizes of Charging Infrastructure Availability and Environmental Awareness.

The result suggests that respondents may be attracted to electric vehicles not only because of their environmental benefits or because charging infrastructure is available. The way consumers perceive electric vehicles as technologically advanced, innovative, modern, and premium also has a strong relationship with their Purchase Decision.

From a theoretical perspective, this finding suggests that the study of electric vehicle adoption may benefit from paying greater attention to the symbolic and perceptual value of the product. Electric vehicles are not necessarily evaluated only based on their functional characteristics. Consumers may also consider what the product represents to them. For some consumers, owning an electric vehicle may be associated with modern technology, innovation, progress, or a certain lifestyle.

This is particularly relevant in consumer behavior research because many purchasing decisions involve both functional and emotional considerations. A consumer may evaluate whether a product is useful, but at the same time, the consumer may also consider whether the product is attractive, modern, desirable, or suitable for their

personal image. The results of this study suggest that this type of perception should not be overlooked when examining electric vehicle Purchase Decision.

Future research can further develop this finding by examining Perceived Technological Luxury together with other consumer perception variables. For example, future researchers could investigate its relationship with perceived quality, perceived value, brand image, consumer innovativeness, social status, or emotional attachment to the product. It may also be interesting to examine whether Perceived Technological Luxury acts as a mediating variable between technological features and Purchase Decision.

The R^2 value of 0.499 also provides an important theoretical implication. The three variables examined in this study explain approximately 49.9% of the variance in Purchase Decision. This indicates that the model provides a meaningful explanation of consumer decision-making toward electric vehicles among the respondents. However, it also means that approximately half of the variation in Purchase Decision is related to factors that were not included in the current research model.

Therefore, future researchers have considerable opportunities to expand the model. Variables such as perceived price, affordability, financial capability, perceived value, government incentives, brand image, social influence, perceived risk, driving range, vehicle performance, trust in electric vehicle technology, and after-sales service could be considered in future studies.

Future research could also examine more complex relationships between variables. The current study focuses on the direct influence of the three independent variables on Purchase Decision. However, consumer behavior may involve indirect relationships. Charging Infrastructure Availability, for example, may reduce consumers' concerns or uncertainty regarding electric vehicle ownership. Environmental Awareness may influence consumers' attitudes toward sustainable transportation before influencing their Purchase Decision. Similarly, Perceived Technological Luxury may increase perceived value or product attractiveness, which may eventually lead to a stronger Purchase Decision.

For this reason, future research could include mediating variables to understand the process through which these factors influence consumers. Moderating variables could also be introduced to determine whether the relationships differ depending on consumer characteristics. Factors such as age, income, previous experience with electric vehicles, consumer innovativeness, or level of knowledge about electric

vehicle technology could potentially influence the strength of the relationships found in this study.

Overall, the theoretical implication of this research is that electric vehicle Purchase Decision should be understood as a combination of different consumer considerations. Practical readiness, environmental values, and technological perceptions all contribute to the decision. However, based on the results of this study, Perceived Technological Luxury appears to have the strongest role. This provides an additional perspective for future research by showing that electric vehicle adoption is not only related to sustainability or infrastructure but also to how consumers perceive the product itself.

5.2.2 Managerial Implication

The results of this study also provide several implications for electric vehicle manufacturers, automotive marketers, dealers, charging infrastructure providers, and policymakers. The main implication is that the development and promotion of electric vehicles should not focus on only one benefit. The findings show that practical considerations, environmental concerns, and technological perceptions are all relevant to consumers' Purchase Decision.

However, because the three variables have different levels of influence, stakeholders should also consider the relative importance of each factor when developing their strategies. Based on the results of this study, Perceived Technological Luxury should receive the greatest strategic attention because it has the strongest relationship with Purchase Decision.

For electric vehicle manufacturers, this means that electric vehicles should not only be positioned as environmentally friendly alternatives to conventional vehicles. Although sustainability remains relevant, the findings suggest that consumers are also strongly influenced by the perception that electric vehicles are technologically advanced and modern products.

Manufacturers and marketers should therefore communicate technological features more actively. Features related to digital connectivity, advanced vehicle systems, modern interfaces, innovation, and other technological capabilities can be emphasized in marketing communication. However, simply listing technical specifications may not always be effective. Some consumers may not fully understand the meaning or benefits of complex technological features.

