

**UNVEILING FACTORS TO INCREASE ELECTRIC
VEHICLE ADOPTION THROUGH GREEN
BANKING IN INDONESIA**

A Thesis

**Submitted to the Master's Study Program of Finance in
Sustainable Finance at the Faculty of Economics and Business in
partial fulfillment of the requirements for the degree of**

Master of Finance in Sustainable Finance (M.Fin.)



by:

Abdurrahman Faqih Mukhlish

03222310001

UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

DEPOK

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ABSTRACT

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The electric vehicle population in Indonesia remains significantly below the government's targets aimed at reducing carbon emissions. This study seeks to identify factors that could enhance the adoption of electric vehicles in Indonesia, thereby accelerating their growth. Using a qualitative approach, the research explores these factors, which are analyzed through thematic analysis. The findings reveal seven crucial factors necessary for expanding the electric vehicle population in Indonesia: ownership costs, functionality, vehicle identity, policies and regulations, environmental impact, facilities and services, and motivations. Challenges and expectations, as well as green financing from banks and multi-finance for electric vehicles, are also examined. This study concludes that the role of green banking financing for electric vehicles will follow the readiness and maturity of the electric vehicle ecosystem itself. Additionally, based on the data analysis, the study offers several recommendations to promote electric vehicle growth, including continuing subsidies and tax incentives, developing and maintaining infrastructure, nurturing the electric vehicle ecosystem, innovating to reduce prices, increasing literacy and awareness, and providing access to competitive and attractive financing options for the community. This research concludes that improving the understanding and management of these factors can significantly boost electric vehicle adoption.

Keywords: *Electric Vehicle, Factors, Green Financing, Qualitative, and Thematic Analysis.*

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ABBREVIATION DIRECTORY

AR	: <i>Annual Report</i>
BBNKB	: <i>Bea Balik Nama Kendaraan Bermotor (Motor Vehicle Transfer Tax)</i>
BCA	: <i>Bank Central Asia</i>
BJB	: <i>Bank Jabar Banten</i>
BNI	: <i>Bank Negara Indonesia</i>
BRI	: <i>Bank Rakyat Indonesia</i>
BSI	: <i>Bank Syariah Indonesia</i>
CBU	: <i>Completely Built Up</i>
CKD	: <i>Completely Knocked Down</i>
COP	: <i>Conference of Parties</i>
EV	: <i>Electric Vehicle</i>
FOMO	: <i>Fear of Missing Out</i>
GAIKINDO	: <i>Gabungan Industri Kendaraan Bermotor Indonesia (Association of Indonesian Automotive Industries)</i>
ICE	: <i>Internal Combustion Engines</i>
MPV	: <i>Multi-Purpose Vehicle</i>
NDC	: <i>Nationally Determined Contribution</i>
OJK	: <i>Otoritas Jasa Keuangan (Indonesia Financial Service Authority)</i>
PKB	: <i>Pajak Kendaraan Bermotor (Motor Vehicle Tax)</i>
PLN	: <i>Perusahaan Listrik Negara (State Electricity Company)</i>
PPN	: <i>Pajak Pertambahan Nilai (Value Added Tax)</i>
PPnBM	: <i>Pajak Penjualan Barang Mewah (Luxurious Goods Sale Tax)</i>
SME	: <i>Small-Medium Enterprise</i>
SPKLU	: <i>Stasiun Pengisian Kendaraan Listrik Umum (Public Charging Station)</i>
SR	: <i>Sustainability Report</i>
SUV	: <i>Sport Utility Vehicle</i>
TKDN	: <i>Tingkat Komponen Dalam Negeri (Local Content Level)</i>
UNFCCC	: <i>United Nations Framework Convention on Climate Change</i>

CHAPTER I

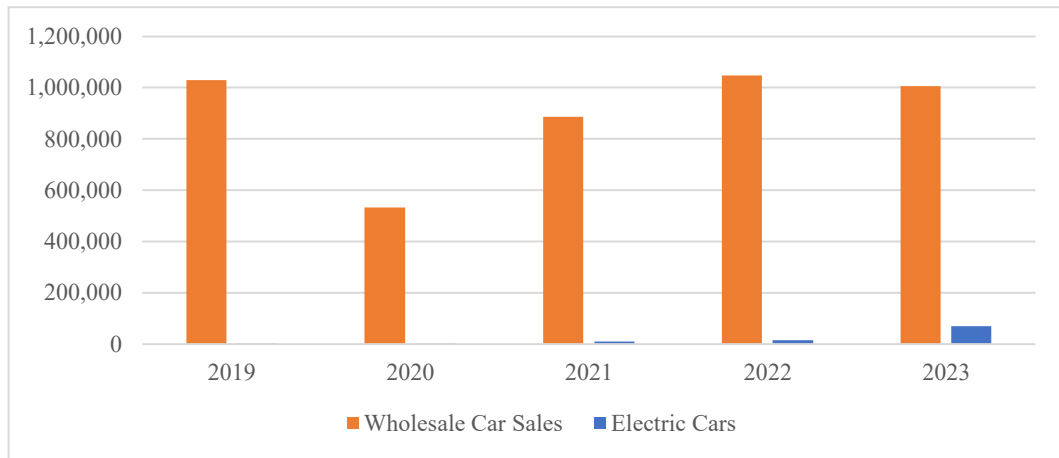
INTRODUCTION

1.1. Background

The background of this research is associated with several critical points. First and foremost, Indonesia's electric vehicle (EV) population remains significantly below the government's 2030 target of 2 million units. Moreover, this issue is closely tied to the broader objective of reducing carbon emissions, with the transportation sector being a substantial contributor. Additionally, enhancing electric vehicle adoption necessitates a comprehensive understanding of the driving forces, barriers, and opportunities involved. Furthermore, an aspect that has been less examined in previous studies is the influence of green financing provided by banks and multi-finance institutions in facilitating electric vehicle acquisitions. The adoption of electric vehicles is closely connected to sustainable finance, a crucial part of efforts to lower carbon emissions and shift toward a green economy. Through green financing, financial institutions help increase public access to electric vehicles, which can become part of a sustainable investment portfolio aligned with environment, social, and governance (ESG) principles.

Sales of fossil fuel vehicles continue to lead the overall figures for vehicle sales in Indonesia. Figure 1.1. shows the data. This poses a challenge to the significant goal of achieving net zero emissions by 2060, as set by the Indonesian government (Badan Riset dan Inovasi Nasional, 2022). Conventional vehicles, including motorbikes, private cars, public transport, buses, trucks, and containers for various goods, continue to be the prevalent mode of transportation on Indonesian roads. It's common to witness harmful, colored smoke emanating from these vehicles, which harms public health and the environment. Economic growth, rising mobility demands, lower vehicle prices, and accessible financing options make it easier for consumers to purchase fossil fuel-powered vehicles. Additionally, improvements in infrastructure, especially roads across both urban and rural areas, contribute to this ease of access. Consequently, this situation will likely lead to increased pollution and emissions from conventional vehicles.

Figure 1.1 Conventional and Electric Car Sales Data from 2019 - 2023



Source: The Association of Indonesia Automotive Industry (Gaikindo)

Conventional vehicles, also known as internal combustion engines (ICE), account for 70% of the air pollution in major cities (Kusminingrum & Gunawan, 2008). As sales of these conventional vehicles continue to rise yearly, air quality is deteriorating further. This poor air quality negatively affects public health. It contributes to rising global temperatures, leading to various disasters such as increasing sea levels, melting ice caps at the North and South Poles, and heat waves. These environmental issues affect several industrial sectors, including agriculture, fisheries, tourism, and water resources. To combat this issue, it is crucial to decrease air pollution and the emissions from conventional vehicles by transitioning from fossil fuel-powered vehicles to electric vehicles.

ICE vehicles rely heavily on fossil fuel energy. Due to insufficient domestic supply, Indonesia imports energy abroad (Ministry of Environment and Forestry, 2018). The Handbook of Energy & Economic Statistics of Indonesia (HEESI) 2023 reports that the transportation sector accounts for 38,49% of total energy consumption. Annually, over 448 million Barrels of Oil Equivalent (BOE) are used for transportation, and more than 26 million kiloliters of refined products are imported (Ministry of Energy and Mineral Resources Republic of Indonesia, 2023).

This data indicates that Indonesia must expend more to satisfy its energy consumption for transportation by importing from various countries. In general, an increase in the production and sales of conventional vehicles corresponds to a higher budget for fossil fuel purchases. Consequently, Indonesia will likely experience rising levels of air pollution and carbon emissions.

Various methods exist to reduce carbon emissions. The main approach involves replacing traditional energy sources like coal with renewable options such as solar, wind, hydroelectric, biomass, and geothermal energy. A second approach is shifting from fossil fuel-powered vehicles to more eco-friendly electric vehicles.

The responsibility of transitioning to renewable energy mainly falls on the government, as it has the authority and resources to start such projects. At the same time, the community also plays a key role in lowering carbon emissions by adopting electric vehicles. However, this shift requires active participation from both the government and the automotive industry. Actions like offering tax incentives for electric vehicle purchases, developing proper infrastructure, and ensuring vehicles are safe, affordable, and accessible are essential.

Environmentally friendly vehicles have been entering the Indonesian market for several years. According to data from the Association of Indonesian Automotive Industries (Gaikindo) reported by Pahlevi (2022), 25 Plug-in Hybrid Vehicles (PHEV) and 787 Hybrid Vehicles (HEV) were sold in 2019. PHEV and HEV are semi-electric vehicles that combine traditional combustion engines with battery power, mainly in cars. In 2020, Battery Electric Vehicles (BEV), which run purely on batteries, saw 125 units sold, increasing to 687 units in 2021. The year 2022 saw significant growth in BEV sales, with Ahdiat (2023) noting that 10,327 units were sold in 2022, followed by 17,006 units in 2023 (Ahdiat, 2024). Despite this impressive annual growth, these figures are still low compared to sales of conventional vehicles.

The data shows that Indonesia has high wholesale numbers for conventional vehicles. These figures might increase further unless proactive measures are taken to promote electric vehicle adoption across different regions. According to Stanford (n.d.), over 90% of transportation depends on fossil fuels, contributing to 15% of global GHG emissions. There is a clear gap between electric vehicle sales and the government's goals. Therefore, strategies to align electric vehicle sales with these objectives need to be improved and re-evaluated.

1.2. Problem Statement

The uptake of electric vehicles remains limited in various regions, from major cities to smaller communities. This limitation arises due to several challenges, including insufficient infrastructure (Maghfiroh et al., 2021), elevated costs (Veza et al., 2022), expensive components (Gaikindo, 2020), existing policies (Utami et al., 2020), and prevailing attitudes and norms (Gunawan et al., 2022). Apart from these factors, attractive

green financing support and schemes are still scarce to support purchasing electric vehicles. It is essential to conduct a study to understand the specific requirements of governments, financial institutions, and society at large to incorporate electric vehicles into both personal and public transportation effectively.

The limited adoption of electric vehicles (EVs) across various regions presents a significant concern, especially given that the transportation sector constitutes a major contributor to greenhouse gas emissions and climate change. Vehicles powered by fossil fuels play a substantial role in exacerbating global warming, which leads to rising global temperatures, the melting of ice caps, and an increase in the frequency of extreme weather events, such as hurricanes and floods. It is imperative to address this issue, as emphasized in the Paris Agreement, which seeks to restrict global temperature increases to between 1.5 and 2 degrees Celsius to prevent catastrophic environmental consequences.

The transition to electric vehicles (EVs) presents a strategic solution to Indonesia, considering the associated environmental impacts; however, various challenges, including insufficient infrastructure, elevated costs, and regulatory constraints, impede progress. Additionally, the absence of adequate green financing schemes further exacerbates the sluggish adoption of EVs. A thorough study is imperative to examine the collaborative roles of governments, financial institutions, and society in overcoming these obstacles and facilitating a transition to EVs within both personal and public transportation frameworks. This transition aims to reduce carbon emissions and align with the goals of global climate initiatives.

1.3 Purpose of the Study

This study delineates two primary objectives. Firstly, it aims to investigate the challenges, opportunities, and factors that may enhance the probability of purchasing electric vehicles. Secondly, it aspires to comprehensively examine the role of banks and green banking financing in facilitating the acquisition of electric vehicles.

This analysis aims to educate the public on the importance of electric vehicles and the present challenges and opportunities. It also provides actionable suggestions for the Government, banks and multi-finance industry to encourage electric vehicle adoption. The goal is to decrease carbon emissions and safeguard the climate, which is essential for achieving the Net Zero Emission 2060 mission.

1.4. Research Question

To support the process and results of the research, three research questions are needed, namely:

1. What are the factors, challenges, and expectations in adopting electric vehicles in Indonesia?
2. What is the role of banks and multi-finance companies in increasing electric vehicle adoption in Indonesia?

1.5. Research Gap

Numerous studies have emerged since the introduction of electric vehicles in Indonesia. These investigations delve into the challenges and opportunities related to electric vehicles, public attitude and behaviors, and relevant policies and their impacts. Most studies are conducted nationally, employing qualitative and quantitative methods to derive general insights. Some, however, focus primarily on major cities like Jakarta. In addition, many previous studies were conducted when electric vehicles had just entered the Indonesian market. The current landscape has evolved significantly regarding pricing, market segmentation, brands, infrastructure, and other factors. Furthermore, previous studies do not emphasize green banking financing for electric vehicles. Here are the specifics:

- Several studies (Rizki et al., 2024; Veza et al., 2022; Putra et al., 2024; Huda et al., 2019; Khairani et al., 2022; Candra, 2022; Dinanta et al., 2023; Pirmana et al., 2023; Heryana et al., 2021; Siahaan et al., 2021) explored challenges and opportunities faced by electric vehicles but do not include green banking financing as the challenges or opportunity to enhance the market of electric vehicles.
- Studies conducted by (Febransyah, 2021; Gunawan et al., 2022; Utami et al., 2020; Maghfiroh et al., 2021; Kresnanto & Putri, 2024; Nugroho & Widiyanto, 2024; Amiruddin et al., 2024; Sasongko et al., 2024; Belgiawan et al., 2024; Hasudungan, 2023; Prasetyo, 2019; Saputra, 2023) summarize the Indonesian people's acceptance and intentions to purchase electric vehicles, both from behavioral and non-behavioral factors but most of the scope is at the national level and do not relate them with banking sector as one of people's behavior to purchase vehicles.
- Other studies related to Green Banking Financing conducted by (Syaifudin et al., 2015; Kartiko et al., 2024; Cahyadin et al., 2019; Tumbaleka & Handogo, 2024; Budiasa, 2019; Handayani et al., 2020; Setyowati, 2020) analyzed the role of Green Banking Financing in

Indonesia. However, studies did not connect electric vehicle financing as one of the green approaches to reducing emissions.

1.6. Research Objectives

Based on what was conveyed in the previous introduction and problem statement, this research has several objectives:

1. Discover the views of the public and chosen parties on electric vehicles, including their challenges and expectations. This objective is linked to the first question by exploring their perspective toward EVs.
2. Examine how the financial sector finances electric vehicles through a Green Financing program and analyze the preferences for selecting a bank to secure financing for their electric vehicle purchases. This objective is related to the second question.

1.7. Relevance of the Study

This study explores gaps in the literature concerning electric vehicles and public perceptions associated with them. The author notes that further investigation is critical to understanding electric vehicles and the factors that motivate their purchase and acceptance. Most Indonesian research has primarily utilized quantitative methods, indicating a significant need for qualitative research to delve deeper into these issues. This research predominantly uses qualitative data to evaluate how the public views electric vehicles.

This study aims to provide policymakers and the electric vehicle industry with guidance on necessary actions to enhance electric vehicle sales and accelerate their adoption.

Additionally, this research aims to investigate developments within the banking sector related to green financing, particularly in financing for electric vehicles. Green Financing has emerged as a significant approach to addressing global warming and climate change by aiming to reduce greenhouse gas emissions and achieve Net Zero emissions. However, practices in this arena require improvement, notably through enhancing public awareness of the role of green finance and developing more appealing and competitive schemes to empower consumers to purchase eco-friendly products.

1.8. Thesis Limitations

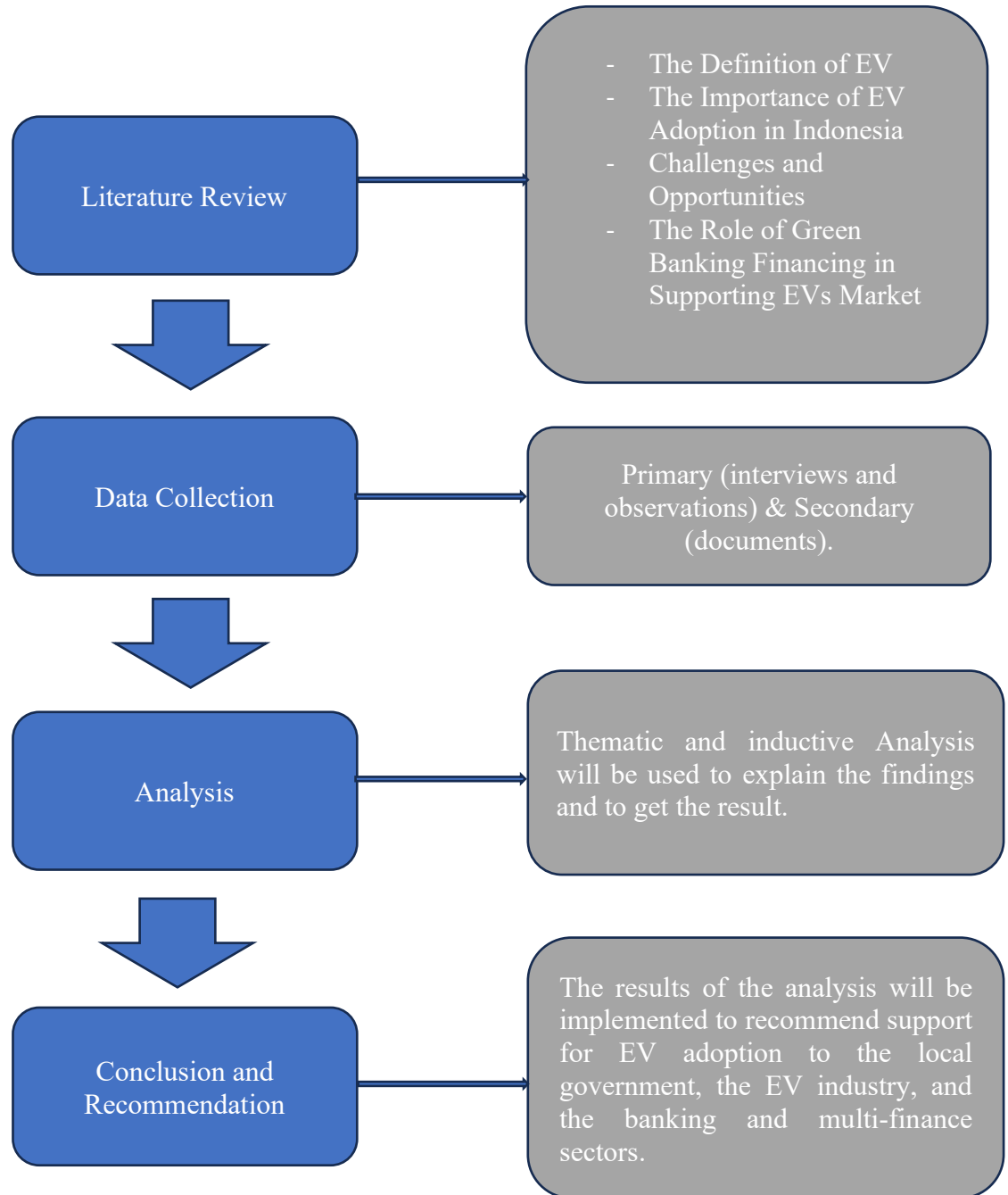
Table 1.1 Scope and Limitations

Aspect	Scope	Limitation
Group Target	The group of the research comprises owners of conventional and electric vehicles, the local government, representatives from EV industry, and representatives from banking and multi-finance sector.	Results will not cover all types of group and parties in Indonesia.
Geographical Emphasis	The Republic of Indonesia	The study doesn't cover other countries.
Implementation Focus	The main research explorations are the chosen parties perspective on electric vehicles and the current intervention from the society, industry, local government, banking and multi-finance sector to support the adoption.	Other explorations will not be examined .
Timeframe	The time of the study is only within data collection period.	The research may not capture the long-term effects of the result.

Source: Processed by the Author

1.9. Research Framework

Figure 1.2 Research Framework



Source: Designed by the Author

CHAPTER II

LITERATURE REVIEW

2.1. The Theory of Risk and Opportunity

The financial literature frequently addresses the concept of risk; however, it does not provide a universally accepted definition risk (Holton, 2019). Aven (2010) underscores the multifaceted nature of risk, which is frequently associated with the potential for loss within the engineering domain. Risk is defined through various perspectives, highlighting its complexity and importance. It can denote the uncertainty surrounding outcomes resulting from certain actions and events, a scenario wherein elements of human value are jeopardized, or the unpredictable repercussions of activities that involve valued components. Moreover, risk encompasses a combination of events or consequences along with their inherent uncertainties, or it may be articulated as the unpredictability and severity of prospective outcomes. Collectively, these definitions illuminate the dual dimensions of uncertainty and consequence that are critical to understanding risk.

Risk within the management domain encompasses a broad spectrum of considerations, including technical analysis, the formulation and implementation of management systems, and the intricacies of human behavior. A comprehensive risk management program considers not only safety but also environmental ramifications, economic repercussions, and more abstract concepts such as corporate reputation (Sutton, 2015).

Royston (2025) clarified that in marketing, “risk” signifies the possible failures or losses that might occur throughout activities from production to promotion. Risks can include incorrect pricing, unsuitable audience engagement channels, and distribution delays. Additionally, negative feedback on social media, employee turnover, and changes in operations can heighten marketing challenges. Collectively, these factors highlight the inherent complexities and uncertainties in marketing efforts.

Meanwhile, numerous studies have frequently associated the concept of risk with opportunity. The fundamental definition of opportunity refers to favorable external factors that may confer a competitive advantage on an organization (Kenton, 2024). According to IRIS Intelligence (2003), opportunity is defined as “an uncertainty that could have a positive effect leading to benefits or rewards,” which closely resembles the traditional definition of “risk.” In fact, opportunity can be perceived as a distinct variant of risk; specifically, a risk with negative consequences is termed a threat, whereas a risk with positive ramifications is identified as an opportunity.

In the domain of management, a sales opportunity constitutes a vital process that enables organizations to recognize and leverage prospective sales possibilities. This entails the monitoring, analysis, and administration of customer interactions throughout the sales cycle (Dealhub, 2024).

In connection with this study, risks and opportunities are assessed for each stakeholder involved in the research, specifically customers, automotive industry professionals, government entities, and the banking sector. The pertinent aspects of each stakeholder can be used to evaluate the risks and opportunities and enhance the purchase and adoption of electric vehicles in Indonesia.

2.2. The Theory of Planned Behaviour (TPB)

The Theory of Planned Behavior, devised by social psychologist Icek Ajzen (1991), constitutes a behavioral model that examines the determinants influencing behavioral intentions and, consequently, provides an explanation for behavior (Knowles, 2024)

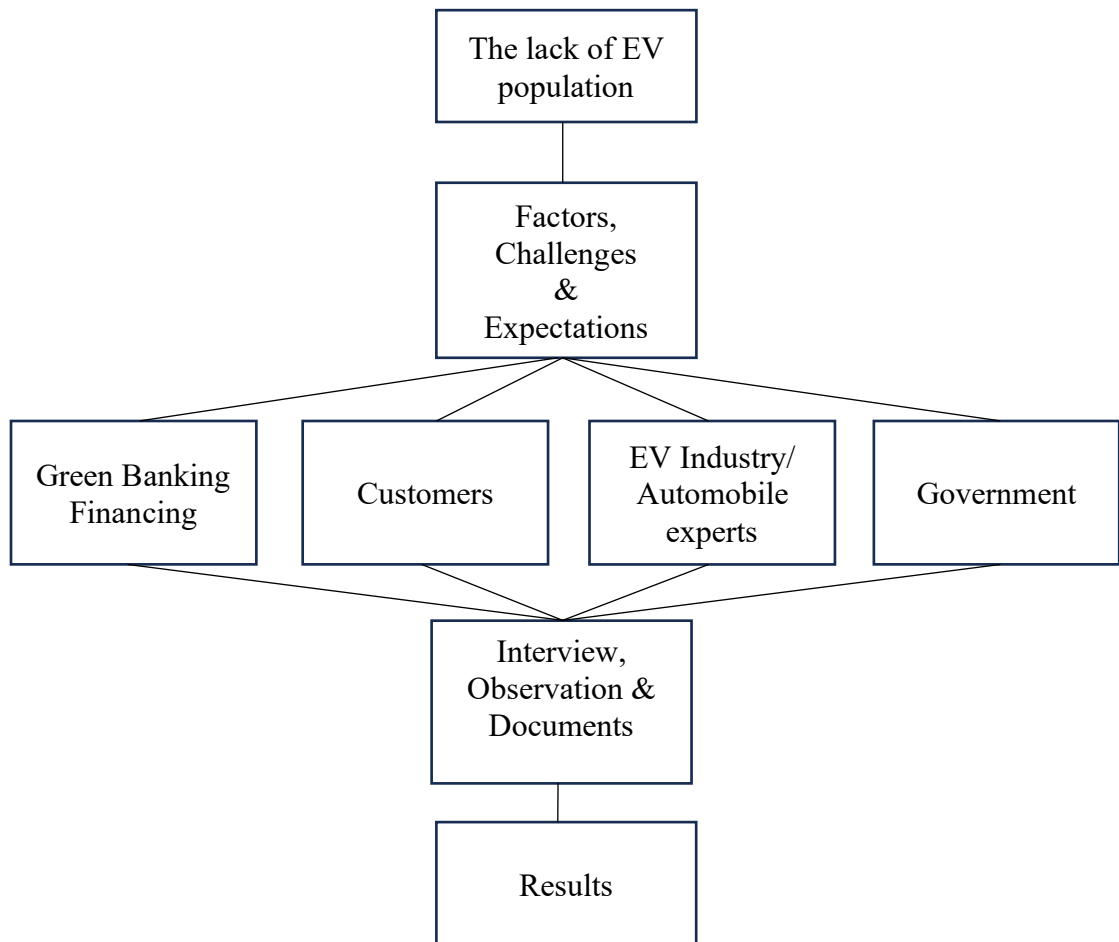
This theory is employed in this research to quantify and elucidate the intention of an individual or organization to undertake a specific behavior, based on three primary components: Attitude, Subjective Norm, and Perceived Behavioral Control or Self-Efficacy. Attitude in this theory relates to an individual's mindset and intent toward a specific behavior; subjective norm refers to the social influence from others or societal roles that can affect individual behavior; and perceived behavioral control or self-efficacy is understood as how easy or difficult it is for an individual or organization to perform a behavior, (Mark et al., 2011).

In this study, 'Attitude' will assess how much a group of participants views the use of electric vehicles as positive or negative. 'Subjective Norm' will evaluate social pressure to adopt electric vehicles. Meanwhile, 'Perceived Behavioral Control or Self-Efficacy' will examine the groups' perceived ability to adopt electric vehicles. This theoretical framework offers a clearer understanding of how attitudes, social and personal influences, and external factors impact electric vehicle adoption. Such insights are essential for identifying, analyzing, and developing recommendations related to the main drivers of electric vehicle adoption.

2.3. Conceptual Framework

In research, the conceptual framework is essential as an analytical model, mapping, structure, or organization of concepts that represent and describe complex ideas, phenomena, or systems in a simplified manner. Sometimes, a conceptual framework is also referred to as a theoretical framework or theoretical model (Clark et al., 2023).

Figure 2.1 Conceptual Framework of the Study



Source: Designed by the Author

2.4. The Definition of Electric Vehicles

Many parties have defined electric vehicles. The U.S. Department of Energy (n.d.) defines an electric vehicle as powered by a rechargeable battery with at least four kilowatt-hours, retaining its original powertrain, weighing 8,500 pounds or less, and capable of speeds of at least 65 mph. Nanaki (2021) defines electric vehicles as those powered by electric or traction motors, either solely or combined with other propulsion systems.

Electric vehicles (EVs) run on electricity instead of traditional fuels, promoting cleaner, sustainable transportation. The four main types are Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEVs), Fuel Cell Electric Vehicles (FCEVs), and Non-Plug-in Hybrid Electric Vehicles (HEVs), each offering benefits like reduced emissions and improved energy efficiency, supporting global climate goals (Australian Renewable Energy Agency, 2024).

Based on the definitions above, electric vehicles (Evs) are interpreted in various ways, with some definitions focusing on their reliance on battery power and the exclusion of fossil fuels, specifically BEVs and FCEVs, to reduce greenhouse gas emissions. However, due to BEV limitations like inadequate infrastructure, long charging times, and high costs, alternatives like HEVs and PHEVs, which still use fossil fuels, are also classified as Evs.

The four categories of electric vehicles—namely Battery Electric Vehicles (BEV), Fuel Cell Electric Vehicles (FCEV), Plug-in Hybrid Electric Vehicles (PHEV), and Hybrid Electric Vehicles (HEV)—are predominantly found in automobiles, particularly in private vehicles.

According to (Sudjoko, 2021), Battery-Electric Vehicles (BEVs) are vehicles entirely powered by electricity. They do not feature an internal combustion engine and do not utilize any form of liquid fuel. Typically, BEVs employ substantial battery packs to ensure adequate vehicle autonomy.

A Plug-in Hybrid Electric Vehicle (PHEV) operates utilizing two powertrains: a conventional internal combustion engine and an electric battery system. This vehicle is capable of functioning on either battery power or traditional fuel sources, such as gasoline. Within the context of PHEV technology, the vehicle's battery possesses the ability to be recharged. Conversely, a Hybrid Electric Vehicle (HEV) incorporates both a conventional engine and an electric battery; however, the battery in an HEV does not have the capability for external recharging, as seen in PHEV or Battery Electric Vehicle (BEV) systems. Instead, battery charging in an HEV occurs through regenerative braking mechanisms. (Dipo Star Finance, 2024).

Fuel Cell Electric Vehicles (FCEVs) use a fuel cell system that utilizes hydrogen or methanol as their fuel source. This system generates electricity, which subsequently charges the battery, which functions as an energy storage mechanism to provide the necessary driving power (Pistoia, 2010).

Among the various definitions provided, the author selects the one describing electric vehicles as powered solely by batteries without any reliance on fossil fuels (BEV).

This choice is rooted in the primary goal of electric vehicles: to decrease emissions generated by traditional vehicles.

The author's selection of the defined term cannot be dissociated from various limitations in other electric vehicles. Plug-in Hybrid Electric Vehicles (PHEVs) enable owners to alternate between battery power and fossil fuels; however, a growing number of users increasingly depend on fossil fuels (Basudewa, 2022). In contrast to traditional Electric Vehicles (Evs), Hybrid Electric Vehicles (HEVs) incorporate batteries into the engine assembly to enhance range but rely exclusively on fossil fuels, resulting in minimal emissions reductions. Fuel Cell Electric Vehicles (FCEVs) share the objective of reducing emissions with Battery Electric Vehicles (BEVs) yet encounter considerable developmental challenges, with no mass production observed in the current market in Indonesia.

Building upon the preceding definitions and discussions, this paper will emphasize the land Battery Electric Vehicles (BEVs) category, focusing on automobiles typically procured and utilized by individuals and the general populace.

2.5. History and Current Development of Electric Vehicles in Indonesia

2.5.1. History of Electric Vehicles Development and Projects in Indonesia

Before the mass marketing of electric vehicles in 2020, the history of modern electric vehicles in Indonesia commenced in the 2010s, with origins tracing back to the New Order era (Yuniarto, 2023).

According to Ridwan Arief Subekti in his work titled "Opportunities and Challenges for Developing National Electric Cars" (2014), the Indonesian Institute of Sciences (LIPI), through its Electrical Power and Mechatronics Research Center, has been conducting research on electric vehicles since the early 2000s. This research has led to the design of prototype vehicles tailored for specific purposes, including golf carts, ambulances, and patrol units. The outcomes of these developments were presented to President Susilo Bambang Yudhoyono in 2005; however, the absence of interested investors halted the project. Notably, development resources were available, exemplified by the contributions of PT Nipress, which embarked on creating specialized batteries for electric vehicles. Regrettably, subsequent development continued only on a limited scale within academic institutions. Significant momentum for national electric vehicles re-emerged in 2011 under the leadership of Dahlan Iskan, who served as the Minister of State-Owned Enterprises, thus revitalizing enthusiasm for this initiative (Fakhriansyah, 2023).

In 2013, the Indonesian Institute of Sciences (LIPI) reintroduced a vehicle known as Hevina. This initiative constitutes one of the pioneering efforts to revive the development of electric vehicles in Indonesia. Hevina has been engineered as an environmentally sustainable electric automobile, capable of traveling up to 150 kilometers on a single battery charge. This vehicle is anticipated to serve as an operational asset to facilitate activities in Jakarta, thereby exemplifying the potential of technology in mitigating carbon emissions in urban environments (Hatta 2013).

In addition to institutions such as LIPI, Dahlan Iskan established a team called 'Putera Petir' (the Sons of Lightning) to undertake research and the production of electric vehicles. The members of this team include Dasep Ahmadi, Ravi Desai, Danet Suryatama, Ricky Elson, and Mario Rivaldi (Fakhriansyah, 2023).

Dasep Ahmadi, an alumnus of the Bandung Technological Institute (ITB), has developed an electric vehicle called Evina. Evina is conceived as a city car, equipped with a 20 kW electric motor and a 21 kWh lithium-ion battery, enabling it to achieve a travel range of up to 135 kilometers. This vehicle is designed to be environmentally sustainable and efficient; however, its development remains constrained to a limited scale (Imran 2022).

In addition to Dasep, Mr. Ravi Desai, the President Director of Great Asia Link, plays a pivotal role in advancing electric vehicles in Indonesia through a national electric vehicle initiative known as Elvi. The primary objective of this project is to facilitate the transition to clean energy and diminish reliance on fossil fuels by fostering the local production of electric vehicles. The company has formulated plans to commence mass production of 100 units of Elvi electric cars starting in May 2013, following an investment of up to IDR 100 billion in establishing a production facility located in Surabaya, East Java. This facility possesses a production capacity of up to 20,000 vehicles annually. The Elvi electric car incorporates approximately 40% local components, with the remaining parts sourced from Korea and Japan. Great Asia Link aims to enhance local content to 50% within five years, underscoring its dedication to achieving technological self-sufficiency and advancing the national electric vehicle sector (Liputan6, 2013).

Alongside the three cars, a notable subject that gained significant media attention in the same year was the Tucuxi electric vehicle, a groundbreaking creation developed by Danet Suryatama, an esteemed automotive specialist who obtained his degrees from the Sepuluh Nopember Institute of Technology (ITS) and the University of Michigan. This initiative exemplifies local endeavors in the design of high-performance luxury electric vehicles. The Tucuxi is equipped with a 200 kW electric motor, equivalent to a

conventional 3,000 cc engine, and is powered by a Lithium Iron Phosphate (LiFePO₄) battery. With a battery capacity of 61 kWh, this automobile can travel up to 321 km and achieve a maximum speed of 200 km/h. It is reported that the charging time for this vehicle may vary from 3 to 5 hours. In terms of aesthetics, the vehicle is predominantly red, featuring an interior design inspired by Ferrari styles. The development process was conducted at the “Kupu-kupu Malam Auto Fashion” modification workshop in Yogyakarta, collaborating with local experts (Azhar, 2023).

The figure who also went viral at that time was Ricky Elson, a prominent Indonesian technology expert who has significantly contributed to advancing national electric vehicles, specifically the Selo and Ghendis models. The Selo is crafted in the aesthetic of a sports car, while the Ghendis is designed as a seven-passenger SUV featuring sliding doors. Prototypes of these vehicles were showcased at the 2013 APEC Summit in Bali, demonstrating the potential of environmentally friendly technology developed by the country’s innovators. Despite garnering international acclaim, the development of this electric vehicle faces considerable challenges, particularly regarding financing and mass production (Santoso, 2021).

The last ‘Putera Petir’ is Mario Rivaldi. He is recognized as a pivotal figure in advancing electric motorcycles in Indonesia. Known as an expert in electric motorcycle technology, he played a significant role in the development project led by Dahlan Iskan, the former Minister of State-Owned Enterprises (BUMN). Mario Rivaldi, who possesses an educational background from esteemed institutions in England and Germany, has successfully designed and manufactured an electric motorcycle under the Abyor brand. This motorcycle has not only passed the certification examination but is also patented, with its quality asserted to be superior to that of imported electric motorcycles from China. (Piriliawito, 2012).

The trajectory of a project is often fraught with challenges. None of the aforementioned projects advanced to the production phase. Bureaucratic complexities represent the primary impediment to the delays experienced by this initiative. Each entity within the Lightning Sons failed to collaborate on the development of electric vehicles, opting instead to pursue independent research endeavors. Compounding these challenges was the identification of Dasep Ahmadi as a suspect in corruption related to the Evina project (Fakhriansyah, 2023). Furthermore, the lack of regulations specifically designed to support electric vehicles further hinders the transformation process (Veza et al., 2022).

2.5.2. Indonesian Government Targets, Strategies, and Policies Related to Electric Vehicles

Government policies are crucial for encouraging the adoption of electric vehicles within the automotive sector and among consumers. This initiative is important because the government aims to reach Net Zero Emissions by 2060.

Net Zero Emission refers to the equilibrium where carbon emissions released into the atmosphere match those absorbed or removed, helping to stabilize the Earth's temperature. An increase in temperature can lead to catastrophic events that threaten humans and nature. Many nations worldwide have set goals to achieve net zero emissions. For instance, amid rapid industrial growth, China aims for Net Zero Emissions by 2050 (The World Economic Forum, 2022). The Indonesian government must act to meet this crucial goal while also pursuing its vision of achieving Indonesia Emas (Golden Indonesia) by 2045. This vision will undoubtedly involve a diverse array of sectors, including Micro, Small, and Medium Enterprises (MSMEs) and Large Enterprises (LEs), both of which can generate greenhouse gas (GHG) emissions through their activities. To support this transition, collaboration between the government and society is essential, beginning with straightforward actions like substituting plastic products for eco-friendly options, planting trees, conserving forests, and promoting the use of electric vehicles.

Table 2.1 Indonesian Government Targets and Strategies Regarding Electric Vehicles

No	Ministries and Stakeholders	Targets	Strategies
1.	The Ministry of Transportation	Automotive industry commit to purchase 13 million units of electric motorcycle and 2 million units of electric cars. All vehicles should be based on battery by 2060.	Building the electric vehicles industry ecosystem. Building public charging station facilities. Creating battery and its recycling industry ecosystem.

2.	The Ministry of Energy and Natural Resources	Energy efficiency of 29,79 million BOE and 7,23 million reduction of CO2. Building 48.118 units of public charging station and 196.179 units of swap stations.	Developing supply chain of battery for Evs both upstream and downstream. Producing the battery components. Cooperating with PLN as the public electricity company.
3.	The Ministry of Finance	Collective collaboration with other parties to finance Evs facilities and Infrastructure.	Provide several fiscal incentives, including custom tax, luxurious tax, and value added tax.
4.	The Ministry of Industry	20% use of BEV by 2025.	Increasing Domestic Component Level (TKDN) up to 80%
5.	PLN (The State Electricity Company)	Building public charging station together with several ministries. Ensuring electricity supply for private charging station.	Provide special prices for new installations or additional electrical power at the homes of electric vehicle owners. PLN customers will get a 30 percent discount on electricity rates from 22.00 PM – 05.00 AM (Western Indonesia Time) for

			use of home charging. PLN has partnered with the State-Owned Bank Association (Himbara) to support financing for the purchase of electric vehicles and the construction of public charging station.
6.	PERTAMINA (The State Oil and Gas Mining Company)	Collaborations with the government to reach Net Zero Emission by 2060.	Fasten the energy transition with the Government, Gojek, Indonesia Battery Corporation (IBC), Gesits, and Electrum. Expanding Battery Swap Stations in Pertamina Green Energy Stations (GES).

Source: Processed by the Author

In terms of providing tax incentives, the Indonesian government has issued Presidential Regulation Number 55 of 2019 concerning the Acceleration of the Battery-Based Electric Motor Vehicle Program for Road Transportation. Several other regulations also provide support to increase people's purchasing power for electric vehicles (Maghfirah et al., 2021):

1. Ministerial Regulation, Ministry of Home Affairs Number 8 Year 2020, regarding Basic Calculation of the Imposition of Motor Vehicle Tax and Motor Vehicle Transfer Fee

2. Ministerial Regulation, Ministry of Transportation Number 44 Year 2020, regarding Physical Type Testing of Motorized Vehicles with Motor Propulsion Using Electric Motors.
3. Ministerial Regulation, Ministry of Energy and Mineral Resources (MEMR) Number 13 Year 2020, regarding Provision of Electricity Charging Infrastructure for Battery-Based Electric Motor Vehicles.
4. Ministerial Regulation, Ministry of Industry Number 27 Year 2020, regarding Specifications, Development Road Map, and Conditions for Calculation of Domestic Component Level Value for Domestic Battery Electric Vehicles.
5. Ministerial Regulation, Ministry of Industry Number 28, the Year 2020, regarding Battery-Based- Electric Motor Vehicles in Completely Decomposed and Incomplete State.

2.6. Initial Electric Vehicle Marketing in Indonesia

Following the conclusion of projects initiated by Putera Petir, the trajectory of electric vehicles in Indonesia has been significantly influenced by the introduction of an American electric car brand, specifically Tesla. The inaugural electric car officially marketed in Indonesia was the Tesla Model S, which was unveiled in 2015 by a local importer. This vehicle represented a pivotal advancement in the adoption of electric vehicles within the domestic market (Prayogi, 2015). The pricing of the Tesla Model S varied upon its release, with the most economical model priced at approximately IDR 2.2 billion and the premium variant priced at around IDR 4.4 billion (Auksi 2023).

Following a period of dominance by Tesla in the Indonesian market, the Chinese automotive manufacturer DFSK launched its first electric vehicle, the DFSK Glory E3, in the year 2019. The DFSK Glory E3, classified as a Sport Utility Vehicle (SUV), represents DFSK's commitment to promoting environmentally friendly mobility solutions within Indonesia. This vehicle is equipped with a 52.56 kWh battery, which boasts a maximum range of 405 kilometers on a single full charge. Additionally, the fast charging technology enables the battery to charge from 20% to 80% in approximately 30 minutes, while a full slow charge can take up to 8 hours. The vehicle provides three distinct driving modes, Normal, Eco, and Sport, and is powered by a 120 kW electric motor that delivers 300 Nm of torque, ensuring a dynamic and comfortable driving experience (DFSK, 2019; Tempo, 2019). Furthermore, alongside DFSK, the luxury automobile manufacturer BMW has also introduced its electric variant by launching the BMW i3s, which carries a remarkable price tag of approximately IDR 1.299 billion (Biondi 2019).

In 2020, several prominent automotive brands, including Hyundai and Lexus, expanded their lineup of electric vehicles in Indonesia. Hyundai Motors Indonesia launched and promoted two electric car models. The first model is the Hyundai Ioniq EV, an electric sedan priced at IDR 600 million. The second model is the Hyundai Kona Electric, an SUV priced marginally higher than the Hyundai Ioniq EV. On the other hand, from the standpoint of Toyota Astra Motor, the Lexus UX 300e represents their initial foray into the electric vehicle market, with an introductory price of IDR 1.245 billion (Jemadu & Nainggolan, 2020). In addition to these three electric vehicles, several hybrid models have emerged, including the Nissan Kicks, Toyota Prius PHEV, and Corolla Cross Hybrid (Liputan6, 2020), facilitating the transition towards electric mobility. However, in terms of sales performance for 2020, no remarkable figures were reported, with only 125 electric vehicles sold (Lidwina, 2020).

In 2021, there was a notable increase in electric car purchases due to the growing array of brands promoting electric vehicles and the comparatively lower price points relative to previous years. According to Gaikindo (2022), 687 electric cars were sold during that year. Moreover, several brands made their debut in the market with new offerings, including DFSK, which introduced the Gelora E, and MG Motor Indonesia, which launched the MG 5 EV (Rohman, 2021).