For this reason, technological features should be translated into benefits that are easier for consumers to understand. Marketing communication can explain how technology improves the driving experience, convenience, comfort, connectivity, or overall ownership experience. Rather than focusing only on the technical side of the product, companies can demonstrate how the technology becomes useful in consumers' everyday lives.

The importance of Perceived Technological Luxury also suggests that consumer experience should support the marketing message. If companies position electric vehicles as advanced and innovative products, consumers should be given opportunities to experience these features directly. Test-drive programs, product demonstrations, showroom experiences, and other interactive activities can help potential buyers understand the technology more clearly.

This is important because purchasing a vehicle usually involves a relatively high level of consideration. Consumers may want to see and experience the product before making a decision. Allowing consumers to interact directly with the vehicle may help reduce uncertainty and strengthen their perception of its technological value.

The IPMA findings also provide useful information in this area. Perceived Technological Luxury has the highest importance among the three independent variables, while its performance value is 73.531. This indicates that respondents already have a relatively positive perception of this factor, but because of its high importance, maintaining and improving this perception should remain a major priority.

Companies should therefore continue to develop and communicate technological features that can differentiate electric vehicles from conventional vehicles and competing products. As the electric vehicle market becomes more competitive, technological features may gradually become more common. For this reason, companies cannot assume that the perception of technological advancement will remain strong without continuous innovation and effective communication.

The second important managerial implication concerns Charging Infrastructure Availability. The results show that this variable has a positive and significant influence on Purchase Decision, with a path coefficient of 0.251. Although its influence is smaller than Perceived Technological Luxury, charging infrastructure remains an important practical consideration for consumers.

For consumers who are considering purchasing an electric vehicle, the decision is not only about whether they like the vehicle. They may also think about whether the vehicle can realistically support their daily activities. Questions regarding where to charge, how convenient the charging process is, and whether charging facilities are reliable may affect consumer confidence.

Therefore, charging infrastructure providers and other stakeholders should continue improving the accessibility and reliability of charging facilities. However, the recommendation is not limited to simply increasing the number of charging stations. Consumers must also be able to easily find and understand how to use the available infrastructure.

Clear information regarding charging locations, charging procedures, estimated charging time, payment methods, and the availability of facilities can help consumers feel more confident. Digital platforms or applications that provide information about charging stations may also be useful because they can make the charging process easier to understand and manage.

Manufacturers and dealers can also contribute by providing consumers with practical information about charging as part of the purchasing process. Consumers who are unfamiliar with electric vehicles may have concerns because they do not fully understand how charging works. Instead of expecting consumers to search for this information independently, companies can provide clear explanations before and after the purchase.

For example, potential buyers can be informed about the charging options available for their vehicle and how charging can fit into their normal daily routine. This type of education may help reduce uncertainty, especially among consumers who are interested in electric vehicles but are still hesitant because of concerns regarding practicality.

The IPMA results show that Charging Infrastructure Availability has the highest performance value, at 73.951. This suggests that respondents generally perceive charging infrastructure relatively positively. However, the significant relationship with Purchase Decision indicates that maintaining this positive perception remains important.

The next managerial implication concerns Environmental Awareness. The results show that Environmental Awareness has a positive and significant influence on Purchase Decision, with a path coefficient of 0.250. This indicates that environmental

concerns remain relevant in encouraging consumers to consider electric vehicles. However, its effect size of 0.105 suggests that environmental awareness alone may not be sufficient to strongly influence the final purchase decision.

For this reason, manufacturers and marketers should continue to communicate the environmental benefits of electric vehicles but should avoid relying only on environmental messages. Consumers may care about sustainability while still requiring practical and personal benefits before deciding to purchase a vehicle.

A more suitable approach may be to combine environmental benefits with technological and practical advantages. Electric vehicles can be communicated as products that provide advanced technology and a modern driving experience while also contributing to more sustainable transportation. In this way, environmental responsibility becomes one of several reasons for consumers to consider the product.

This integrated approach may be particularly useful because it reflects the overall results of this study. The findings show that all three variables are significant. Therefore, marketing communication that combines technological innovation, practical convenience, and environmental benefits may provide consumers with a more complete understanding of the value offered by electric vehicles.