In 2022, Indonesia's electric vehicle market attracted substantial interest by introducing two prominent models: the Hyundai Ioniq 5 and the Wuling Air EV. The Hyundai Ioniq 5, manufactured locally at Hyundai's facility in Cikarang, West Java, showcases contemporary design innovations and sophisticated technologies, including rapid-charging battery systems (Putri, 2022). This vehicle is aimed at the upper-middle market segment, with pricing commencing at approximately IDR 718 million, thereby positioning it as one of the top-selling premium electric vehicles in Indonesia for that year. The Hyundai Ioniq 5, currently under public scrutiny, achieved sales of 1,829 units throughout 2022 (Fansuri 2023).

Meanwhile, the Wuling Air EV emerges as a viable electric vehicle option, offering a more affordable price point at IDR 250 million. This automobile integrates compact and futuristic design elements. It is engineered to promote environmentally sustainable urban mobility (Rahmadi, 2024). 8,053 units of the Wuling Air EV were successfully sold during 2022 (Nurhuda, 2023). This statistic reflects a notable consumer interest in compact electric vehicles that are comparatively priced lower than their counterparts.

Several electric vehicles were introduced in 2022, in addition to the Hyundai Ioniq 5 and the Wuling Air EV. The MINI Electric costs approximately IDR 945 million, while the BMW iX and i4 cost IDR 2.26 billion and IDR 1.99 billion, respectively. The Toyota bZ4X costs IDR 1.19 billion (Putri, 2022).

Introducing new electric vehicle brands is experiencing a consistent increase each year. In 2023, Priyantoro and Kurniawan (2023) summarized the most recent electric vehicles launched during that period. From the esteemed German manufacturer, the luxury automotive brand Mercedes-Benz unveiled the EQS SUV, which is priced at IDR 3.59 billion; the EQS Edition1 at IDR 3.95 billion; the EQA SUV at IDR 1.54 billion; and the EQB at IDR 1.56 billion.

In addition to Mercedes-Benz, the esteemed French automobile manufacturer Citroen has also introduced its electric vehicle variant, the eC3, with a price tag of IDR 395 million. Volvo, representing Sweden in the automotive sector, similarly markets the C40 Recharge, which is priced at IDR 1.36 billion. Kia, a competitor from South Korea, has launched the EV6 GT and EV9 GT-Line, priced at IDR 1.7 billion and 2 billion, respectively. Furthermore, Hyundai has enriched its electric vehicle offerings by introducing the Ioniq 5 Bule Link, priced between IDR 760 million and 870 million, and the Ioniq 6, which retails at IDR 1.2 billion. The Japanese manufacturer Lexus has expanded its electric vehicle portfolio with the launch of the RZ 450e, priced at IDR 2.29 billion (Priyantoro & Kurniawan, 2023).

Alongside the manufacturers mentioned, China stands out as one of the top electric vehicle producers, having broadened its product range with several new models. Morris Garage has introduced the MG4 EV, which is available for IDR 650 million (Priyantoro & Kurniawan, 2023), while Neta has launched the V variant for IDR 379 million. Additionally, Wuling has come out with the Air EV Lite, priced at IDR 189 million, and Binguo presents a model that ranges from IDR 350 to 400 million. Lastly, Seres has unveiled the E1, also available for 189 million IDR (Rohman, 2023).

The journey of electric vehicles in 2023 has revealed a significant array of options concerning brands, segments, and pricing. Certain brands maintain relatively high price points, while others offer moderate pricing. Furthermore, several Chinese electric vehicle manufacturers provide the most economical choices. This diversity of options has a favorable impact on the growth of electric vehicles in Indonesia. During this period, 17,058 electric vehicles were sold (Putra, 2024).

2.7. Current Electric Vehicles Progress and Growth in Indonesia

The preceding five years of marketing electric vehicles have yielded commendable results. Furthermore, national electric vehicle sales increased in 2024. According to data from the Association of Indonesian Automotive Industries (GAIKINDO), wholesale sales of electric vehicles in the country (from manufacturer to dealer) totaled 23,045 units from January to August 2024 (Gaikindo, 2024).

Several new electric car manufacturers emerged in that year. The brands, segments, and prices of electric cars are increasingly diverse, which is good news for consumers who can buy electric cars according to their desires and needs. The electric car market in 2024 provides enough flexibility for people to adopt it more quickly.

Details of the 2024 electric car line-up can be seen in the table below:

Table 2.2 Electric Vehicles in 2024

No	Factory	Brand	Segment	Price
1	BMW	i4 eDrive35	Sedan	IDR 1,8 Billion
2		i5 eDrive40	Sedan	IDR 2,2 Billion
3		i5 M60 xDrive	Sedan	IDR 2,8 Billion
4		i7 xDrive60 Gran Lusso	Sedan	IDR 3,3 Billion
5		iX1 eDrive (20/40/60)	SUV	IDR 1,3 — 2,6 Billion
6	BYD	Atto 3	SUV	IDR 515 Million
7		Dolphin	Hatchback	IDR 425 Million
8		M6	MPV	IDR 379 Million
9		Seal Premium/Performance	Sedan	IDR 629 — 719 Million
10	Chery	Omoda E5/E5Pure	SUV	IDR 419 — 488 Million
11	Citroen	eC3	SUV	IDR 377 Million
12	DFSK	Gelora Electric E-BV/E-MB	VAN	IDR 350 — 399 Million
13		E1 B-Type/L-Type	Hatchback	IDR 189 — 219 Million
14	GAC	Aion Y Plus	SUV	IDR 415 Million
15		Aion ES	Sedan	IDR 386 Million
16		Aion V	SUV	IDR 499 Million

17		Aion Hyptech HT	SUV	IDR 680 Million
18		Ioniq 5	SUV	IDR 713 — 902 Million
19	Hyundai	Ioniq 5 N	SUV	IDR 1,3 Billion
20		Ioniq 6 Signature	SUV	IDR 1,2 Billion
21		Kona Electric	SUV	IDR 499 — 590 Million
22		EV6 GT/GT-Line	SUV	IDR 1,35 — 1,8 Billion
23	Kia	EV9 GT-Line	SUV	IDR 1,9 Billion
24		EV9 Earth	SUV	IDR 1,55 Billion
25	Lexus	UX 300e	SUV	IDR 1,5 Billion
26		RZ BEV	SUV	IDR 2,3 Billion
27	Maxus	Mifa 9	MPV	IDR 1,4 Billion
28		4 EV Magnify i-Smart	SUV	IDR 395 Million
29	MG	ZS EV	SUV	IDR 413 Million
30		Cyberster	Sedan	IDR 1,68 Billion
31		EQA 250 Electric Line	SUV	IDR 1,54 Billion
32		EQB 250 Progressive Line	SUV	IDR 1,65 Billion
33		EQE 350+ Electric Art Line	Sedan	IDR 2,3 Billion
34	Mercedes-Benz	EQE 350 4Matic	SUV	IDR 2,85 Billion
35		EQS 450+ Electric Art Line	Sedan	IDR 2,99 Billion
36		EQS 450+ AMG Line	Sedan	IDR 3,5 Billion
37		EQS 450+ Edition One	Sedan	IDR 3,95 Billion
38		EQS 450+ 4Matic AMG Line	SUV	IDR 3,65 Billion
39	Mini	Mini Electric	Hatchback	IDR 1 Billion
40		V	SUV	IDR 317 Million
41	Neta	V-II	SUV	IDR 299 Million
42		X	SUV	IDR 460 Million
43	Nissan	Leaf One Tone/Two Tone	Hatchback	IDR 738 — 740 Million
44	Renault	Twizy	Micro Car	IDR 409 Million
45		Zoe	Hatchback	IDR 888 Million

46		Megane E-Tech	SUV	IDR 1,37 Billion
47	Tesla	Model 3	Sedan	IDR 1,5 Billion
48		Model Y	SUV	IDR 2 Billion
49	Toyota	bZ4X Panoramic Roof	SUV	IDR 1,2 Billion
50	Volvo	EX30 Plus	SUV	IDR 890 Million
51		EX30 Ultra	SUV	IDR 1,16 Billion
52		C40	SUV	IDR 1,36 Billion
53		XC40	SUV	IDR 1,31 Billion
54	Vin Fast	VF e34	SUV	IDR 273 Million
55		VF 5	SUV	IDR 218 Million
56	Wuling	Air EV	Hatchback	IDR 224 — 275 Million
57		Air EV Lite	Hatchback	IDR 179 -190 Million
58		Binguo EV	Hatchback	IDR 317 — 327 Million
59		Cloud EV	Hatchback	IDR 398 Million

Source: Sulistianti, 2024; CNN Indonesia, 2024; Ihsan, 2024

The data presented show that the Sport Utility Vehicle (SUV) segment continues to dominate the electric vehicle market in Indonesia. In terms of pricing, Chinese electric vehicles are generally more competitively priced than their Japanese, Korean, and notably European counterparts.

In the year 2024, Chinese manufacturers prominently dominate the Indonesian electric vehicle market. During the first quarter, the Chery Omoda E5 emerged as the best-selling vehicle. This was followed by the Wuling Binguo EV, Wuling Cloud EV, MG4 EV, Hyundai Ioniq, Wuling Air EV, and NG ZS EV (Yonatan, 2024). However, by the conclusion of 2024, BYD has come to monopolize the market. The public is particularly aware of the BYD M6, which is recognized as Indonesia's first electric Multipurpose Vehicle (MPV). This heightened attention is attributed to the vehicle's competitively priced offering, especially when juxtaposed against traditional vehicles, which are generally less expensive than electric options. The sales performance of BYD is further bolstered by the presence of models such as the BYD Seal, Atto3, and Dolphin, which rank among the top 15 best-selling electric vehicles. In addition to BYD, other Chinese manufacturers,

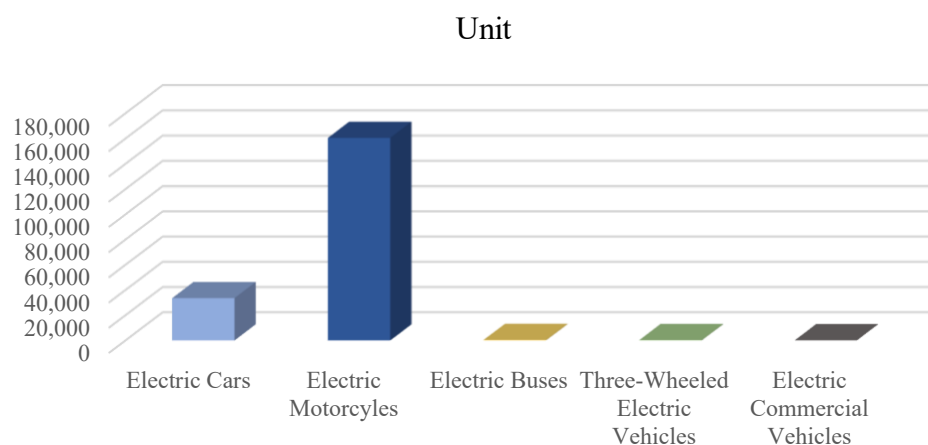
including Wuling, Chery, and MG, remain popular choices among consumers. Specifically for Wuling, the availability of Micro Hatchbacks like the Wuling Air EV serves as a viable solution for consumers seeking compact and affordable electric vehicles. Moreover, Korean manufacturers, particularly Hyundai, are increasingly considered as alternative options following the Chinese electric vehicle surge. The Hyundai Ioniq 5 and Kona continue to be pivotal in sales performance. Conversely, manufacturers from Japan, Europe, and America have yet to achieve substantial sales figures in comparison (Rayanti, 2024).

The data as mentioned earlier show that Japanese manufacturers, including Toyota, Honda, Suzuki, Nissan, and Mitsubishi, have exhibited minimal penetration in the production of electric vehicles. Gaikindo (2020) mentioned that conventional automobile brands from Japan accounted for 98.21% of the automotive market in 2017 in Indonesia.

In addition to private automobiles, electric motorcycles have also undergone substantial advancements. Sales of electric motorcycles in Indonesia for the year 2024 exhibited a notable increase, with 60,857 electric motorcycles acquired by the public as of September 2024. This increase can be attributed to the ongoing governmental policies promoting electric vehicle adoption through subsidy initiatives (Gartiwa, 2024).

The Ministry of Industry has indicated that approximately 195,084 electric vehicles are circulating on Indonesian roads. This growth in the number of electric vehicles aligns with the acceleration program aimed at developing the electric vehicle ecosystem in Indonesia. The population of electric vehicles was only 41,743 units in 2022. This figure rose to 116,438 units in 2023 and reached 195,084 by November 2024 (Nurhuda, 2024).

Figure 2.2 Electric Vehicles Population in Indonesia (November 2024)



Source: Nurhuda, 2024

2.8. Challenges and Opportunities of Electric Vehicles in Indonesia

2.8.1. Challenges of Electric Vehicles in Indonesia

The sales of electric vehicles in Indonesia have experienced growth since their inception in the market. This development is undoubtedly advantageous for various stakeholders, including vehicle owners, governmental authorities, the electric vehicle industry, and the environment. Nevertheless, the current volume of electric vehicle sales in Indonesia requires significant enhancement. Gaikindo (2020) indicated that the Indonesian government has established an ambitious objective of achieving 2 million electric cars and 13 million electric motorbikes operational on public roads, alongside the capacity to produce 600,000 electric cars annually by 2030. This target remains considerably distant from the present figure of electric vehicles expected in 2024, which is merely 195,084 units. This objective aligns with the government's aim to diminish carbon emissions by 2.7 million tons from four-wheeled or larger vehicles and by 1.1 million tons from two-wheeled vehicles in 2030.

The current prevalence of electric vehicles, which remains significantly below the established targets, faces numerous obstacles within the industry. The author provides a comprehensive summary of the various challenges associated with the adoption of electric vehicles below:

a. Young Market Age

The nascent stage of the electric vehicle market is a significant factor contributing to its limited population. Since its inception and subsequent marketing efforts, electric vehicles have been present in Indonesia for merely four years. At this embryonic phase, it is evident that a novel product necessitates adaptation to compete in the marketplace effectively. The duration required for an industry to achieve maturity varies and is influenced by numerous factors, including adaptability and technological advancement. According to Michael Porter's Classic Theory of the Industry Life Cycle, an industry progresses through four primary phases: Introduction, Growth, Maturity, and Decline. The electric vehicle sector in Indonesia has thus far only transitioned through the initial two stages: Introduction and Growth, characterized by the launch of innovative products, extensive technological adoption, rising demand, and the entry of several new participants into the industry (Sucofindo, 2024).

b. Lack of Infrastructure

The subsequent challenge originates from the infrastructure aspect. A crucial factor that facilitates the adoption of electric vehicles is the preparedness to support necessary

infrastructure. Electric vehicles represent a relatively novel concept within Indonesian society, which predominantly continues to rely on conventional vehicles. The dependence of the Indonesian populace on internal combustion engine (ICE) vehicles is inextricably linked to the availability of supporting elements for their use, beginning with fuel filling stations. A significant point highlighted in numerous prior studies is the insufficient number of public charging stations (SPKLU) in Indonesia, which constitutes a key factor contributing to the limited public interest in transitioning to electric vehicles. (Maghfiroh et al., 2021)

Current data indicates the presence of only 1,124 SPKLU units (PT PLN, 2024). In contrast, the government aims for the total number of electric vehicles in Indonesia to reach 15 million units by the year 2030. To support this goal, it is essential to establish at least 25,000 Direct Current Fast Charging (DCFC) units as well as over 290,000 Level 2 charging ports (Veza et al., 2022). This reveals a significant disparity between the existing conditions and the government's objectives.

In contrast to conventional vehicles, which require a brief refueling period, electric vehicles require a longer duration to travel a certain distance. It is challenging to envision a battery charging scheme during specific occasions, such as the homecoming celebrations associated with the Eid al-Fitr holiday, extended school vacations, end-of-year holidays, and other high-traffic holiday periods.

Public charging stations play a critical role in the adoption of electric vehicles. A recent survey conducted by McKinsey & Company reveals unexpected findings: 46% of American electric vehicle owners desire to revert to fossil-fuel vehicles. This research further shows that 46% of U.S. respondents who possess an electric vehicle are likely to opt for an internal combustion engine (ICE) vehicle as their next automobile acquisition, with charging challenges identified as the primary barrier to a transition towards all-electric vehicles. Additionally, the survey highlighted that 29% of electric vehicle owners globally may consider switching to petrol vehicles, citing similar concerns. Notably, electric vehicle owners seem to experience buyer's remorse, attributed to inadequate public charging infrastructure, elevated ownership costs, and limitations on long-distance travel. According to the findings, 35% of respondents cited insufficient charging infrastructure as a reason for their inclination to switch. Concurrently, overall ownership costs and implications for long-distance journeys were also significant concerns, with 21% of respondents worldwide asserting that they would never transition to an electric vehicle (Moss, 2024).

The United States is among the nations with the highest number of electric vehicle users globally (Alexander, 2023). Electric vehicle manufacturers such as Tesla have

emerged as emblematic of the nation's shift from internal combustion engine vehicles to electric vehicles. Nevertheless, there are various other factors contributing to the public's acceptance of the purchase and utilization of electric vehicles in this country. Any nation aiming to adopt electric vehicles should take these factors into account. The accessibility of charging stations constitutes one of the primary reasons for the convenience experienced by electric vehicle users.

c. Few Segments Options

Another challenge confronted by electric vehicles pertains to the availability of market segments and pricing structures. Based on the segment and car brand data presented in Table 2.2.3.1, the market for electric cars is predominantly occupied by Sport Utility Vehicles (SUVs). Meanwhile, the segments that are most favored by private car consumers in Indonesia are Multipurpose Vehicles (MPVs) and Low-Cost Green Cars (LCGCs). The Association of Indonesian Automotive Industries (GAIKINDO) has indicated that the type of vehicle currently exhibiting the highest sales in the Indonesian market is the multipurpose MPV or 4×2 variant. This vehicle category frequently constitutes 50 to 55 percent of total national car sales. This figure surpasses other variants, including Affordable Energy Efficient Motor Vehicles (KBH2) or LCGCs, which account for 10 to 15 percent, pickups at 12 to 17 percent, and trucks at 8 to 10 percent. However, it is essential to note that not all MPVs necessarily achieve strong sales in the market; an additional crucial requirement for a vehicle to succeed is that the selling price must be below IDR 300 million. According to GAIKINDO data, sales of MPVs targeting the lower middle segment and first-time buyers have reached 25 percent of total car sales. This represents the most lucrative market segment within the automotive industry in Indonesia (Gaikindo, 2024).

The representation of the Multi-Purpose Vehicle (MPV) segment within the electric vehicle market remains markedly limited. Presently, there are only two MPV models included in the 2024 electric vehicle lineup: the BYD M6 and the Maxus Mifa 9. Regarding pricing, the BYD M6 presents a significantly higher likelihood of appeal to the average consumer, as its cost remains below IDR 400 million. Conversely, the Maxus Mifa 9 is priced at IDR 1.4 billion, a figure that is substantially disconnected from the projections put forth by Gaikindo. Furthermore, electric passenger vehicles priced below IDR 300 million continue to be dominated by the Wuling Air EV and DFSK Seres, both of which possess compact dimensions and accommodate only four seats. In contrast, conventional vehicles priced below IDR 200 million offer larger dimensions and typically feature seating configurations accommodating five to seven passengers.

d. Unstable Ecosystem

In addition to the challenges mentioned above, electric vehicles currently lack a robust support ecosystem in terms of services. The availability of specialized electric vehicle workshops is a concern for various stakeholders. Furthermore, electric vehicle spare parts distribution remains limited, particularly in smaller urban centers, despite being more accessible in larger cities. Vehicle owners typically prefer general repair workshops over official dealerships for servicing their vehicles once the warranty period has lapsed, primarily due to the lower service costs associated with general workshops (Sibarani, 2023). Additionally, private sector general workshops exhibit reluctance to invest in establishing dedicated electric vehicle service centers. The shortage of qualified technicians for electric vehicles and the high cost of diagnostic equipment further impede the advancement of the electric vehicle sector vehicles (Shafly, 2024; Tempo, 2023).

e. Other Challenges

Additional concerns, such as the expense associated with battery replacement, are also acknowledged by the public. A survey conducted by PwC (2023) indicated that 87% of respondents expressed considerable apprehension regarding the costs involved in battery replacement. Furthermore, participants noted numerous after-sales issues that could prove burdensome, including spare parts costs, unforeseen expenses, and the elevated costs of routine maintenance beyond the financial implications of battery replacement. Utami et al. (2020) identified several other factors considered significant by the Indonesian populace when evaluating the adoption of electric vehicles. These factors included technology, driving range, power, battery recharging duration, safety, battery lifespan, battery security, and recharging processes costs.

2.9. Opportunities for Electric Vehicles in Indonesia

The proliferation of electric vehicles in Indonesia continues to encounter various challenges, indicating the need for further improvement. Nonetheless, their presence also generates positive outcomes and numerous opportunities.

As the fourth most populous country globally, Indonesia presents a significant demand for electric vehicles (Evs). According to a report by YCP Solidiance, there are three opportunities that can be leveraged by the Indonesian government and prospective electric vehicle stakeholders (Veza et al., 2022):

1. The advantages of personal vehicle ownership are noteworthy. In Indonesia, owning a personal vehicle is associated with increased convenience and flexibility, as well as serving as a symbol of economic status. As mentioned by

Gaikindo (2024), despite various influencing factors, individuals consistently express a desire to possess their own vehicle. Not only does personal vehicle ownership enhance the mobility of both passengers and goods, but it also represents an individual's social status and success within society. These factors drive the persistent demand for automobiles, even in challenging economic circumstances sluggish.

2. The increase in population and the emergence of a prosperous middle class are notable trends. The rising inclination towards environmentally conscious living among Indonesia's affluent middle class may facilitate the adoption of electric vehicles (Evs). Additionally, a significant opportunity that could enhance the EV market in Indonesia is the affordability of these vehicles electricity.
3. The cost of electricity in Indonesia is among the lowest globally, estimated at 0.1 USD per kilowatt-hour (kWh). In comparison, the price of petroleum in Indonesia stands at 0.9 USD per liter (L). Considering the travel efficiency of electric vehicles (Evs) at 4.8 km per kWh compared to fuel-based vehicles, which achieve 20 km per liter, the operating cost for Evs amounts to 0.02 USD per kilometer, whereas fuel-based vehicles incur a cost of 0.045 USD per kilometer. Therefore, it can be concluded that operating electric vehicles in Indonesia is more economical than that of fuel-based vehicles.

In addition to the earlier opportunities, investments by various electric vehicle manufacturers in Indonesia are expected to yield numerous advantages for the electric vehicle ecosystem and bolster economic growth within the nation. The Government of Indonesia has enacted a protectionist measure by instituting the Local Content Requirement (LCR) policy (Herdenta et al., 2023). The provisions of this policy mandate that multinational corporations utilize a specified percentage of domestically produced materials and components, thereby safeguarding the interests of the domestic industry (Dewanti, 2012). The average LCR value is projected to increase to 50% by 2024 (Baheramsyah 2020).

Hyundai Motor Indonesia (HMID) is dedicated to investing 9.8 billion US dollars, equivalent to IDR 142 trillion, in establishing an integrated national electric vehicle manufacturing facility. This investment encompasses 850 million US dollars allocated for mining operations, 4 billion US dollars for processing, 1.8 billion US dollars for precursors and cathodes, and 3.2 billion US dollars for battery cell production (Kurniawan & Ferdian, 2024)

In addition to Hyundai, the Chinese electric vehicle manufacturer BYD has announced its intention to invest IDR 11.7 trillion in Indonesia to produce 150,000 electric vehicles annually. Furthermore, BYD seeks to establish facilities dedicated to research, development, after-sales services, and training (Ivani, 2024). The Vietnamese electric vehicle manufacturer is also prepared to invest 1.2 billion US dollars to construct its manufacturing facility (EV Indonesia, 2024). PT SAIC Motor Indonesia, which acts as the holding company for the Chinese automotive brands Wuling and Morris Garages (MG), has similarly allocated IDR 10 trillion to the development of its factory in Cikarang, with 60 percent of this investment earmarked for the production of electric vehicles (Nanda & Ferdian, 2023)

In addition to manufacturers from Korea and China, VinFast, an electric vehicle manufacturer based in Vietnam, has set an investment target of IDR 18.7 trillion in Indonesia to construct its factory (Nurdifa, 2024). An initial investment of IDR 3.1 trillion has already been made (Dananjaya & Maulana, 2024). As of December 2024, its vehicles have officially joined the ranks of the electric taxi fleets operating in Indonesia, managed by PT Xanh SM Green and Smart Mobility (Ramadhoni, 2024).

The production of nationally manufactured electric motorbikes under the Gesits brand is set to be expanded by PT Wika Industri Manufaktur (WIMA), which serves as both the manufacturer and principal of the Gesits electric motorbike. In addition, WIMA will establish a new factory in Bali (Satria & Maulana, 2021). The production of components for electric vehicles, such as batteries, will further bolster the electric vehicle ecosystem. The Minister of Investment and Head of the Investment Coordinating Board (BKPM), Bahlil Lahadalia, announced that the inaugural 10 Gigawatt (GW) car battery factory, operated by PT Hyundai LG Indonesia (HLI), is scheduled to commence production in April 2024. This electric car battery factory will possess a capacity of 10 GW and is currently initiating the construction of a second 10 Gigawatt factory. Meanwhile, the cathode and smelter facilities are expected to commence operations this year (Pratomo 2024).

The influx of foreign investment aimed at establishing manufacturing 31 Indonesiies within the country, coupled with enhanced local content policies, is anticipated to render electric vehicles and their components more affordable. An increase in the number of new market participants is expected to facilitate the wider adoption of electric vehicles, as competitive dynamics within the market intensify. Furthermore, the substantial growth in investment towards electric vehicles and their components, along with the emergence of

new electric vehicle manufacturers, is likely to generate additional employment opportunities for the Indonesian workforce people.

2.10. Previous Research on Determinants of Customer Intentions to Adopt Electric Vehicles in Indonesia

Several studies have ascertained Indonesia's inclination to purchase and utilize electric vehicles. Electric vehicles are anticipated to emerge as one of the primary solutions to mitigate air pollution and the reliance on fossil fuels, which generate carbon emissions. The adoption of electric vehicles remains relatively nascent in Indonesia, with their population significantly trailing behind conventional vehicles powered by internal combustion engines (ICE) utilizing fossil fuels. The increase in the acquisition of ICE vehicles unquestionably catalyzes escalating carbon emissions and air pollution, both of which adversely affect the rise in geothermal heat and are detrimental to the environment, public health, industry, and other sectors. In addition to environmental concerns, fuel consumption in Indonesia poses financial burdens on the nation. Following 2004, there has been a marked increase in fossil fuel consumption in Indonesia. According to Bank Indonesia, the average gasoline fuel subsidy from 2008 to 2019 was 9.67%, which is detrimental to the financial health of the state (Gunawan et al., 2022)

The emergence of electric vehicles represents a significant challenge in the quest to reduce carbon emissions. A portion of the population remains hesitant to embrace and utilize these vehicles due to various factors, including cost, maintenance, durability, and existing infrastructure (Wirabrata, 2021). Furthermore, there is persistent skepticism among the Indonesian populace concerning the batteries employed in electric vehicles and their travel distances (Ajanovic & Haas, 2018). Additional issues stem from the insufficient number of public charging stations, the high production costs, and extended battery charging times (Subekti et al., 2021). Nonetheless, there remains a strong interest among the Indonesian people in acquiring vehicles, presenting an opportunity for the government to promote electric vehicles to the populace (Gunawan et al., 2022).

Gunawan (2022) illustrates that a variety of perspectives and considerations exist regarding the adoption of electric vehicles. These include performance expectancy, effort expectancy, hedonic motivation, price value, habitual behavior, perceived functional and financial risk, perceived time risk, and perceived social risk. The findings of this study conclude that certain perspectives positively influence the intention to utilize electric vehicles, while others exert a negative effect influence.

Electric vehicles have yet to attain a competitive standing against conventional vehicles. His research procured multiple perspectives concerning the acquisition of an electric vehicle. The first perspective pertains to emotions, encompassing both personal and social feelings. The second perspective addresses the cost of ownership, which includes the vehicle price, fuel expenses, maintenance costs, and resale value. The third perspective involves functionality, covering performance, comfort, safety, seating capacity, and luggage capacity. The fourth perspective relates to identity, incorporating brand reputation, aesthetic appeal, and technological advancement. The findings from this research indicate that personal and social-emotional factors are the most significant among the aspects examined. However, the study was rather exclusive, as the researchers exclusively invited senior-level executives and individuals in higher positions across various industries in Indonesia, given the limited prevalence of electric vehicle ownership in the country during the timeframe of the research conducted (Febransyah, 2021).

Other factors, such as fiscal policies, which consist of government subsidies and tax incentives (Belgiawan et al., 2024; Bau et al., 2024; Nugoroho & Widyanto, 2024; Saputra & Andajani, 2023; Hasudungan et al., 2023; Kornel et al., 2024) and supporting regulations for EV industries (Sasongko et al., 2024), also influence the intention to use electric vehicles.

2.11. Green Finance and Green Banking Financing

Financing acts as a crucial driver for nearly all human activities. It enables individuals and companies to bring their visions to life. The advantages of financing are numerous, especially in enhancing the economies of communities, companies, and whole countries. However, it also significantly contributes to rising global temperatures. Financing is a critical factor in industrial and personal activities that can negatively impact the environment. As a result, various initiatives have emerged in response to the increasing heat of the planet. Numerous conferences and collaborations are being organized to uphold reasonable temperature limits for the Earth.

A way the world demonstrates its dedication to environmental preservation is through Green Finance. This term describes financial activities aimed at enhancing and supporting projects that yield positive environmental results. It includes organized strategies focused on tackling ecological issues and promoting sustainability (World Economic Forum, 2020).

Green finance presents a multitude of benefits that connect economic growth with environmental sustainability. It encourages the use of eco-friendly technologies and the

creation of sustainable infrastructure, especially in developing nations where governments are directing private investments into local green markets to enhance long-term resource management and competitiveness. Moreover, green finance offers a strategic edge, as the shift towards low-carbon initiatives becomes increasingly critical due to stricter environmental regulations. Companies that incorporate green finance into their practices can boost their portfolio value by appealing to environmentally conscious investors and consumers. Additionally, governments that advocate for green finance strengthen economic resilience by nurturing renewable energy sectors and exploring new industries with considerable job creation potential. Collectively, these benefits highlight the importance of green finance in promoting both environmental advancement and economic growth (Kelkar, 2024).

Banking plays a crucial role in financing. Within green financing, banks offer various products such as Climate Financing, Impact Investing, Green Loans, Green Sukuk, and Green Credit Cards. Regarding individual funding, loans are among the most common offerings from conventional banks (Martucci, 2023), with Mortgages, Auto Loans, and Personal Loans being the most sought-after by their customers (Peterson, 2024). In contrast, Islamic banks do not define loans as conventional banks do. Instead, they utilize a concept known as "*Murabahah*," where Islamic banks do not earn from upfront interest. Instead, they purchase an item (such as a house or vehicle) from a seller and sell it to the customer at a markup.

Conventional and Islamic banks offer different vehicle financing options. The author has noted a scarcity of data on how banks finance electric vehicles. With the rise of electric vehicles in Indonesia, banks have an opportunity to encourage and support consumer purchases through tailored financing solutions. However, it remains unclear whether banks will take advantage of this opportunity or continue focusing on financing fossil fuel vehicles.

2.12. Green Banking Financing for Electric Vehicles

Financing is a significant component of vehicle acquisition, encompassing both conventional and electric models. The Indonesia Financial Service Authority (OJK) has indicated that the financing provided by banks and multi-finance institutions for motor vehicles amounted to IDR 400.57 trillion as of May 2024, reflecting an annual increase of 13.02 percent (Santia, 2024).

The OJK reported that electric vehicle financing in August 2024 amounted to IDR 29 trillion (Damayanti, 2024). This figure is notably significant considering the

development of electric vehicle sales over the past five years. A growing enthusiasm among the Indonesian population for electric vehicles is evidenced by a substantial increase of 128.34% in electric car credit. Nevertheless, the author has encountered a scarcity of data from banks in Indonesia concerning motor vehicle financing, particularly for electric vehicles (Puspandini, 2024).

Multiple financial institutions, including conventional and Sharia banks, have disclosed their financing figures for motor vehicles. According to Mandiri Utama Finance (2024), Bank Mandiri reported that total consumer financing in 2023 reached IDR 17.07 trillion, reflecting an increase of 11.67% compared to IDR 15.29 trillion in 2022. The number of vehicles financed by the company in 2023 amounted to 268,805 units, a rise of 5.04% from 255,898 units the previous year. This expansion is aligned with Mandiri Utama Finance's office network growth throughout 2023. Furthermore, Bank Mandiri has allocated credit for electric vehicles amounting to IDR 670 billion during 2023. Additionally, Bank Mandiri is collaborating with the electric vehicle manufacturer BYD to acquire operational vehicles in 2024 (Burhan, 2023).

As of September 2024, Bank Central Asia (BCA) has disbursed motor vehicle credit totaling IDR 64.1 trillion (Mayasari, 2024). Additionally, IDR 1.5 trillion has been allocated for the financing of electric vehicles up until June 2024 (Fajri (OCV5), 2024). This amount has surpassed the total financing achieved for electric vehicles in 2023, which was IDR 1.3 trillion (BCA, 2023).

As of September 2023, BRI Finance has distributed over 250 financing packages for electric vehicles (BRI, 2023). PT BRI Multifinance Indonesia (BRI Finance) reported a significant increase in electric vehicle financing distribution in the first quarter of 2024, exhibiting an annual growth of 419%, amounting to IDR 20 billion (Sinambela & Perwitasari, 2024). In contrast, BNI's electric vehicle financing distribution, as of July 2024, reached only IDR 93.4 billion (Simamora & Sulistiowati, 2024).

Regarding Islamic banking institutions, Bank Syariah Indonesia (BSI) is a prominent leader in vehicle financing. At the outset of the year, BSI's total vehicle financing reached IDR 4.4 trillion (Oktaviano and Dewi, 2024). Within this aggregate, IDR 180 billion was explicitly designated for electric vehicle financing (Khaerunnisa, 2024).

Meanwhile, BCA Syariah is expected to provide IDR 55.5 billion for vehicle financing until mid-2024 (Fajarihza, 2024). However, the author has been unable to find relevant information and data regarding electric vehicle financing due to insufficient data and information availability.

In addition to the banks mentioned above, there is a paucity of data and information available for the author to utilize owing to the insufficient presentation of data provided by banks in Indonesia concerning electric vehicle financing.

The aforementioned data indicates that there remains a lack of significant attention from the banking sector and its business units regarding the financing of electric vehicles. This The author is concerned about this situation, particularly given that banking financing is one of the principal contributors to the advancement of the industry economy.

The initiatives undertaken by the Indonesian government to promote the adoption of electric vehicles require financial institutions to be responsive in their lending practices. Cooperative efforts with the government and strategic measures are essential for banks to effectively advocate for electric vehicles and thereby contribute to the achievement of the government's Nationally Determined Contributions (NDC) and Net Zero Emission targets.

2.13. Electric Vehicles, Nationally Determined Contribution (NDC), and Net Zero Emissions

The emergence and advancement of electric vehicles in contemporary society are inextricably linked to the environmental challenges stemming from rising global temperatures, air pollution, and the adverse effects and natural disasters that result from these issues. Various strategies and initiatives are being implemented to foster an improved environment.

Carbon emissions significantly affect global climate change and pose considerable risks to the health of living organisms. Pollutants from motor vehicles, forest fires, volcanic eruptions, and industrial activities adversely impact public health. Farooq et al. (2019) emphasized that an increase in carbon emissions leads to a notable rise in health issues. Conversely, afforestation activities yielding a negative coefficient indicate that forest growth can serve as an effective measure in mitigating health risks.

In addition to influencing health factors, carbon emissions exert several other detrimental effects, including acid rain, depletion of the ozone layer, eutrophication, ocean acidification, deforestation, soil pollution, depletion of natural resources, and disruption of ecosystems (Sakti, 2024).

The Ministry of Transportation of the Republic of Indonesia has officially reported that Indonesia is the leading contributor to global CO₂ emissions. In 2022, the country released approximately 1.3 gigatons of CO₂, of which 50.6 percent originated from the energy sector. Furthermore, over 80 percent of these emissions are attributed to

transportation modes, specifically cars and motorbikes (Kementerian Perhubungan Republik Indonesia, 2024).

Each nation that holds membership in the United Nations Framework Convention on Climate Change (UNFCCC) is obligated to undertake measures to mitigate emissions, thereby fostering an environmental equilibrium that significantly influences the sustainability and future viability of the planet. In alignment with this commitment, every member state participating in the Conference of the Parties (COP) is mandated to prepare, submit, update, and report on their Nationally Determined Contributions (NDCs).

The Conferences of the Parties (COPs) are convened under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC), a multilateral treaty established in 1992. These assemblies function as the official meetings of the Conference of the Parties (COP). During these occasions, member governments evaluate global endeavors to 37ndone the primary objective of the Paris Agreement: to restrict global warming to as close as possible to 1.5 °C above pre-industrial levels. The Parties determine methodologies for reducing greenhouse gas emissions, formulate strategies for adapting to the impacts of climate change, and address measures related to Loss and Damage, which extend financial support to vulnerable nations significantly affected by phenomena such as floods and droughts. Furthermore, they deliberate on approaches to assist countries in transitioning to greener economies and enhancing resilience against climate challenges through initiatives involving financing, technology, and capacity-building (United Nations Climate Change, n.d.).

Nationally Determined Contributions (NDCs) represent a crucial component of the Paris Agreement, pivotal in achieving its long-term goals. The Paris Agreement requires that each nation delineate and communicate its climate-related efforts beyond 2020, commonly referred to as NDCs. These contributions embody the commitments of each country to reduce national greenhouse gas emissions and adapt to the impacts of climate change. As delineated in Article 4, Paragraph 2 of the Paris Agreement, each Party must prepare, communicate, and uphold successive NDCs they aspire to achieve. Furthermore, Parties are obligated to pursue domestic mitigation measures to 37ndone the goals established in their respective contributions (United Nations Climate Change, n.d.).

As a member nation, Indonesia is committed to the reduction of greenhouse gas emissions and the mitigation of climate change. In pursuit of this objective, Indonesia has implemented various initiatives, one of which is the moratorium policy on forest clearing, as outlined in Presidential Instruction No. 5 of 2019, which addresses the Termination of New Permits and the Enhancement of Governance regarding Primary Natural Forests and

Peatlands. This policy aims to preserve the integrity of primary natural forests and peatlands while concurrently reducing emissions attributable to deforestation and forest degradation (WRI Indonesia, 2021).

Indonesia exemplifies a progressive climate commitment through systematic updates to its climate documentation. In 2021, it published its Updated NDC, aiming for a 29% emission reduction domestically, potentially rising to 41% with international support. This includes objectives in energy, forestry, and land use, especially with international aid, and sets adaptation targets for resilience and landscape preservation. In 2022, Indonesia increased its ambitions with the ENDC, targeting a 31.89% reduction domestically, up to 43.2% with support. The 2024 Second NDC will align with the goal of limiting global warming to 1.5°C, revising emission baselines based on 2019 GHG levels, adding sectors like oceans, and addressing Loss and Damage, Adaptation, and Just Transition.

Indonesia, as a participant in the UN Framework Convention on Climate Change (UNFCCC) and the Conference of the Parties (COP), has committed to achieving net zero emissions by the year 2060. Net zero emissions refer to establishing an overall equilibrium between the greenhouse gas emissions produced and those removed from the atmosphere (Climate Council, 2023). The concept of net zero is significant as it represents the condition under which global warming ceases, particularly regarding carbon dioxide (CO₂). The Paris Agreement emphasizes the necessity for net zero emissions (Net Zero Oxford University, n.d.).

Consequently, the Indonesian government has actively encouraged policies aimed at facilitating the adoption of electric vehicles. The widespread implementation of electric vehicles represents a strategic initiative to significantly reduce carbon emissions, thereby contributing to the attainment of Nationally Determined Contributions (NDC) as a short-to medium-term objective, and realizing the goal of Net Zero Emissions as a principal long-term aim goal.

CHAPTER III

RESEARCH METHODOLOGY

In academic research, the methodology is a critical factor in achieving the researcher's desired outcomes. This section elucidates the employed approach, data collection methods, analytical techniques, and the rationale for method selection. The methodology is chosen based on its relevance to the research problem, thereby ensuring valid, reliable, and accountable results. By applying an appropriate methodology, this research is anticipated to address the research questions and contribute significantly to the advancement of knowledge within the relevant field studied.

3.1 Overview Research Methodology

The research methodology, as articulated by Goundar (2012), constitutes a systematic approach to addressing a problem. It represents the scientific investigation of how research should be conducted. Fundamentally, the procedures researchers utilize to describe, explain, and predict phenomena are collectively called research methodology. Additionally, it is defined as examining the methods through which knowledge is acquired. Its objective is to provide a comprehensive work plan for the research undertaking research.

Traditionally, Onwuegbuzie and Leech (2005) articulated that research methodologies can be broadly categorized into qualitative and quantitative approaches, thereby creating a significant division among researchers, particularly within the social sciences. Howe (1988) and Neuman (1997) assert that the distinction between these two methodologies has been emphasized in numerous publications related to research methods. For example, Myers (2009) differentiates qualitative research as an in-depth exploration of social and cultural phenomena, concentrating on textual analysis. In contrast, quantitative research examines general trends across populations, emphasizing numerical data. Similarly, Miles and Huberman (1994) contend that qualitative research prioritizes a comprehensive examination of research issues, while Harrison (2001) posits that quantitative design offers a broader understanding of the issues under investigation (Goundar 2012).

3.2. Research Design

3.2.1. Qualitative Methodology

Qualitative research involves investigating and explaining real-world problems. Unlike quantitative research, which focuses on gathering numerical data or applying

treatments, qualitative research aims to develop hypotheses and explore quantitative data in greater depth. It gathers insights into participants' experiences, perceptions, and behaviors, emphasizing the underlying reasons rather than mere quantities. This method can be conducted as a standalone study based exclusively on qualitative data or as part of mixed-methods research that combines both qualitative and quantitative approaches to data (Tenny et al. 2017).

In a qualitative study, research design is a reflexive process occurring at every project stage. Data collection, analysis, theory development, question refinement, and validity management happen simultaneously, influencing each other. Researchers may need to adjust design decisions based on new developments or shifts in the research field, requiring a flexible, non-sequential approach. This differs from traditional methodologies in textbooks. However, qualitative research still has a design; as Yin (1994) states, "Every type of empirical research possesses an implicit, if not explicit, research design." Thus, qualitative research requires a broader understanding of design.

The research will employ an exploratory approach to comprehend the perspectives of the involved parties concerning a relatively new phenomenon, specifically electric vehicles. The study aims to ascertain their responses to electric vehicles, including their advantages, disadvantages, and the associated supporting infrastructure. This case study serves as a preliminary step to investigate the factors that will inform the outcomes of this research, including functionality, tax incentives, financing, and various other consideration factors.

3.3. Research Population

This study has five target populations:

- Conventional Vehicle Owners

Conventional vehicles in Indonesia play a crucial role in determining the extent of carbon emissions resulting from transportation. Introducing electric vehicles in Indonesia represents a novel development that the community is anticipated to embrace. Their participation in this research is imperative to ascertain their perspectives on electric vehicles, thereby facilitating the categorization of challenges and their motivations to acquire and utilize these electric alternative vehicles.

- Electric Vehicle Owners

Electric vehicles are often highlighted as a key solution to cut carbon emissions. Their purchasing and usage experiences are crucial for understanding their advantages and disadvantages, which is essential for developing their ecosystem for the future.

- **Electric Vehicle Industry and Automotive Experts**

Numerous motor vehicle manufacturers have introduced electric vehicles in Indonesia. These manufacturers come from various countries, including China, South Korea, Japan, Vietnam, Germany, France, and the United States. In addition to these manufacturers, several independent experts in the automotive sector can offer insights regarding the advancement of electric vehicles in Indonesia. Their participation in this research is crucial for identifying the industry's requirements to enhance the sales of electric vehicles in Indonesia.

- **Indonesian Government**

The advancement of electric vehicles is inextricably linked to the engagement of the Indonesian national government. The government has established objectives aimed at reducing carbon emissions in the short and medium term, such as the Nationally Determined Contributions (NDC), and in the long term, such as achieving Net Zero Emissions. The significance of the Indonesian government's role at the national level is paramount in this study, as it seeks to elucidate the regulations, policies, and strategic plans that promote the adoption of electric vehicles in Indonesia.