The IPMA results show that Environmental Awareness has the lowest performance value among the three variables, at 70.140. Although this value is still relatively positive, it suggests that there may be room to strengthen consumers' understanding of the relationship between their transportation choices and environmental sustainability.

Policymakers, educational institutions, environmental organizations, and industry stakeholders can contribute to improving public understanding in this area. Educational campaigns can explain the environmental impact of transportation and introduce electric vehicles as one of the available alternatives.

However, environmental communication should remain relevant and understandable to consumers. General messages about environmental problems may not always directly influence a person's purchasing decision. Consumers may respond more positively when environmental issues are connected to practical actions and choices that they can make in their daily lives.

The findings also suggest that different consumers may have different reasons for being interested in electric vehicles. Some consumers may be attracted mainly by technology and innovation, while others may be more concerned about sustainability

or charging convenience. Therefore, companies may consider developing different communication approaches for different consumer groups.

For example, technology-oriented consumers may respond more positively to communication about innovation, advanced systems, connectivity, and modern design. Consumers with strong environmental concerns may be more interested in sustainability-related benefits. Meanwhile, consumers who are more practical may require information about charging convenience, accessibility, and the daily usability of the vehicle.

Although this study does not directly examine consumer segmentation, the significance of all three variables suggests that consumers may consider different types of value when making their decisions. Therefore, companies should avoid assuming that one marketing message will be equally effective for all potential consumers.

The results also provide implications for collaboration between different stakeholders. Electric vehicle adoption cannot depend only on manufacturers. The availability of charging infrastructure requires cooperation between infrastructure providers, businesses, government institutions, and other relevant parties. Public awareness also requires education and communication beyond traditional product advertising.

Therefore, a more coordinated approach may be beneficial. Manufacturers can focus on developing attractive and technologically competitive products. Infrastructure providers can improve accessibility and reliability. Policymakers can support the development of the overall electric vehicle ecosystem. Educational institutions and other organizations can contribute to improving public knowledge regarding sustainable transportation.

Based on the findings of this study, the strategic priorities can be considered according to the relative influence of the variables. Perceived Technological Luxury should receive the greatest attention because it has the strongest relationship with Purchase Decision and the largest effect size. Charging Infrastructure Availability should continue to be maintained and improved because it supports consumers' confidence regarding the practical use of electric vehicles. Environmental Awareness should also be strengthened, particularly by connecting sustainability with other benefits that consumers can directly experience.

However, these priorities should not be interpreted as meaning that one factor can replace another. A technologically attractive electric vehicle may still face difficulties

if consumers do not feel confident about charging. Similarly, the availability of charging infrastructure may not be enough to attract consumers if the product itself is not perceived as desirable or valuable.

For this reason, the most appropriate approach is an integrated strategy. Electric vehicles should be positioned as products that are technologically advanced and attractive, practical enough for everyday use, and connected to broader environmental benefits. The relative importance of each message can be adjusted based on the findings of this study, but all three dimensions should remain part of the overall strategy.

In general, the main managerial recommendation from this study is that stakeholders should move beyond the idea that consumers purchase electric vehicles only because they are environmentally friendly. The results suggest that technological perception plays a particularly important role. Therefore, the future development of the electric vehicle market should focus not only on solving practical barriers but also on making electric vehicles products that consumers genuinely want to own.

5.2.3 Limitation and Further Research

Although this study provides meaningful findings regarding factors influencing Purchase Decision toward electric vehicles, several limitations should be considered when interpreting the results.

First, this study focuses on respondents in Jakarta. Consumer characteristics, mobility patterns, purchasing power, infrastructure conditions, and exposure to electric vehicle technology may be different in other parts of Indonesia. Therefore, the findings may not fully represent the attitudes and purchasing decisions of consumers in other cities or regions.

Future studies could expand the geographical scope by including respondents from several major cities or regions in Indonesia. Comparative research could also be conducted to examine whether Charging Infrastructure Availability has a stronger influence in areas where charging infrastructure is less developed or whether Perceived Technological Luxury remains the strongest factor across different consumer markets.