- **Banking and Multi-finance Industries**

The acquisition of motor vehicles, including both internal combustion engines (ICE) and electric vehicles (EV), is intrinsically linked to the role of financial institutions in providing necessary financing and the various programs and incentives offered to stimulate consumer interest in procuring private vehicles. The banking and multi finance sector's involvement in this study is crucial for assessing its level of consciousness regarding environmental concerns and the degree of its engagement in promoting electric vehicles in Indonesia.

3.4. Research Setting

This research was conducted in various locations in Indonesia, predominantly in Jakarta City and its surrounding cities, which serves as the epicenter of governmental and industrial activities. The study aimed to achieve optimal time and cost efficiency. A diverse array of populations and stakeholders was targeted to gather more precise and in-depth information, including experts from the automotive industry, representatives from the national government, professionals within the banking sector, and owners and users of private vehicles. Several factors underpinned the selection of these specific location populations:

- The electric vehicle ecosystem is developing rapidly in Jakarta and its surroundings.
- The locus of the Indonesian government remains in Jakarta and its surrounding cities.
- The primary hubs of the electric vehicle and finance industries are predominantly located in Jakarta.
- The five populations actively contribute to developing an electric vehicle ecosystem in Indonesia.

Considering these factors, this study is anticipated to yield comprehensive information and results that will enhance the likelihood of adopting electric vehicles in Indonesia.

3.5. Research Participation

There are several groups of participants involved in this research:

- Conventional Vehicle Owners

Individuals utilizing conventional vehicles play a pivotal role in identifying barriers, opportunities, and motivations for electric vehicles. The authors engaged 13 owners of conventional vehicles to gather pertinent, precise, and equitable insights.

- Electric Vehicle Owners

This study included several electric vehicle owners to gather firsthand, reliable insights into their experiences, benefits, and drawbacks of electric vehicles. Five electric vehicle owners participated in collecting the data.

- Electric Vehicle Industry and Automotive Experts

This study conducted interviews with several electric vehicle manufacturers to gather relevant, accurate, and comprehensive insights. This includes representatives from Hyundai, Chery, GAC AION, and MINI Cooper. Furthermore, independent experts from the automotive sector may also be invited to participate in the study. Their involvement is essential in exploring their perceptions of electric vehicles and identifying critical factors and strategic measures to facilitate their adoption.

- Indonesian Government

To foster the electric vehicle ecosystem, government regulations and policies must be established to facilitate the production and utilization of electric vehicles by both industry and society. In this regard, this study interviewed a representative from the Directorate of Maritime Industry, Transportation Equipment, and Defense Equipment of the Ministry of Industry. The involvement of the relevant ministry is crucial for acquiring pertinent and accurate data regarding the government's discourse and measures in support of the electric vehicle ecosystem.

- **Banking and Multi-finance Industries**

In Indonesia, various financial sectors, both conventional and sharia, typically finance motor vehicle purchases. Banks and multi-finance institutions are the primary entities involved in this financing. To achieve balanced outcomes, it is crucial to evaluate the contributions of conventional and Sharia banks, as well as multi-finance institutions, in gathering information about electric vehicle financing. Additionally, understanding the challenges and opportunities they bring to the Indonesian automotive industry is vital for the market. Four representatives participated in the interview to gain a deeper understanding of the electric vehicle financing dynamics.

To advance the research initiative, a selection of first-mover banks was identified to gather the requisite information. These institutions have been delegated a mandate by the Indonesian Financial Services Authority (OJK) to serve as First Movers in the development of sustainable financial programs (Pangaribuan & Idrianita, 2024). The banks involved in this endeavor include PT Bank Mandiri (Persero) Tbk, PT Bank Negara Indonesia (Persero) Tbk, PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank Central Asia Tbk, PT Bank, PT Bank Muamalat Tbk, PT Bank BJB Tbk, and PT Bank Arta Graha Internasional Tbk. This study also analyzes PT Bank Syariah Indonesia Tbk due to the merger of PT BRI Syariah with PT BNI Syariah and PT Bank Syariah Mandiri, resulting in the formation of PT Bank Syariah Indonesia Tbk.

In addition to the commercial banks, several multi-finance companies, PT BRI Multifinance Indonesia, BNI Finance, Mandiri Utama Finance, Mandiri Tunas Finance, BCA Finance, and other multi-finance companies have also been incorporated into this study.

With the involvement of all aforementioned parties, this study seeks to acquire a comprehensive perspective to enhance the adoption of electric vehicles Indonesia.

3.6. Data and Collection Method

Research data constitutes the raw materials that are collected, analyzed, and examined throughout the research process. These data serve as the foundational evidence that underpins the findings published in scholarly works. Such data may be categorized as either primary, which is generated or acquired directly by the researcher, or secondary, which is sourced from existing materials and incorporated into the research framework (University of Reading, n.d.). In qualitative data analysis, researchers emphasize the interpretation of meanings rather than the mere representation of numerical values. This form of research may draw upon a variety of sources, such as observational studies,

unstructured interviews, group discussions, and the collection of documentary materials (Henderson, 2016).

Data are required to address the formulated research questions. In this study, the data collection process encompasses interviews, observations, and a multi-criteria decision-making method known as the Analytic Network Process. The following details the examined data, inclusive of its source, collection method, and analytical tools employed used.

3.6.1. Interview

Interviews constitute the primary data source for this study. A total of 27 respondents participated in the research. In qualitative research, two considerations are typically used to determine the sample size: saturation and variation within the target population. Saturation is reached when the researchers observe consistent patterns in responses and no new concepts emerge (Patton, 2002). The concept of saturation, originally developed by Glaser and Strauss (1967) as ‘theoretical saturation’ within their influential grounded theory approach, is now widely used across various qualitative research methodologies, even those that do not follow grounded theory (Hennink et al., 2017). A study by Hennink et al. (2017) found that empirical data collection often reached saturation within a limited number of interviews (9–17) or focus groups (4–8), especially when involving relatively homogeneous participants and specific, narrowly defined goals. Meanwhile, Patton (2002) indicates that assessing between 20 to 30 individuals is generally sufficient to achieve saturation when data collection involves the in-depth interview method.

Based on earlier research on saturation in qualitative studies, this study has a sufficient number of participants to achieve saturation. Here are the details of the interviews conducted:

Table. 3.1 Interview Methods and Procedures

Sources	Number of Respondents	Data Explorations	Method	Procedures
Owners of Conventional Vehicles	13 respondents (OCV 1-13)	- Views on the presence of electric vehicles in Indonesia (awareness and knowledge of other things related to EVs).	Semi-structured and in-depth interviews were used	- Prepare questions that will be used in the interview. - Invite the participants to

		- The decision-making processes associated with the adoption of electric vehicles (Evs) encompass the perceived challenges and concerns related to the purchase and utilization of an EV, as well as the anticipated opportunities, expectations, and benefits associated with their use.	to get the data.	be interviewed. - Conduct the interviews in the preferred places and times.
Owners of Electric Vehicles	5 respondents (OEV 1-5)	- The experience in purchasing and using the electric vehicles, as well as the views on the ongoing subsidies and some tax incentives. - The decision-making processes associated with the adoption of electric vehicles (Evs) encompass the perceived challenges and concerns related to the purchase and utilization of an EV, as well as the anticipated opportunities, expectations, and benefits associated with their use.	Semi-structured and in-depth interviews were used to get the data.	- Prepare questions that will be used in the interview. - Invite the participants to be interviewed. - Conduct the interviews in the preferred places and times.
Electric Vehicle Industry	4 respondents (EVIND 1-4)	- Their perspectives on what is happening in the electric vehicle industry and ecosystem, from challenges, opportunities, and expectations to gain the needs of the industry.	Semi-structured and in-depth interviews were used to get the data.	- Prepare questions that will be used in the interview. - Invite the participants to be interviewed. - Conduct the interviews in the preferred places and times.

Banking and Multi Finance Companies	4 respondents (FIN 1-4)	- Views and opinions regarding Evs in the eye of the banking industry. (awareness of the market, demand, development of the EV industry and infrastructure) and potential challenges and opportunities for the banks. - The role of banks in pushing and supporting financing programs and schemes for purchasing electric vehicles.	Semi-structured and in-depth interviews were used to get the data.	- Prepare questions that will be used in the interview. - Invite the participants to be interviewed. - Conduct the interviews in the preferred places and times.
The Government	1 respondent (GOV)	- Perspective on Evs in the government's eyes (including the journey to the NDC and Net Zero Emissions). - The role of government in supporting the EV ecosystem. (evaluating the current policies and exploring future regulations)	Semi-structured and in-depth interviews were used to get the data.	- Prepare questions that will be used in the interview. - Invite the participants to be interviewed. - Conduct the interviews in the preferred places and times.

Source: Author's Data

3.6.2. Observation

According to McKechnie (2008), observation in qualitative research is one of the oldest and most fundamental approaches to research methods. This approach involves the systematic and meaningful collection of data through one's senses, primarily through observation and auditory perception. Similarly, Adler and Adler (1994) described observations as the foundational basis for all research methodologies within the social and behavioral sciences (Smit & Onwuegbuzie, 2018). Qualitative observation is often used in marketing to analyze consumer behavior, preferences, and attitudes toward products or services. Additionally, qualitative observation is widely employed in design disciplines to

gain a deeper understanding of user needs, preferences, and behaviors. This understanding can significantly contribute to developing products and services that more effectively meet user requirements (George, 2023).

In the present study, observations were conducted to directly ascertain the reality, behaviors, and gestures exhibited by each group regarding electric vehicles. These observations reinforced the insights gained from the interview. The observations undertaken in this study were characterized as non-participatory, whereby the author solely observed the developments within the field without actively engaging as a member of the groups being studied.

3.6.3. Documents

Document analysis remains an underutilized technique in qualitative research, offering significant benefits. By examining existing texts, researchers can pursue studies that may otherwise be unfeasible. Paton (2015) highlighted that document analysis has served as an important research method for many years. This technique encompasses the analysis of diverse document types, including books, newspaper articles, academic journal articles, institutional reports, and photographs captured by the author. Essentially, any text-containing document can be a viable source for qualitative analysis (Morgan, 2021).

This study utilized various documents, including annual reports and sustainability reports from banks and multi-finance companies, photographic evidence, and press releases from a particular government agency, along with other reliable news sources, to collect information and support the findings.

3.7. Data Triangulation

To enhance the validity of the results, this study also employs data triangulation. Bans-Akutey & Tiimub (2021) elucidate that triangulation serves to augment the credibility and validity of research. The utilization of multiple data sources reduces biases related to sampling, procedural methods, and researcher influence, thereby strengthening validity and credibility. Triangulation assists in confirming research findings, reducing deficiencies inherent in single methods or sources, providing additional insights, promptly identifying and eliminating inconsistent data, and ultimately increasing the validity and credibility of the study (Bans-Akutey & Tiimub, 2021).

This study employs a qualitative approach to address various research questions concerning the rise in electric vehicle purchases in Indonesia. Interviews and observations were conducted to gain a comprehensive understanding of the factors that present

challenges and expectations in the acquisition and use of electric vehicles. Semi-structured and in-depth interviews will be utilized to obtain thorough and profound insights regarding electric vehicles, encompassing perspectives from government officials, representatives from the banking and multi-finance industries, and members of the public as users.

Apart from primary data, this study also utilized secondary data, including annual and sustainability reports from certain banks, related articles, and news from reliable sources. Additionally, documents such as photographic evidence were also used to strengthen the result. Several studies on electric vehicles in Indonesia (Febransyah, 2022; Maghfiroh et al., 2021; Veza et al., 2021) have also implemented qualitative methodologies to gain a deeper understanding of stakeholder perspectives.

To acquire credible and valid results, these data sources will be integrated to reinforce the findings mutually, and comparisons will be made to identify consistent patterns or discrepancies. These will be further analyzed to understand the underlying context or dynamics.

CHAPTER IV

FINDINGS AND DISCUSSIONS

This chapter will present the outcomes of the research undertaken, along with its subsequent analysis. It comprises four principal sections: data description, data analysis, discussions of findings, and the correlation of findings. The objective of this chapter is to present the research data with clarity and to deliver a comprehensive interpretation of the findings obtained.

4.1. Data Description

This section outlines the data collected during the research, detailing the collection method, the number of respondents, and the tools employed in the study.

4.1.1. Data Collection Methods

4.1.1.1. Interview

This study involved 27 in-depth interviews with diverse groups, including 13 owners of conventional vehicles, five owners of electric vehicles, four representatives from the financial sector, one government official, and four representatives from the electric vehicle industry. The majority of respondents opted for Zoom interviews, while some were held at mutually agreed-upon locations.

Table 4.1 Data of Respondents

No	Names ^a and Codes	Group	Occupation	Domicile
1	Abu Bakar (OCV1)	Owner of a Conventional Vehicle	A director of an Islamic Foundation	Bogor
2	Dendy (OCV2)	Owner of a Conventional Vehicle	An official of the DKI Jakarta Education Department	Depok
3	Mulan (OCV3)	Owner of a Conventional Vehicle	A General Practitioner (a doctor) at a hospital	Depok
4	Akram (OCV4)	Owner of a Conventional Vehicle	A CEO of an educational start-up platform	Jakarta

5	Fajri (OCV5)	Owner of a Conventional Vehicle	An IT Service Manager at an international private company	South Tangerang
6	Ruby (OCV6)	Owner of a Conventional Vehicle	Head of Research and Innovation Department of Bogor City Government	Bogor
7	Gilbert (OCV7)	Owner of a Conventional Vehicle	An owner of a business	Surabaya
8	Harsi (OCV8)	Owner of a Conventional Vehicle	A teacher	East Kalimantan
9	Tono (OCV9)	Owner of a Conventional Vehicle	A staff member in an F&B company	Depok
10	Afrizal (OCV10)	Owner of a Conventional Vehicle	A manager of educational foundation	Palembang
11	Faiq (OCV11)	Owner of a Conventional Vehicle	A manager of educational foundation	Lampung
12	Fredi (OCV12)	Owner of a Conventional Vehicle	A manager of a bank	Jakarta
13	Roy (OCV13)	Owner of a Conventional Vehicle	A sales manager of a company	Jakarta
14	Zalfa (OEV1)	Owner of an Electric Vehicle	An owner of a business	Depok
15	Abdullah (OEV2)	Owner of an Electric Vehicle	An Independent Commissioner at an insurance company	Jakarta
16	Hifzi (OEV3)	Owner of an Electric Vehicle	An owner of a business	Jakarta
17	Joko (OEV4)	Owner of an Electric Vehicle	An official of a state- own enterprise company	Bogor
18	Umair (OEV5)	Owner of an Electric Vehicle	An official of a company	Bekasi
19	Tio (FIN1)	Bank Syariah Indonesia (BSD)	An Area Operations & Service Manager	Bogor
20	Hamdi (FIN2)	Bank Muamalat (Headquarter)	A head of Financing Operation Quality Assurance	Bogor

21	Agustian (FIN3)	Permata Bank (Headquarter)	A head of Sharia Corporate & Commercial Financing	Bogor
22	Habli (FIN4)	Maybank (Headquarter)	A Sharia Digital Channel and Solution Specialist	Depok
23	Rey (EVIND1)	Mini Cooper (Senopati)	A sales officer	Jakarta
24	Imas (EVIND2)	GAC AION (Senayan Park)	A sales officer	Depok
25	Johan (EVIND3)	Chery (Cempaka Putih)	A sales officer	Jakarta
26	Dika (EVIND4)	Hyundai (Tangerang)	A sales officer	Tangerang
27	Andi (GOV)	Government (Ministry of Industry)	A staff member at Directorate of Maritime Industry, Transportation Equipment, and Defense Equipment	Jakarta

Source: Author's Data

a: To protect respondents' privacy, the names in the table are fictitious. Nevertheless, all information, excluding the names, is authentic.

4.1.1.2. Observation

This study utilizes observation to investigate public charging station (SPKLU) facilities and monitor electric charging activities across several sites, including Jakarta, Depok, Bogor, and select rest areas. In addition to observing SPKLU, observations were made on significant national automotive events, such as the Indonesia International Motor Show (IIMS) 2025 and the Periklindo Electric Vehicle Show (PEVS) 2025, both held at the Jakarta International Expo Kemayoran.

4.1.1.3. Secondary Data

This study employs secondary data collected from official documents of various banks and multi-finance companies. This includes annual and sustainability reports, relevant ministry press releases, and other credible sources that substantiate the findings.

4.2. Thematic Analysis

Following an analysis of interview data from conventional and electric vehicle owners, banking and multi-finance representatives, electric vehicle industry representatives, and government officials, as well as an examination of observations and necessary documents, seven key factors and themes concerning electric vehicles in Indonesia were identified. These include ownership costs, functionality, vehicle identity, policies and regulations, environmental impact, facilities and services, and motivations. Alongside these factors, green financing from banks and multi-finance companies, as well as challenges and expectations, are also explored in the study.

To provide a more comprehensive explanation, a thematic analysis will be used to describe each factor separately. Thematic analysis is a popular technique for analyzing qualitative data, which typically comprises detailed descriptive material (Naeem et al., 2023). Researchers might use thematic analysis using their own written or spoken experiences to describe and depict a participant's world. This approach records the insights that participants provide and aggregates them into identifiable patterns. Although researchers employ thematic analysis in different ways, this method usually comprises three components: the researcher's themes, categories, and individual codes (Lochmiller, 2021).

4.2.1. Cost of Ownership

This theme is related to the costs associated with owning an electric vehicle. Several codes were identified in this theme, including the Price of Electric Vehicle, Tax, Cost of Battery Replacement, Fuel Cost, Resale Value, and Cost of Services.

Table 4.2 Thematic Analysis of Cost of Ownership

Theme	Codes	Text
Cost of Ownership	Price of Electric Vehicle	- Abu Bakar (OCVI): "However, around 90% of the Indonesian population still considers vehicle prices.

		- <i>Mulan (OCV3)</i>: “As a woman, my initial focus is on the price. The price comes first. The vehicle’s price is my top priority.” - <i>Gilbert (OCV7)</i>: “The most important thing is definitely the price.” - <i>Faiq (OCV11)</i>: “Thus, the most crucial aspect is possibly the purchase price. Indeed, this is the key factor.” - <i>Ruby (OCV6)</i>: “The third factor is that, generally speaking, we consider the price. It plays a crucial role in our purchasing decisions. Our willingness to pay must align with the market price, establishing a point of agreement for a transaction to take place.” <i>Hifzi (OEV3)</i>: “For instance, when discussing segment B, the key factor is the price. Price holds significant importance.”
	Price of Electric Vehicle (Relatively Expensive)	- <i>Abu Bakar (OCV1)</i>: “Yes, it remains costly to purchase, which is a downside. Indeed, it is comparatively more expensive. For instance, when comparing this brand to another, the difference is evident. In relation to gasoline, this product already has a price point. In its category, this is pricier, correct?” - <i>Dendy (OCV2)</i>: “Because especially at the beginning the price was quite high, so that not many people were interested in buying it.” - <i>Mulan (OCV3)</i>: “However, the disadvantage is that the initial purchase price is relatively high. Therefore, one must adequately save funds before considering the acquisition of an electric vehicle.” - <i>Akram (OCV4)</i>: “Expensive, the price is still getting more expensive. 400, 600.” - <i>Harsi (OCV8)</i>: “Subsequently, the price must be comparatively higher than what is regarded as the average price of other vehicles.” - <i>Afrizal (OCV10)</i>: “Currently, it can likely be stated that electric cars remain fairly costly.” - <i>Roy (OCV13)</i>: “if the cost of the vehicle itself we both know it is still quite expensive.” - <i>Abdullah (OEV2)</i>: “Electric cars in Indonesia remain costly.” - <i>Agustian (FIN3)</i>: “So because the price of the car is still relatively expensive.”
	Price of Electric Vehicle (Relatively Affordable)	- <i>Fajri (OCV5)</i>: “Additionally, there are now numerous affordable options, many of which are both cheap and cheerful.” - <i>Gilbert (OCV7)</i>: “The cost is approximately 600. At this price, the shape is acceptable. Acceptable, acceptable.”