Second, the study examines only three independent variables. The R^2 value of 0.499 shows that the model explains approximately 49.9% of the variance in Purchase Decision. While this represents meaningful explanatory power, approximately 50.1%

of the variation remains unexplained. This suggests that other factors may also influence consumers' decisions regarding electric vehicles.

Future research could therefore include additional variables. As identified within the scope of this research, future studies may consider perceived price, perceived value, financial capability, government incentives, brand image, social influence, perceived risk, vehicle performance, or trust in electric vehicle technology.

Financial factors may be particularly relevant because purchasing a vehicle generally involves a significant financial commitment. Even if consumers have positive perceptions regarding technology and environmental benefits, their final decision may still depend on whether they consider the product affordable and worth the price.

Brand-related factors may also be relevant. Consumers may have different levels of trust and familiarity with different automotive brands. A consumer may be interested in electric vehicle technology but may still hesitate if they are uncertain about the manufacturer's reputation, after-sales service, or long-term reliability.

Future research could also examine the role of social influence. Purchasing a vehicle can sometimes involve social considerations, particularly when the product is new or associated with technological innovation. Recommendations from family, friends, colleagues, or online communities may influence how consumers evaluate electric vehicles.

Another limitation is that this study focuses on direct relationships between the independent variables and Purchase Decision. Consumer decision-making may involve a more complex process. For example, Charging Infrastructure Availability may influence consumers' perceived convenience or reduce their concerns about using an electric vehicle. Environmental Awareness may influence attitudes toward sustainable transportation, which may then influence Purchase Decision.

Future studies could therefore introduce mediating variables to examine how the relationships occur. For example, perceived value, consumer attitude, perceived risk, or trust could be tested as mediators between the independent variables and Purchase Decision.

Moderating variables could also be considered. The influence of Charging Infrastructure Availability may be different between consumers who live in different areas. Similarly, the influence of Perceived Technological Luxury may differ depending on age, income, consumer innovativeness, or previous experience with advanced technology.

Another recommendation for future research is to compare different types of consumers. Consumers who already own or have used an electric vehicle may have different perceptions from consumers who have never experienced one. Existing users may evaluate charging infrastructure based on actual experience, while potential consumers may rely more heavily on assumptions or information from external sources.

Future research could therefore separate respondents into groups based on their experience with electric vehicles. This may provide a clearer understanding of whether the factors influencing Purchase Decision are different between experienced and inexperienced consumers.

Future studies could also consider using a longitudinal research design. The electric vehicle market is still developing, and consumer perceptions may change over time. Charging infrastructure may become more widely available, new technologies may be introduced, and consumer familiarity with electric vehicles may increase.

As these conditions change, the importance of different factors may also change. For example, Charging Infrastructure Availability may become less of a concern if charging facilities become widely accessible and consumers become more familiar with electric vehicle ownership. On the other hand, technological features may become more important as manufacturers compete to differentiate their products.

A longitudinal study could provide useful insights into how consumer attitudes and Purchase Decisions change as the market develops. This would allow researchers to move beyond a single point of observation and examine the development of electric vehicle adoption over time.

Finally, future research may benefit from combining quantitative and qualitative methods. The quantitative approach used in this study is useful for examining the statistical relationships between variables. However, qualitative methods such as interviews or focus group discussions could provide a deeper understanding of why consumers hold particular perceptions.

For example, qualitative research could explore what specific technological features make consumers perceive an electric vehicle as luxurious or advanced. It could also investigate what concerns consumers have regarding charging and why some environmentally aware consumers may still decide not to purchase an electric vehicle.

Combining quantitative and qualitative approaches may provide a more complete understanding of consumer behavior. Quantitative analysis can identify whether

relationships exist and how strong they are, while qualitative research can provide additional explanations regarding the experiences, motivations, and concerns behind those relationships.

Overall, the limitations of this study should not reduce the contribution of the findings but should instead be viewed as opportunities for further research. This study provides evidence that Charging Infrastructure Availability, Environmental Awareness, and Perceived Technological Luxury are all relevant to consumers' Purchase Decision toward electric vehicles in Jakarta. At the same time, the remaining unexplained variance and the limitations related to geographical scope and research design indicate that there is still substantial room to further develop the understanding of electric vehicle consumer behavior.

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