		- Afrizal (OCV10): "This electric car has a slight advantage over traditional cars, which tend to be less expensive."
Cost of Ownership	Tax	- Mulan (OCV3): "Oh, and one more thing about taxes. Regarding the electric car I saw yesterday, I only paid around 200,000 or 300,000 in taxes. In contrast, for my own car, the amount is about ten times that." - Fajri (OCV5): "The tax is currently cheap." - Roy (OCV13): "Yes, when I consider the government's role at this moment, it's solely from a tax perspective. Therefore, the tax on electric vehicles is indeed lower than that on non-electric vehicles.." - Imas (EVIND2): "The second benefit is the tax is very cheap." - Johan (EVIND3): "Another one, they get a very cheap annual tax, Sir." - Umair (OEV5): "The second is the tax discount. It is very helpful because you can see for yourself from 4 million, 4.5 million conventional cars, it could be only 10%, 10% more." - Abu Bakar (OCV1): "Honestly, I don't know the amount. I've read it, but I can't remember anymore. It's just lower. The government provides incentives for these electric cars, such as tax incentives and lower taxes."
Cost of Ownership	Cost of Battery Replacement	- Johan (EVIND3): "Additionally, we (Chery) should consider the battery's warranty period, as we appreciate their feedback. The cost of the battery can indeed be quite high, sometimes amounting to half the price of the vehicle." - Dika (EVIND4): "Many people claim that the price of a car battery is 50% or more of the overall cost of the vehicle. However, in Hyundai, when a battery is damaged, it isn't replaced as a single battery block. Instead, each battery block contains several cells and modules. There are dozens of modules, with 36 or more in the Ioniq 5. So, when a battery is damaged, we first check which module is affected. We then either replace that module or compensate the customer. It's not just one block that accounts for 50% of the car's price, sir." - Mulan (OCV3): "I own an electric car that my father gave me. He asserts that after five years, the battery's health remains good with regular use. Following this period, there is a warranty, but it doesn't guarantee a full replacement of the battery if the health declines. I'm a bit confused about the specifics of this warranty"

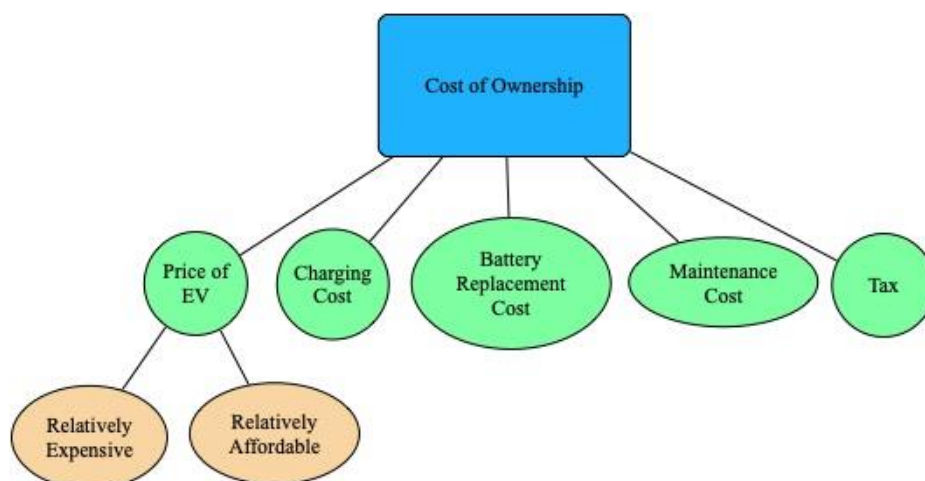
		and what kind of compensation it entails. Additionally, he mentioned that the cost of battery repair can be quite high—potentially double. However, in comparison to the maintenance of a gasoline car, which requires servicing every six months and costs at least 10 million annually, it seems cost-effective to maintain the electric car's battery health for five years or longer.” - Zalfa (OEVI): “However, BYD has offered an 8-year warranty. This made me think that they are prepared for various risks.” - Johan (EVIND3): “We (Chery) offer one lifetime, referred to as Omoda Pure. Beyond that, we provide an 8-year guarantee, sir.”
Cost of Ownership	Charging Cost	- Abu Bakar (OCV1): “The second point is that the cost of energy consumption is comparatively lower. Currently, gasoline prices are quite high, whereas electricity offers a more economical alternative in the future.” - Mulan (OCV3): “”For a gasoline car, fuel expenses can reach 300 thousand per week, whereas an electric car only costs about 200-300 thousand per month for charging.” - Fajri (OCV5): “At this moment, I am utilizing a Mazda 2 and have just completed a refueling at Pertamina, which costs approximately IDR 500 thousand when the tank is full. In contrast, when I assess the electric vehicle, its refueling remains below IDR 100 thousand, and upon achieving a full charge, it can travel a distance of 300 kilometers..” - Hifzi (OEVI): “I use 7,700 kWh, which costs me only 500 thousand PLN for a month. Just imagine! This results in savings of three and a half million. People see this and think, wow, this is incredible; they say that electricity is very economical.” - Zalfa (OEVI): “Secondly, let us evaluate the financial implications associated with fuel consumption. Upon performing the calculations, the expenditure amounts to 2 million; previously, during the utilization of the Ayla, my monthly expenses were similarly 2 million. Conversely, should I transition to an electric vehicle, the projected costs may approximate 1 million or potentially less, which constitutes half of the aforementioned amount.” - Joko (OEVI): “When considering fuel, it is also more cost-effective.”

Cost of Ownership	Maintenance Cost	- <i>Mulan (OCV3): “This is also, for the maintenance costs. The maintenance costs for electric cars are cheaper, because they don’t need oil and all that. The maintenance costs are lower than gasoline cars.”</i> - <i>Zalfa (OEVI): “Just yesterday, he (the dealer staff) mentioned that he simply connected it to the computer, updated the system, and that was all—no screws or anything, so I don’t have any concerns about that issue.”</i> - <i>Hifzi (OEVI): “So yesterday, I only took it to the repair shop once, and that was just to tighten the bolts. That’s it. There was no oil change and no complicated spare parts. Actually, this electric car is economical in terms of maintenance costs because there aren’t many variables in the engine, which is why it’s strong.”</i>
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Source: Author’s data

From this initial theme, it can be inferred that several factors emerge from it, including the cost of electric vehicles. Some respondents believe the price is still relatively high, while others find it quite affordable. Besides the vehicle price, Respondents also consider expenses related to very cheap battery charging compared to petrol or solar price, expensive battery replacement, cost of services and repairs, as well as tax incentives when thinking about purchasing an electric vehicle.

Figure 4.1 Thematic Analysis of Cost of Ownership



Source: Author’s data processing

4.2.2. Functionality

Based on the findings derived from the existing data, functionality is a significant factor frequently considered by individuals when purchasing a vehicle. Functionality constitutes the second theme of this study and includes categories such as Features, Mileage Capability, Passenger Capacity, Safety, Comfort, Performance, and Practicality.

Table 4.3 Thematic Analysis of Functionality

Theme	Codes	Text
Functionality	Features	- Umair (OEV5): <i>"The features of my new car (electric car) far exceed those of my previous one. It includes a panoramic sunroof and steering assist, allowing for self-driving capabilities. Previously, I used the Xpander, which could do this without needing to accelerate, yet we still had to keep our hands on the steering wheel. We could manage it with our feet a bit freer, but control was essential. With my new car, we can actually let go of the steering wheel for short periods. This is incredibly useful when you feel drowsy."</i> - Afrizal (OCV10): <i>"Absolutely, I've noticed this, particularly with the rollout of electric vehicles from China. Compared to traditional fuel-powered cars, these electric vehicles provide a range of intriguing features."</i> - Fajri (OCV5): <i>"The features are numerous and comprehensive."</i> - Mulan (OCV3): <i>"After considering the price, we then evaluate the car's appearance and features. We ask ourselves whether the cost is justified based on these attributes."</i> - Dendy (OCV2): <i>"I believe that as a new car, it includes a complete set of features."</i>
Functionality	Mileage Capability	- Zalfa (OEV1): <i>"As an electric vehicle owner, I don't think I would enjoy traveling long distances"</i> - Fajri (OCV5): <i>"It is more appropriate for urban use."</i>
Functionality	Passenger Capacity	- Umair (OEV5): <i>"Capacity is our top priority; price is secondary. My wife and I need a car that accommodates our large family, which includes our parents and nephews. Thus, we are seeking an electric vehicle with three rows or seven seats. Only after considering capacity does the price factor come into play, making it a secondary concern."</i>

		- Afrizal (OCV10): “It’s (Wuling Air EV) quite compact, isn’t it? That size seems small for families. With kids, we can’t invite our parents; it’s just not possible.”
Functionality	Safety	- Abu Bakar (OCV1): “I think it would be safer” - Akram (OCV4): “So we really feel really safe (with the features), so we don’t hesitate (when driving).” - Afrizal (OCV10): “I also observed that older electric car models may pose a higher fatality risk in crashes compared to traditional gasoline vehicles. This is largely due to the significant presence of electricity, particularly from the battery, which, as many know, is extremely challenging to extinguish if it ignites.”
Functionality	Comfort	- Zalfa (OEVI): “Initially, I wanted to upgrade my car to a new model—something better and more comfortable.” - Harsi (OCV8): “After experiencing the BYD directly, I’ve found it to be more comfortable and compact. When riding in the vehicle, the sense of comfort is truly evident. “The car may feel overly calming for the driver, it provides significant comfort for the passenger. I have experienced that level of comfort myself.” - Afrizal (OCV10): “So I think the advantages are mainly the comfort features.” - Ruby (OCV6): “Third, in terms of noise, it is quieter so it can provide comfort.” - Imas (EVIND2): “So, there is no issue, it means that if people want comfort, electric cars offer that.” - Umair (OEVI5): “Oh, comfort. When we had the chance to test drive, we started choosing what car we wanted to buy, we first tried the BYD M6. We went straight to the BYD showroom, then we test drove the M6. Luckily, thank God, it was according to our expectations, even more. The comfort is actually like a European car, an expensive European car. So it’s soundproof, the suspension is very soft. Very different from the previous main car.”
Functionality	Performance	- Abu Bakar (OCV1): “The acceleration is faster than a fossil-fuel based car. Because of the electrical system, because it is more instant. There is no combustion, the combustion process is skipped. So of course it will create more instant thrust than a gasoline car.”

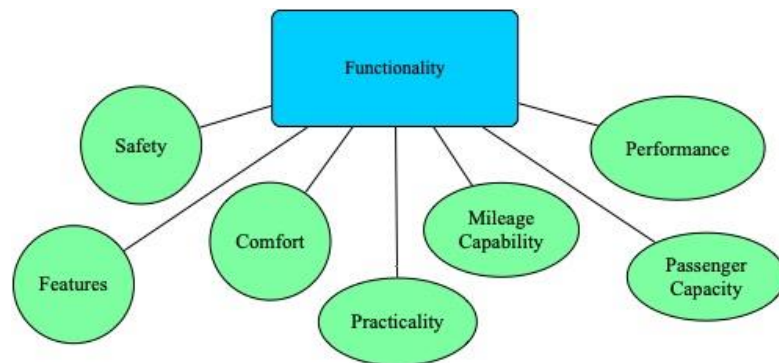
		- Harsi (OCV8): “And for automotive lovers, I asked the online taxi drivers that I used yesterday, they prefer electric cars. Why? Because the acceleration of the vehicle is faster, higher, right? So maybe automotive lovers will prefer electric cars. Efficient, then the acceleration is high.” - Tono (OCV9): “And as far as I know, the power of an electric car is definitely much greater than a gasoline-powered car or other.” - Faiq (OCV11): “Wow, it turns out the electric car is also fast. Well, maybe another advantage is that it’s also fast.” - Fredi (OCV12): Electric vehicles surpass gasoline cars in torque, providing immediate power upon acceleration without delay. Gasoline cars may experience a lag due to processing requirements, whereas electric vehicles ensure an instant response through their battery.” - Umair (OEV5): “Also, the acceleration is instant, so overtaking is really easy; don’t be afraid if we want to overtake on the toll road, we definitely can. We can overtake any car, whether it’s a Fortuner or a Pajero Sport.”
Functionality	Practicality	- Akram (OCV4): “I believe life becomes more efficient and effective when using an electric vehicle. In contrast, filling up a petrol vehicle often feels like a waste of time, especially when queuing during peak hours. For instance, in the morning, when I haven’t yet filled my tank, the queue can seem quite long. However, with an EV, I can simply relax or even sleep while it charges, making it feel like we’re always ready to go.” - Zalfa (OEVI): “Thirdly, visiting the gas station is unnecessary. They often have long queues, and I tend to avoid waiting in line.” “In fact, after being attached to electric vehicle, I actually wanted to promote electric vehicle itself, because it was really worth it in terms of time, cost, maintenance, and (free from) odd-even system.” - Gilbert (OCV7): “But the advantage is that we can charge it while we’re at home.” - Afrizal (OCV10): “There’s no need to wait in line for fuel. Furthermore, you won’t be disappointed if your fuel quota runs out.” - Faiq (OCV11): “You know, perhaps that’s actually a great benefit—it makes things a bit simpler for us! We don’t have to wait in line, and electricity is readily available at home. On

		<i>the other hand, solar and Peralite options aren't always easy to access at home. So, where do we head first? Maybe to Pertamina? It just feels like a simpler choice overall."</i>
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Source: Author's data

More codes emerge from the data regarding Functionality. Respondents agree that electric vehicle features are increasingly sophisticated compared to conventional cars. However, opinions vary on range capability; some believe that a long range is not a concern for EVs, while others think EVs are currently better suited for shorter distances. Besides features and range, factors such as passenger capacity—which is still limited—safety and security issues, and comfort, which most agree is enhanced in EVs, are important. Additionally, improved performance and practical charging and mobility are key factors influencing the adoption of electric vehicles.

Figure 4.2 Thematic Analysis of Functionality



Source: Author's data processing

4.2.3. Vehicle Identity

The third factor identified in this study pertains to Vehicle Identity. This identity encompasses three categories: brands, appearance, and technology, all of which play a role in influencing an individual's decision to purchase an electric vehicle.

Table 4.4 Thematic Analysis of Vehicle Identity

Theme	Codes	Text
Vehicle Identity	Appearance	- Dendy (OCV2): "Observing it on the highway reveals that the car's shape is very intriguing and distinctly unique." - Akram (OCV4): "The third one is, we as young people definitely look at the appearance."

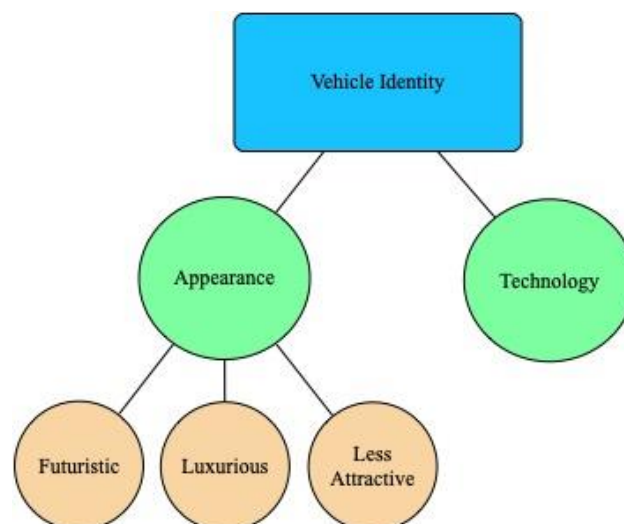
		- <i>Mulan (OCV3): "Next, we evaluate the appearance and features after considering the price. We determine if the car's features and appearance justify the price."</i> - <i>Gilbert (OCV7): "But I have to admit, the designs are good. The ones that are circulating on the streets are good."</i> - <i>Ruby (OCV6): "In addition to the sleek design of electric vehicles, I believe it's important to consider how we go about choosing the right one for ourselves."</i>
Vehicle Identity	Appearance (Futuristic)	- <i>Abu Bakar (OCV1): "Yeah, I was wondering, could this be the car of the future? It definitely looks futuristic, doesn't it?"</i> - <i>Fajri (OCV5): "Since the presence of electricity, the appearance is now more futuristic."</i> - <i>Gilbert (OCV7): "Both of these options are definitely more futuristic compared to gasoline vehicles. That's the key point. When it comes to appearance, style, or model, they really stand out as more advanced."</i> - <i>Fredi (OCV12): "Electric vehicles truly seem like the vehicles of the future, don't they? They have such a futuristic design and appearance that really sets them apart."</i>
Vehicle Identity	Appearance (Less Attractive)	- <i>Akram (OCV4): "Think of the Wuling Air EV. We're familiar with its look, and honestly, it's not my favourite."</i>
Vehicle Identity	Appearance (Luxurious)	- <i>Fredi (OCV12): "Similarly, if you examine the interior, it's more luxurious compared to fuel-powered vehicles at the same price point, isn't it?"</i>
Vehicle Identity	Technology	- <i>Abu Bakar (OCV1): "Individuals are considering electric vehicles due to their novelty and perceived technological appeal."</i> <i>"Indeed, the second one pertains to technology. If newer technology exists, it is more likely to hold promise for the future."</i> - <i>Akram (OCV4): "This is extremely advanced technology. Everything, including the sensors, cameras, and mirrors, has been upgraded."</i> <i>"The YouTube video highlights a variety of exciting advanced features, such as automatic parking and tire shift sensors, all designed to make your experience easier. Plus, many of these technologies have been thoughtfully enhanced! The free drive and free run options, akin to the dashboard camera, offer an even more comprehensive and safer 360-degree view for everyone to enjoy."</i>

		<i>"In my opinion, it has more advanced technology, more sophisticated, more advanced in the same class."</i> <i>- Zalfa (OEVI): "It's also cool, (because I'm) a Millennial, still young, always want the latest technology. I also have a business, so I understand a little bit about technology."</i> <i>- Joko (OEVI4): "Navigating the (EV) technology is quite awkward. There are so many incredible features since almost all electric cars incorporate truly remarkable technology. However, it's mostly found in high-end or luxury (conventional) vehicles. As time goes on, we're definitely getting better at adapting to these changes."</i> <i>- Imas (EVIND2): "(EV owners) want to explore new technology; indeed, it is simply more technology."</i>
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Source: Author's data

From the findings presented above, it can be concluded that the identity of electric vehicles is identical to appearance and technology. Most of the statements have positive sentiments towards the appearance of electric vehicles, only one person has a statement that not all electric vehicles have an attractive appearance. As for technology, all statements have the same tone which shows that electric vehicles have better technology than non-electric vehicles in general.

Figure 4.3 Thematic Analysis of Vehicle Identity



Source: Author's data processing

4.2.4. Policy and Regulation

The fourth factor identified is policy and regulation, where policies related to electric vehicles are often expressed as odd-even policies, subsidies and tax incentives, and incentives for the electric vehicle industry.

Table 4.5 Thematic Analysis of Policy and Regulation

Theme	Codes	Text
Policy and Regulation	Exemption from Odd-Even Restriction	- Abu Bakar (OCV1): <i>"The odd-even rule creates challenges for families as well. Activities don't adhere to specific days; needs can arise unexpectedly. For instance, I received a violation ticket while traveling to Pondok Gede Hospital in Cawang, which is just a few hundred meters from Jalan Raya Cililitan, leading towards Gatot Subroto. I simply forgot the date. My concern stemmed from caring for a sick person, and I overlooked whether it was an odd or even day. Additionally, this situation could serve as an incentive for electric vehicles."</i> - Mulan (OCV3): <i>"In Jakarta, there's an odd-even system. Electric vehicles are exempt from this rule. Therefore, if we go to Jakarta, we should just take an electric car."</i> - Akram (OCV4): <i>"The initial perception of electric vehicles is that they enhance our agility. This is particularly true in Jakarta, where they are not restricted by the odd-even license plate scheme. People's needs, whether for business or family, can be unpredictable. Restrictions based on odd-even timing can certainly pose challenges."</i> - "Any day, any date, this is crucial, particularly in business, as we engage with clients daily. If restrictions like odd-even apply, we may face challenges in arriving on time or even being absent. This is extremely important." - Zalfa (OEVI): <i>"I appreciate the government due to the free odd-even policy."</i> - <i>Why choose electric vehicles? The main reason is the odd-even rule, which affects my frequent travels to Jakarta. Electric vehicles are exempt from this regulation."</i> - Abdullah (OEVI2): <i>"Almost every day (using electric vehicles). Because of flexibility, especially odd-even flexibility."</i> - <i>"So the flexibility factor of its use. Flexible, can be used anytime. Because our needs, people's needs cannot be limited. This means</i>

		that sometimes we need to go wherever we need, and (cannot) be limited by odd-even.” - “So in this condition, the most important thing for me is the benefit that it can be used anytime. Moreover, I (like to) forget, sometimes I’m already in the middle of the road, (it turns out the date is) odd, (finally) I go back home because I use even, because there are two cars at home.” - Habli (FIN4): “In addition, we are aware that Jakarta offers numerous advantages to using electric vehicles, particularly regarding the odd-even regulation.” - Mulan (OCV3): “The third is the benefit of odd-even, so people don’t need to use 2 cars, that also saves money.” - Agustian (FIN3): “Actually, the role of the government at this time has been seen from the beginning when the DKI Regional Government made odd-even free.” - Hifzi (OEV3): “Well, electric vehicles are not a desire for me, but electric vehicles are a necessity. Why do we need them? Now we live in Jakarta. Where we have odd-even, that’s the first thing. Because I live in the South. I have three houses. All three are in the South. Most of my office is also in South Jakarta. I go out of the alley and I’m immediately hit by odd-even. At that time, I had two cars: one for even, one for odd. So it was confusing.” - Joko (OEV4): “I used to rely on an odd-even driving system to travel to Jakarta, which required me to swap between two cars. Now, I can use just one car for my trips and optimize the second car at home. Previously, I needed both cars due to the odd-even restrictions in Jakarta.” - Johan (EVIND3): “Then the third one, it doesn’t hit the Gage (odd-even) system, sir. People with these three (benefits) might be enthusiastic about buying electric cars.” - Umair (OEV5): “First of all, the most important consideration is actually the ease of mobility in Jakarta. Because my wife and I work in South Jakarta, then we tend to move around there, South Jakarta, Central Jakarta, even though we live in Bekasi. So, we are a bit tired of this odd-even regulation. So, usually before (having) an electric car, we have to find another route to get to the office when it’s raining or when it doesn’t match the vehicle’s license plate. Well, we thought about it, it seems like it’s
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		<i>time to switch to electric. That's the first reason, because of the odd-even."</i> <i>- "In my opinion, the government is very helpful in encouraging people to have electric cars. Especially the regulation that in Jakarta is free of odd-even, that's what really helps. We don't get nervous, we don't have to think about what date is today? Is today odd or even? If the road we pass is restricted or not. Wow, that's really confusing, especially for people who have quite high mobility in Jakarta, during rush hour. So yes, that really helps."</i>
Policy and Regulation	Subsidies and Tax Incentives	<i>- Akram (OCV4): "From what we understand, we do receive a subsidy when we purchase an electric vehicle, which is great! However, we're a bit uncertain at the moment about whether that subsidy is still available or not."</i> <i>- Afrizal (OCV10): "Plus, when it comes to electric motorbikes, it seems like there aren't as many enthusiasts these days, perhaps because the subsidy is no longer available."</i> <i>- "Initially, when electric cars arrived in Indonesia, the government seemed very enthusiastic. However, as time passed, they likely realized that consumer interest and public enthusiasm for electric cars were lacking. This may have led them to consider providing large subsidies for a product that wasn't in high demand."</i> <i>- Faiq (OCV11): "Tax relief alone suffices. Additionally, if it's free, just the tax relief is sufficient."</i> <i>- Fredi (OCV12): "It was substantial during the Jokowi administration, wasn't it? The electric vehicle industry really benefited from support in terms of taxes and subsidies for both car and motorcycle purchases."</i> <i>- Roy (OCV13): "Yes, when I consider the government's role right now, it mainly pertains to taxation. The tax on electric vehicles is indeed lower than that on non-electric vehicles, which I think is positive." However, I've also heard that there was a subsidy of 7 million for two-wheeled vehicles at that time.</i> <i>- Abdullah (OEV2): "Additionally, the tax incentives are excellent. The tax for this (my previous conventional car) is 18 million Rupiah, while this (my electric car) is only 400 thousand Rupiah."</i> <i>- Andi (GOV): "So the incentives that we provide are actually more of a long-term fiscal</i>

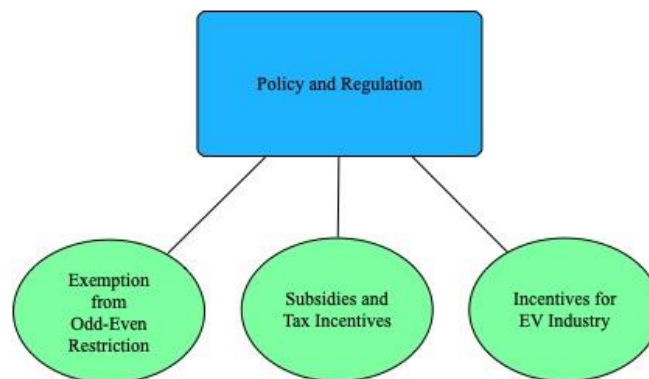
		incentive to reduce the price of electric vehicles.” - Dika (EVIND4): “Absolutely, by using electric vehicles (Evs), we have saved millions of dollars, sir. For instance, if a car costs over 500 million, the annual tax is approximately 6-7 million for gasoline vehicles. In contrast, with Evs, the annual tax is less than 500 thousand. This clearly shows a savings of millions, sir.” - Imas (EVIND2): “Another advantage is the significantly lower taxes; we expect the government to remain consistent and keep them affordable.” - Agustian (FIN3): “In the meantime, electric vehicles benefit from lower taxes, just 1%, if I remember correctly. This creates a very promising outlook, especially with the government continuing to offer incentives. Regarding tax categories, what are they exactly? Additionally, the price of electric vehicles doesn’t require subsidies at this point, which further supports their appeal, right?” - Hifzi (OEV3): “When I mentioned my electric vehicle, he remarked, “Sir, if it’s electric, it’s only 450 thousand,” you know? At the time, I purchased the SEAL for 629 million Rupiah. Sure enough, 450 thousand. I replied, “Wow, how is that possible?” The second point is lower taxes. It is not subject to progressive taxation.” - Joko (OEV4): “from my perspective, the government’s involvement has improved, especially with subsidies and other incentives.” - “Given the current conditions, the support from the taxation framework for electric cars is considerable. I hope this encouragement remains for a long time. From the outset, I’ve noted various factors regarding the transition to electric vehicles, particularly concerning taxes. Annual taxes are much lower for electric vehicles compared to conventional ones, making them more attractive to buyers.” - Johan (EVIND3): “Here at Chery, we convey three key points to consumers, Sir. First, it is exempt from progressive tax.” - Umair (OEV5): “We already have the STNK, so the annual tax for the current car (EV) is 450 thousand per year, cheaper. There are friends who have motorbikes, (EV tax) is cheaper than MX motorbikes, MX can be 600-700 thousand. Then, if compared to the old car, the last time I renewed it, the annual tax has gone up to 4
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		million per year. So it's very far, this is extraordinary." - CIMB Niaga & CNAF: We have a positive outlook on the PPNBM subsidy, particularly for electric and hybrid vehicles, as it promotes the use of environmentally friendly vehicles. This subsidy is expected to boost vehicle demand, subsequently enhancing activity in the related industries.
Policy and Regulation	Incentives for EV Industry	- Ruby (OCV6): "(The government) helps build factories and so on, also invites investors to be able to invest their capital in Indonesia to build several facilities and even ecosystems related to and supporting electric vehicles. And also the form of incentives provided by the government for investors to be able to provide their investments in Indonesia." - Andi (GOV): "We are indeed concerned about establishing Indonesia as a production hub. Last year, I would say that electric vehicles (EV) have become a trend, and the global market is moving in that direction. Similar to how the battery market evolved, there wasn't much government support for smartphone incentives initially, but as technology advances, markets tend to follow. Given our interest in attracting industry, we should aim to make Indonesia a production base for Evs." - Tio (FIN2): "And also related to, perhaps, investment permits. The construction of (EV) factories in Indonesia may not be like other (conventional) cars that already have many factories." - Agustian (FIN3): "In my view, subsidizing the vehicle's price isn't justified. Electric cars are expensive partly due to high luxury goods taxes, which makes them primarily accessible to middle and upper-class buyers. It seems unfair to subsidize those who can afford to buy electric cars. On the other hand, subsidizing electric motorbikes makes more sense since buyers are mostly from the middle to lower class, and I support that. However, when it comes to electric cars, the real beneficiaries of the subsidy are the dealers or large business owners. This, in my opinion, wastes government funds. A better approach might be to offer subsidies in other forms, such as a one-time tax reduction instead of recurring taxes every five years. Making this change could increase attractiveness."

Source: Author's data

The data presented in the table indicates that societal perceptions of electric vehicle policies and regulations are predominantly positive. Numerous individuals recognize and directly experience the benefits derived from subsidies and tax incentives available to electric vehicle owners. This further suggests that the taxes levied on conventional vehicles are pretty expensive, underscoring the fact that tax reductions offer considerable relief and motivation for purchasing electric vehicles.

Figure 4.4 Thematic Analysis of Policy and Regulation



Source: Author's data processing

4.2.5. Environment

Another factor highlighted by this study is the environment, where electric vehicles are often associated with environmental issues. This factor comprises two categories: the first is Environmentally Friendly, and the second is Not Completely Eco-Friendly.

Table 4.6 Thematic Analysis of Environment

Theme	Codes	Text
Environment		- Dendy (OCV2): "This vehicle is intriguing because we usually associate vehicles with gasoline or Pertamina and similar fuels. However, as I mentioned earlier, this is one of the factors contributing to (reduce) air pollution." - Zalfa (OEVI): "The expectations are very high, very high. But on the one hand, it is said that it only moves pollution. But I don't really care, what's important is for myself, if there is no pollution in the environment, that's not my job (to do it)."

		- “Even though electric cars are safe, riding a motorbike alongside them can be noisy, and the exhaust can produce unpleasant smells.” - Harsi (OCV8): “I’m a forestry professional, so one of the areas I focus on is carbon emissions. It appears that if you want to calculate the ratio of carbon emission reduction, it’s quite significant when we only consider the carbon production of that unit (car), right?” - Tono (OCV9): “The presence of this electric vehicle will help reduce carbon emissions, especially in Jakarta. I can say that in the morning, the air quality is really bad; the sky looks dark, and it’s filled with carbon.” - Faiq (OCV11): “Yes, actually it also has an impact on the environment.” - Roy (OCV13): “Well, this pollution negatively impacts us. The effects on health are indeed severe. That’s my concern, which is why I support electric vehicles (Evs) wholeheartedly and wish to participate in creating a more environmentally friendly atmosphere in various ways. One way is through electric vehicles. The reasoning is that we are attempting to reduce and eliminate pollution where the technology already exists. So, why not embrace it? This electric vehicle has a very positive impact on the environment, especially.” - Ruby (OCV6): “The key factor is our ability to think comprehensively while prioritizing sustainability. The capacity of our environment plays a crucial role in our overall development. It’s not merely about our present concerns; we must also consider how we hand down this planet to our children and grandchildren.” - Abdullah (OEV2): “But the second one is that I have always wanted to switch to a green base.”
Environment	Environmentally Friendly	- Fajri (OCV5): “Indeed, urban areas will feel the effects significantly, as most vehicles currently rely on gasoline. With the introduction of electric vehicles (Evs), even a switch of just 20% to Evs could lead to an approximate 20% reduction in carbon emissions.” - Abu Bakar (OCV1): “What I understand is that the benefit is its non-polluting nature, addressing both air and noise pollution.”

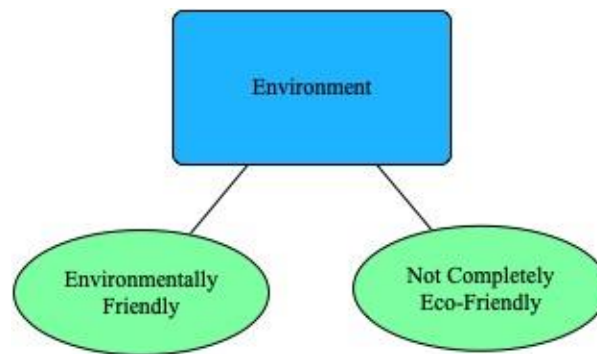
		- Dendy (OCV2): <i>"I believe this is a new approach in the effort to address the issue of pollution caused by vehicles. In my opinion, electric vehicles produce very minimal pollution—if not zero—so the existing pollution can be mitigated through the use of these vehicles. Therefore, I think this could be one of the solutions to reduce pollutants, especially motor vehicle emissions in big cities."</i> - Akram (OCV4): <i>"Yes, of course, I really hope that in Jakarta. We think about our families, our wives, and later our children. When we look around while riding a motorbike, we can really feel the pollution; it feels like there are a lot of pollutants in the air. That's why, with the presence of Evs, it can be calm in front of and behind an EV motorbike. Sometimes on the left, there's a Wuling or a BYD, and it feels calm. We don't inhale this, right?"</i> - <i>"It also relates to transportation. In fact, transportation was created to reduce pollution. However, if the transportation itself is polluting, it seems like something is not quite right. The aim is to reduce pollution, but the system still emits thick smoke. Perhaps that is one of the things that makes us uncomfortable."</i> - Fajri (OCV5): <i>"In big cities, it will definitely have an impact because the majority of vehicles here now use gasoline. With the presence of Evs, if, for example, 20% switch to Evs, that equates to a significant reduction in carbon emissions, around 20% reduction."</i> - Fredi (OCV12): <i>"Second, it is definitely more environmentally friendly because there are no exhaust gases."</i> - Hifzi (OEV3): <i>"I thought about it (the environment) because I've been to China several times. I know that in the past, the sky there was never blue due to industrialization and very dense settlements, especially in Beijing and Shanghai. But now, when I come back, the sky is blue. Why? Because they require most roads to use electric vehicles. I said, 'Wow.' It turns out that reducing fossil fuels has a far-reaching impact: health levels have increased, and pollution has decreased. It's the same in Jakarta; now it's visible—maybe around 30% of vehicles are electric. In some places, where there are many electric vehicles, the air quality is healthier. In my</i>
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		<i>house, there are no more coughs, and even motorbikes are now electric.”</i>
Environment	Not Completely Eco-Friendly	<i>- Harsi (OCV8): “But the question is, where do the resources or energy sources come from? That’s probably debatable.”</i> <i>- Zalfa (OEVI): “But on the one hand, it is said that making the (EV) battery causes pollution in the factory, so it is simply relocating the pollution, they say.”</i> <i>- Fajri (OCV5): “So in other words, if possible, in addition to the fact that electric vehicles produce zero emissions, the source of electricity itself can also be renewable, replaced with an environmentally friendly alternative.”</i>

Source: Author’s data

Regarding the environment, the data indicates that most people see electric vehicles as a solution to air pollution and higher carbon emissions, since they do not produce exhaust gases. However, some believe that electric vehicles are not entirely eco-friendly because their batteries and energy sources still generate significant carbon emissions.

Figure 4.5 Thematic Analysis of Environment



Source: Author’s data processing

4.2.6. Motives

The next factor in this study is the underlying motive for an individual to purchase or desire an electric vehicle. The motives found in this study include Economic, Personal, Social, and Environmental Consciousness.

Table 4.7 Thematic Analysis of Motives

Theme	Codes	Text
Motives	Economic	- Abu Bakar (OCV1): <i>“First, of course, is our financial capacity. If possible, I begin considering it.”</i> - <i>“To be honest, I currently don’t have enough budget to purchase an electric car. I’m still using a gasoline car.”</i> - Faiq (OCV11): <i>“For us, it has a very significant impact. Looking at the village, we can say that the money we have today is sufficient for the standard economy of society, which means the money we have now is just enough for basic necessities, such as food. So, we consider buying an electric motorbike, but in the long run, it tends to break down within 2-3 years. Replacing it by buying a battery feels like buying a new motorbike. When considering an electric motorbike, it’s better to buy a second-hand one; a second-hand motorbike for 5 million is already a long-term solution.”</i> - <i>“Okay, okay. If I have money, I also want an electric vehicle, like an electric car.”</i> - Fredi (OCV12): <i>“Back again, it essentially depends on the economic conditions, Mas Faqih. In the current situation, we focus more on efficiency. For the middle class, yes, the middle class definitely views it as more efficient. But when the economy is booming, that’s a different story. They certainly consider the brand and the prestige. Oh, is that so? Now, there are many Korean cars, and there are BMWs from Europe that already offer all-electric models. If there is a choice available, for the middle class, they certainly prioritize efficiency. Personally, I choose something that is more efficient yet looks good. That’s typical of all Indonesians. We want something that is efficient, affordable, yet still looks decent. Well, this is evident from the car I bought.”</i> - Ruby (OCV6): <i>“In principle, the efficiency measures will guide my decision. Thus, it is genuinely measured and rational. There is no inclination to be FOMO. Everything is assessed based on our capabilities and beliefs.”</i> - Imas (EVIND2): <i>“Surely the reason consumers buy Evs is that they’re tired of paying high taxes and feel exhausted by the idea of having to change; juggling two cars can be tiring. It’s more about value for money than the</i>

		<i>benefits previously mentioned regarding the environment.”</i> <i>- Joko (OEV4): “Well, at first glance, calculating the costs, it seems more worthwhile to use an electric car because I need to save money. I also thought about retirement, which means my income from the office will decrease over time. So, with an electric car, there’s a guarantee for maintenance and more.”</i> <i>- Umair (OEV5): “In my opinion, first, it’s economical. In terms of cost, it’s economical. At that time, I said I was tired of buying gasoline because the price kept going up. We don’t know the quality, whether it’s genuine or not. A few months after I mentioned this, it turned out there was a case with Pertamina. We still don’t know, and it makes us even more convinced that it can’t be trusted; we don’t know what kind of quality we are getting. We want to buy from a private company, but we can’t compare whether it’s really better. In my view, we can’t compare gasoline usage. If this were electricity, there’s only one provider. Much like electricity, we can’t differentiate between high-quality and low-quality electricity. Yes, there is a difference; it just arrives quickly and lasts a long time, that’s all. That’s my point. So the price is equal to quality; we can’t assess the quality of gasoline. The only ones who know are the sellers; during a brief power outage, there’s no way to tell.”</i>
Motives	Personal	<i>- Abdullah (OEV2): “The EV is still expensive, but I decided to go for it anyway. I chose the MINI because I replaced my old car, which was also a MINI, the petrol one.”</i> <i>- I bought the first-generation electric car from MINI. It’s the first edition of MINI that I use.</i> <i>- Imas (EVIND2): “(EV Consumers) want a new experience, want new technology, a new experience.”</i> <i>- Hifzi (OEV3): “So, for example, if I asked why I chose a BYD — at that time, I also had a BMW, you know — the standard is like the interior; it has leather and quality, like that. When I compare them, it’s mainly the soundproofing of the car. Well, BYD’s standard already meets the European standard, while Toyota’s is more aligned with the Asian standard. Like that. So the built quality is European quality. That’s the first one.”</i>

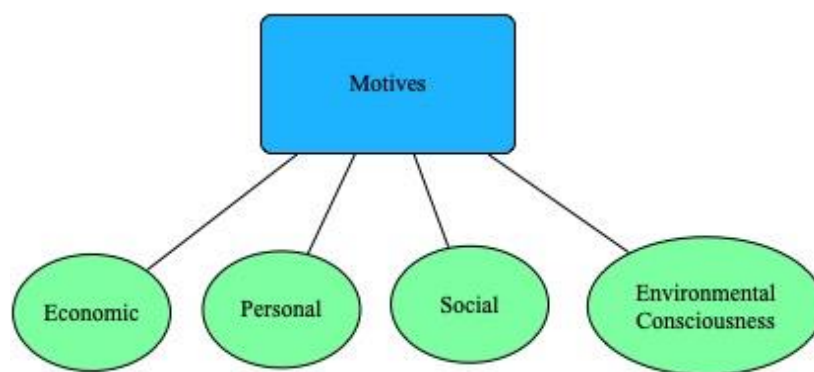
Motives	Social	- Zalfa (OEV1): <i>"Honestly, I am more influenced by YouTube influencers like Fitra Eri and others, as they recommend electric cars."</i> - Dendy (OCV2): <i>"Initially, when socialization developed, there were also testimonials from friends who had electric vehicles. Maybe that would encourage us to get one at some point, right?"</i> - Tono (OCV9): <i>"It's similar to FOMO. Many people have tried it, but then they'll switch. They're too afraid to explore new options. That's all."</i> - Imas (EVIND2): <i>"FOMO is common among Indonesian people; they frequently experience FOMO."</i> - Hifzi (OEV3): <i>"I also want to add more, maybe SEAGULL later. That's 210 million. Well, I plan to buy there too. So, if they use BYD, right? Because I have directors in my company, and all of them use BYD. Some use ATO, and some use M6, right? Some of them use SEAL, like that. So we have several—yeah, seven—who all use BYD."</i> - <i>"So the social environment is very influential. External factors are more important. Therefore, education from YouTube, from influencers, is very important. Honest reviews are very much needed for purchasing decisions."</i>
Motives	Environmental Consciousness	- Dendy (OCV2): <i>"If asked why I was interested, the reason is that it was something new, and from the air rescue perspective, it was also quite beneficial. Air pollution, noise pollution, and so on present significant solutions to urban problems. That's what I mean."</i> - Mulan (OCV3): <i>"I really want to have an electric vehicle. Why? First, as mentioned earlier, it is environmentally friendly. In today's era of globalization, it is essential to reduce pollution. One way to start is by using an electric vehicle."</i> - Zalfa (OEV1): <i>"since I am not a smoker, I dislike cigarettes, I don't want to be around smoke, I avoid poison, and I don't enjoy riding a motorbike, even with a helmet on. I want to wear a mask, which really impacts my life, especially for my children."</i>

Source: Author's data

In this context, economic factors appear to greatly influence the motivation to purchase electric vehicles. Some conventional vehicle owners haven't been able to afford

electric vehicles due to budget constraints. Meanwhile, for those who already own electric vehicles, fuel efficiency and tax benefits are the main reasons for their purchase. In addition to economic considerations, some electric vehicle owners are motivated by personal preferences for specific brands. Social encouragement is also quite influential, both through testimonials from other electric vehicle owners and from social media influencers who provide information and education about electric vehicles. Awareness and concern for the environment also complement respondents' motivations for buying and using electric vehicles.

Figure 4.6 Thematic Analysis of Motives



Source: Author's data processing

4.2.7. Facilities and Services

This study identifies additional factors related to facilities and services, categorized into four types: Workshop/Garage, Maintenance, Public Charging Station (SPKLU), and Wall Charging.

Table 4.8 Thematic Analysis of Facilities and Services

Theme	Codes	Text
Facilities and Services	Workshop/Garage	- Abu Bakar (OCV1): "I hope it's as good as the petrol one. Or maybe even better. Perhaps the price could be lower. When it's at an authorized workshop, the cost is high; at a general workshop, it's not as costly as at an authorized one." - Akram (OCV4): "So, don't let it happen that we buy an electric vehicle and need to service it, because many workshops don't accept them. They can't; they still don't want to take the risk. Well, the workshop comes first."

		- Zalfa (OEVI): <i>“Not many, if you need it, not many. In fact, the need isn’t as great as for conventional ones, and it must be official, as the warranty lasts for years. Therefore, it is impossible for there to be an electrical repair shop on the side of the road due to the existence of a warranty.”</i> - Gilbert (OCV7): <i>“Then there’s the availability of the workshop. First, perhaps a regular workshop for maintenance. There are also some available for modifications and accessories.”</i> - <i>“Maybe they need to start building the workshop area earlier. Don’t just cater to a specific brand. For example, if I have one brand and there’s a repair shop nearby with a different brand, I can still go there.”</i> - Tono (OCV9): <i>“The second issue pertains to technicians in Indonesia. As electric cars are relatively new, many people are unaware of the challenges they present. In these situations, we typically approach the official dealer. However, these factories are primarily situated in large cities. Consequently, residents in remote areas may find it quite difficult to purchase, service, or repair their vehicles.”</i> - Faiq (OCV11): <i>“When we’re in the village and our car breaks down, the repair shops around our house don’t necessarily understand electric cars. So, yes, not every workshop understands.”</i> - <i>“There are certain concerns, especially regarding what happens when an electric vehicle encounters issues. When an electric vehicle has a problem, it turns out that there are few, if any, vehicle technicians who can repair it. Indeed, this presents a significant obstacle. How can someone fix it if they themselves don’t understand the technology?”</i> - Roy (OCV13): <i>“Nowadays, showrooms and workshops should be located in major cities, as this competition is essential for capturing market share. If they only sell cars without workshops, customers are unlikely to choose that brand. Instead, people will prefer brands that have established networks ready to assist them.”</i> - Ruby (OCV6): <i>“However, when that (trouble) happens, it’s important to prepare swift actions or other measures that simplify access to after-sales or post-operational services for people. For instance, the workshop is available.”</i>
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		- Dika (EVIND4): “And of course, at my dealer, Hyundai Tangerang City, we offer a full range of services, including servicing and body repairs. We also have an extensive display, sir. So, essentially, everything is taken care of.”
Facilities and Services	Maintenance/ Services	- Dika (EVIND4): “Well, regarding service, there hasn’t been any problem since the Ioniq 5 was released. From the initial launch to now, there have been no service-related issues. We handle everything, and we guarantee it, sir. This includes vehicle warranty, service warranty, spare parts warranty, and especially the battery.” - “Okay, regarding after-sales service, we at Hyundai have also established a spare parts center. This center is located in Cikarang, alongside the Hyundai factory. Whether it’s on the same side or not, the important point is that Cikarang serves as our spare parts center. Based on my experience at Hyundai with customers who require service or body repairs, it doesn’t take long; typically, less than a month for serious collisions. For significant body repairs, the work is usually completed in under a month. Therefore, customers can rest assured that Hyundai’s after-sales service will ensure quick and efficient handling of their needs.” - “And of course, at my own dealer, Hyundai Tangerang City, we offer a full range of services, including maintenance and body repairs, and we also have a comprehensive display. So, everything is safe.” - Imas (EVIND2): “In AION’s view, the battery is indeed the heart of the electric car itself, and a decrease in battery health or an accident raises numerous questions from customers. The solution provided to us is the first lifetime warranty for the battery, similar to Wuling. The main difference is that if something happens to the components within the battery, even if the overall condition is safe, we replace the entire pack rather than just individual modules. In contrast, if the contract manufacturer, which I prefer not to name, uses blood cell batteries, they will only replace the damaged cell. While it could theoretically be done on a module basis, logically it is not feasible because Indonesia lacks the technology and human resources needed for such repairs.” - Hifzi (OEV3): “Do electric vehicles need maintenance? No, they don’t. We go to the

		repair shop once a year. Why? Because electric systems don't require maintenance. So, yesterday I took it to the repair shop just once to tighten the bolts. That's it. There's no oil change or complicated spare parts. Overall, this electric car is economical in terms of maintenance costs because there aren't many variables in the engine, and that's why it's reliable. - Joko (OEV4): "This is what the government should pay attention to, to avoid importing all electric cars or electric vehicle products into Indonesia without considering the supervision related to maintenance. For instance, the service, spare parts, and their sustainability later." - Umair (OEV5): "Regarding service and maintenance, thank God, the past 3 or 4 months have been trouble-free. Yesterday, during the first service at 5,000 miles, there were no issues. The next service will be at 20,000 miles and I hope there won't be any delays then either. That's it, bro. Of course, we hope so."
Facilities and Services	SPKLU (Inadequate)	- Abu Bakar (OCV1): "There are few charging stations available." - Dendy (OCV2): "For example, what if during a trip someone suddenly forgets to measure how many meters of electricity they need and runs out halfway through the journey? If the availability of POM, or whatever they call it to refill electricity (SPKLU), is probably not as common as SPBU, that might be the drawback." - Mulan (OCV3): "As of today, the primary issue is that access remains limited. SPKLU stations are still scarce, even in major cities. Therefore, we need to have our own electricity at home to charge. If the battery drops to 50% or below, it becomes concerning, especially in case of a traffic jam." - Fajri (OCV5): "If you look at the regions, for example, if we return to our hometown, the (SPKLU) is still minimal, right?" - Zalfa (OEV1): "There are quite a few fast chargers with capacities up to 120 kWh in outer cities; yesterday, there was only one in Cirebon. In Depok, there are many, but fast chargers are available in various locations." - Gilbert (OCV7): "That's the biggest concern. So first up is infrastructure., SPKLU is similar

		to a gas station — a public electric vehicle charging station.” - Afrizal (OCV10): “In my opinion, the main drawback is the charging station, which is particularly lacking in this area (Palembang). Additionally, I have visited PLN several times. PLN has SPKLU, right? It often goes by, and it is very quiet. Very quiet.” - Faiq (OCV11): “Electric vehicles. In my opinion, electric vehicles may not be suitable for us in the village. The reason is that we are in a village, and the availability of electricity stations, similar to gas stations, is limited.” - Roy (OCV13): “What I know is that the infrastructure is still separate. What I mean is that the brand that was there was made by themselves, they made it themselves.” - Ruby (OCV6): “As far as I have heard from fellow users who have done it, and as far as I have also received information related to this electric vehicle. First, the condition of the facilities is not evenly distributed in all cities. Yes, not all SPKLU and so on still have to queue.” - Abdullah (OEV2): “I’m afraid that there won’t be any (SPKLU) suddenly. On the road, right? Where? Where is there any? If you go to Tasik, you only get there and don’t go back. Are there any SPKLUs in Galunggung? Not yet. One SPKLU has several connectors. There are several types, too. There are AC, CCS, fast charging, and low charging.” - Andi (GOV): “That’s why there needs to be a lot of SPKLUs.” - Dika (EVIND4): “But once again, regarding the main point, we need to return to the issue of SPKLU or the charging stations themselves. Perhaps in other countries, charging stations are located on the side of the road. However, in Indonesia, we must visit specific gas stations, which makes it difficult—it’s still very challenging for Indonesians. So, returning to the public’s concerns about chargers, yes, from the government’s perspective, it’s not optimal.” - Habli (FIN4): “Well, there may be shortcomings in some areas because electric vehicles still lack widespread charging stations.” - Imas (EVIND2): “So, SPKLU is important, especially for people who have a lot of mobility, they need fast charging.”
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		- Hifzi (OEV3): “For example, when I went to Bali, in the Banyuwangi area, there were still a few SPKLUs, and only slow charge. So it’s uncomfortable, I’m nervous, “How will I charge it later?” That’s what makes me a bit worried.”
Facilities and Services	SPKLU (Adequate)	- Zalfa (OEV1): “The SPKLU is already quite sufficient. Well, at most, just add more large power, and that’s it.” - “In Depok, it is sufficient, very sufficient; even yesterday, I returned to my hometown in Cirebon, and it is available at all PLN stations and several gas stations. However, what is lacking is speed.” - “I don’t usually check, but for example, if there’s a range of 500 km, it’s only 250 km to Cirebon. The important thing is that there’s one in Cirebon, and that’s all that matters. However, if you look at the app, there’s one in every city; there should be one at every PLN and at every gas station in a large area.” - Hifzi (OEV3): “SPKLU now, I’ve tested it from Jakarta to Surabaya. So, SPKLU is not just adequate; it will definitely grow. In economic terms, there’s demand and supply. For instance, about a year ago, when I drove the BYD Seal to Jogja, it was only at a rest area. At that rest area, there were only two charging points. Some even provided only slow charging. But look at this past year: almost all rest areas now have at least two fast charging points. So it’s really not an issue now. If, for example, you can’t stop here, there will be another one up ahead.” - Fredi (OCV12): “Additionally, this is reflected in the SPKLU development policies. We also recognize that SPKLU is actually quite comprehensive. Perhaps every toll road stop heading towards Java should have one or two SPKLUs, or stops at PLN offices, something like that.” - Imas (EVIND2): “In fact, there are already many SPKLUs in Indonesia, especially in Jakarta, West Java, or Java Island. There are already a lot, and there are many on Sumatra Island as well.” - Johan (EVIND3): “But up until now, we have always taught them that SPKLU is already numerous, and the government has a program like that, to boost the sale of electric cars. So, from the government, building facilities for electric cars is, of course, accelerated.”

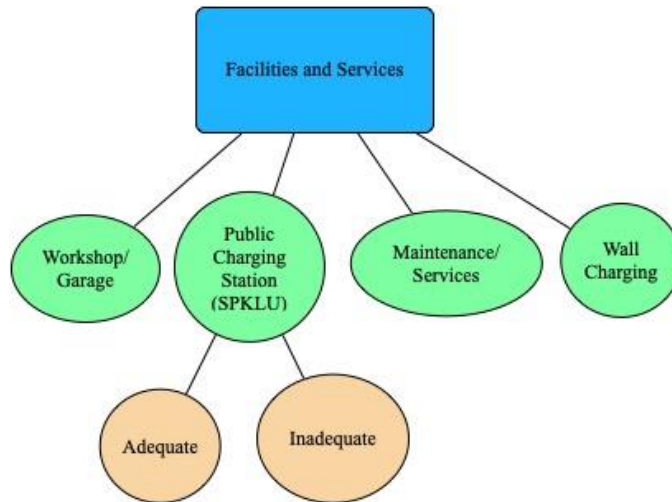
		- Umair (OEV5): “For the city, I believe there are already plenty of SPKLUs. There just happens to be one near our house. We also have the convenience of being able to leave it to charge at the showroom where we purchased it, which just so happens to be close to the office, so it’s not an issue. It can be like that. Taking the M6 out of town requires a lot of bravery and confidence to head to Java area.” - “For the city, I believe there are already plenty of SPKLUs. There just happens to be one near our house. We also have the convenience of being able to leave it to charge at the showroom where we purchased it, which just so happens to be close to the office, so it’s not an issue. It can be like that. Taking the M6 out of town requires a lot of bravery and confidence to head to Java area.”
Facilities and Services	Wall Charging	- Abdullah (OEV2): “I charge it from 0 until it’s full. Once, it was so low that when I got home, it was at 20%. When I charged it, it only took 7 hours.” - “At that time, it was part of the sales.” - “Due to practicality, I believe the SPKLU must be limited.” - Imas (EVIND2): “At home, one of the advantages for us right now is that the government supports electric cars by collaborating with PLN, which installs 7,700 for only IDR 850,000, and then there is a subsidy.” - “As manufacturers, we can focus more on wall charging because the purpose of this wall charger is to maintain our battery. We have the technology to improve the battery’s lifespan. Therefore, we also educate the public about charging at home.” - Hifzi (OEV3): “Yes, it’s free (included in the purchase)” - “It is Practical. It seems we don’t need to worry. When you get home, just charge it. For that person too, we don’t have any additional costs other than the fees for PLN.” - Joko (OEV4): “When I got home, I charged it to 100% to use it three times back and forth to the office. That night, I charged it at home, and in the morning, I used it again when it was full. So, you could say I never charge it outside, right? Maybe once in a while, but it’s very rare rarely.”

		- “Actually, the first reason is indeed one of the advantages of buying this car. We get a lot of benefits charging.” - “After using it three times, I usually go to the office, and the charge is still around 25%. When I get home at night, I typically charge it, usually around 10:30 PM. In the morning, the battery is usually full, which works perfectly for me. Additionally, there are government benefits; by charging at home, I receive extra incentives from the government.” - “We got it and then installed it with our own installation costs at PLN, and if I’m not mistaken, we received a discount for those costs as well. So, I finally completed the installation.” - Umair (OE5): “For BYD, the M6 does not come with a wall charging bonus, so we have to purchase it ourselves. However, the dealer provides facilities, assistance, and recommends brands that are compatible with the car. This support helps us find someone who sells the equipment and connects us with PLN for registration. While the price of the wall charger is quite high if we buy it ourselves, I believe it is a long-term investment.” - “It’s a convenience, yes. So, because of convenience and flexibility.” - “It’s full at night. At home, it is indeed limited by the government and PLN. The maximum use for purchasing the device can only be 7,700 watts, which is about 7 kWh. Charging the car will take a very long time. So, 60% can take 7 to 7.5 hours. From 40% to 100% yes.”
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Source: Author’s data

In this context, several key factors are foremost considerations. Firstly, the availability of specialized and general workshops, which have not experienced a significant increase across many locations. Secondly, there are differing opinions regarding the availability of public charging stations (SPKLU). Thirdly, regarding services and maintenance, most stakeholders consider that these are no longer pressing concerns for electric vehicles. Fourthly, the function of wall charging, which is an essential component for home-based battery charging.

Figure 4.7 Thematic Analysis of Facilities and Services



Source: Author's data processing

4.2.8. Financing

The eight factor that emerged in this study was financing, which included three types: conventional financing, sharia financing, and financing from digital banks.

Table 4.9 Thematic Analysis of Financing

Theme	Codes	Text
Financing		- Abu Bakar (OCV1): "Yes, I believe that for most Indonesians, the roles of banks and non-banks are essential in facilitating the ownership of electric vehicles. Many people likely own motorbikes, cars, and other vehicles due to these roles. You could say they purchased them on credit." - "For financing, I believe we should focus on lower margins. So those are two aspects: the margin offered and the ecosystem, or the number of services owned by the bank." - "It is possible that the financing is cheaper. Payments can now be made online from anywhere, and you can also use your cellphone." - Mulan (OCV3): "First, the bank bought us an electric car yesterday because it was recommended by them. So, the bank itself offered us a deal on an electric car due to available discounts—specifically on the interest rates. Consequently, the83ndonesents were also low. That's what made my father

		interested in buying an electric car from this bank.” - Fajri (OCV5): “Regarding financing itself, we actually rely on gasoline vehicles. Historically, on average, about 90% of people in Indonesia have made purchases using financing options, whether from banks or multi-finance.”
Financing	Conventional Financing	Umair (OEV5): “So at that time, I used BCA, specifically BCA Finance. At that time, I had two options: BCA Finance and one Permata. In the end, we chose BCA because we already had a track record, which made dealing with BCA Finance easier. We had previously used BCA as well, so it was simpler for us; it wasn’t complicated, and we didn’t have to start from scratch. We just continued from where we left off to pick up the second car. So, it was easier, no need to prolong the process. The point is, it was a repeat order, as we already had a prior track record.” - Mulan (OCV3): “Then at that time, I used BCA, BCA Finance. At that time, I had two options: BCA Finance and one Permata. In the end, we chose BCA because we already had a track record, making it easier with BCA Finance. We previously also used BCA, so it was convenient, gentlemen; it wasn’t complicated, and we didn’t have to start from scratch again. We were just continuing from what was already paid off, picking up the second car. It was easier, no need to drag it out, so the point is repeat orders. There was already a prior track record.” - Zalfa (OEVI): “In this case, it’s funding, and why that bank or institution matters. I mean, in the past, I had paid off a motorbike in installments at Adira, a multi-finance company.” - Ruby (OCV6): “I have been offered financing for electric vehicles by one of the conventional banks, which is the office’s reference bank. Yes, from the shifting and several proposals they mentioned as part of what they referred to as the priorities.” - Faiq (OCV11): “But if, for example, it turns out that you can still afford sharia, even though it is a bit burdensome, then perhaps you can still choose sharia. However, if it becomes too overwhelming, then maybe you can select something else conventional.”

		- Johan (EVIND3): “Okay. We have our partners: Adira, Maybank, MTF (Mandiri Tunas Finance), and BCA Finance. In total, we have five leasing companies.” - Hifzi (OEV3): “Financing is pretty good because the programs are even more interesting now, you know? Where does it show? For example, the cooperation between several banks and electric vehicles— they even offer 0%, you know. Right? For instance, yesterday I wanted to buy, but why did I buy BYD? I have a BYD Seal, so why did I get a Sealion, right? It’s because of a program from Clipan Financial; it’s 0%. So, “Sir, with you paying 50% DP, you pay 0% installments, sir. You only pay insurance.” Like that. If I’m not mistaken, the difference is only 13 million for one year, right? So, I paid 350 million DP, right? Well, then the 350 million is paid over 12 months. There’s also a second program that is even crazier, which involves paying 50% now and then 50% next year. And that’s just for electric vehicles: Mandiri, BCA doesn’t have. Mandiri and Clipan, if I’m not mistaken, and with Adira.”
Financing	Conventional Financing (Balloon Payment/Financing)	- Hifzi (OEV3): “There’s another program that’s even more extreme, offering 50% now and 50% next year. This only applies to electric vehicles. Several institutions are involved, including Mandiri and Klipan, but not BCA. If I am not mistaken, Mandiri, Clipan, and Adira.”
Financing	Conventional Financing (0% interest rate)	- Dika (EVIND4): “Rich people seek leasing companies that can give them 0% interest rates.” - “There are many 0% interest rate programs, not just from Hyundai Finance. For instance, BCA also offers 0% interest rates. The point is that wealthy individuals will seek 0% interest rate financing options for EVs because they want to keep their payments from becoming too high.” - Joko (OEV4): “Yeah, when I talked with my family yesterday, I thought, thank God if there’s 0% interest. If not, I would just pay in cash, that’s what I mentioned. So I believe in avoiding unnecessary interest usury.”
Financing	Sharia Financing	- Abu Bakar (OCV1): “First, I will definitely choose a sharia bank. The controversy over whether sharia banks are the same or not is none of my business. As someone who is not an expert in sharia, I leave the expertise to the

	(Sharia Compliance/Avoid Usury)	<i>DPS (sharia board) and just follow their guidance. This means that I choose a sharia bank that adheres more closely to the teachings of Islam than a conventional one. Like the tagline of one bank, it is more reassuring. So, definitely a sharia bank.</i> <i>- “When we are discussing sharia; it is not about emotions, but about spirituality. If it is spiritual, you don’t consider anything else. For instance, right now, the margin of sharia banks is larger than that of conventional banks. People don’t care; they simply join sharia banks. The reason is that sharia banks make up only 6% of the total ecosystem in Indonesia. The capital is still small, and so on. The IT is also not that impressive. There are still many notes on the service. However, those people have quite a strong enthusiasm for sharia banks.”</i> <i>- Dendy (OCV2): “Yes, for me personally, because we are Muslims, we hope that these processes do not violate sharia.”</i> <i>- “Although Islamic banks may have higher margins compared to conventional ones, I still choose the Islamic bank. Earlier, it wasn’t about the price, but our peace of mind and the peace of our souls. We transact without violating sharia. That’s it; that’s the most important thing. Regarding the difference in price and so on, well, it’s relative, right?”</i> <i>- Mulan (OCV3): “Well, first of all, this is the factor: if sharia is clear in the contract, such as in the sale and purchase agreement, it creates a more peaceful situation for credit. Additionally, the interest does not increase over time. For sharia, it’s more peaceful for that reason. When the contract is clear, the interest is also not, well, it’s not really interest. The profit sharing is clear from the start, which means it doesn’t make you anxious. For example, after 2 or 3 years, suddenly the interest doesn’t jump to a high rate. I didn’t anticipate it would be like that. So, every month I need to prepare this much money for an electric car.”</i> <i>- Fajri (OCV5): “For me, it leans more towards religion. I choose BSI bank to avoid usury, as it aligns better with sharia, so I consider that first. Well, when it comes to the flat rate, that’s the added value. However, if we compare it to the appealing promotions offered by conventional banks, BSI can</i>
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		sometimes be more expensive in terms of what we end up paying.” - Zalfa (OEVI): “Of course, there must be, if I have to choose, I will definitely choose sharia because I don’t want to be charged usury, that’s all.” - Gilbert (OCV7): “Certainly, there’s Sharia—what’s it called? There’s a Sharia bank, right? Since most of us are Muslims.” - Harsi (OCV8): “Yeah, especially for Islamic banks, because I am sure and believe that a more halal scheme is a distinct issue. It’s okay.” - Tono (OCV9): “We can say that Indonesia is predominantly Islamic. For those who understand, they will definitely consider Islamic banks. That’s my starting point, leaning more towards Islamic finance institutions.” - Afrizal (OCV10): “But if there is no money and an urgent need to buy an electric car arises, you have no choice but to seek out a banking institution that follows Sharia law or does not have significant elements of usury.” - “Yes, for me personally, because of my background is from a Pondok (Islamic boarding school), I might prefer Sharia first. Sharia first when I really need to take credit, right?” - Fredi (OCV12): “So, no matter what, it should be a Sharia bank.” - Roy (OCV13): “Credit, yes, definitely sharia. That’s for sure. But as I mentioned earlier, it would be even better for the spirit of Green if financing institutions had programs that aligned.” - Ruby (OCV6): “I would first prefer a Sharia bank. Because of my preference, I avoid usury. So that’s the principle, right?” - Dika (EVIND4): “To be honest, it’s rare for customers to use sharia finance. Perhaps only those who are deeply religious, Sir, tend to avoid anything that could be considered usurious, for example.” - Imas (EVIND2): “(Customers) Muslims are rarely a significant demographic; out of 100 buyers, only 20% are Muslims. The majority are Chinese, based on our findings in Senayan. This represents the typical average, with around 20-30% being Javanese, for instance. So far, Muslims rarely request
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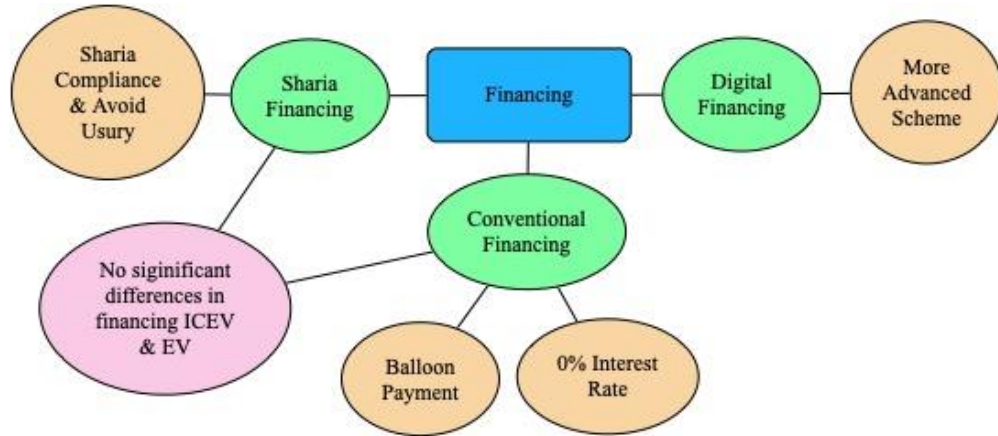
		<i>sharia, unless some have their own principles and choose to adhere to sharia.”</i>
Financing	Digital Financing (More Advanced Scheme)	- Gilbert (OCV7): “Maybe this is a technological advancement. I might trust online banks more now. Online banks are more advanced, like the Jago bank model. Jago banks are very advanced. Digital banks offer advantages. In my opinion, their offers are superior to those of traditional banks. For example, if they launch a campaign for electric vehicles, it seems more fitting compared to conventional banks, which often just follow trends. So I tend to trust conventional banks more, similar to Jago banks, Aladin, and others. Digital banks.” - “Because usually, maybe Digital Bank, in the bank application we can see the scheme, the details, because it is already based on a advanced application, right? So we don't hesitate.”
Financing	Conventional and Sharia Financing (No significant differences in financing ICEV & EV)	- Roy (OCV13): “There's no difference. From what I understand, if I go to the mall, it seems to be the same.” - Fredi (OCV12): “Essentially, the scheme should be consistent across all vehicle financing options. The differences are minimal, mainly revolving around interest rates. When a program is involved, there might be a one-time installment discount, a reduced payment, or a lower interest rate compared to others.” - Fajri (OCV5): “Regarding the packages, so far, they all seem identical. For the financing to promote EVs, the approaches are nearly the same, with similar applications gasoline cars.” - Tio (FIN2): “So far, there haven't been any promotions for electric or regular cars, so financing options remain the same.”

Source: Author's data

The data indicates certain financing preferences. Some individuals prefer conventional financing because they have prior experience with conventional banks or multi-finance institutions, making the process simpler. Others opt for conventional financing due to the availability of a balloon payment scheme. Additionally, a few seek 0% interest rates from conventional banks. Conversely, some respondents, even if they haven't used it yet, prioritize Sharia financing from Sharia banks or multi-finance, aiming to avoid usury (riba) in EV financing, driven by Islamic teachings. Only one person favors digital

banks, believing they are more advanced, with clearer financing schemes and greater transparency. Overall, respondents note minimal differences between conventional and Sharia financing for both conventional and electric vehicle purchases.

Figure 4.8 Thematic Analysis of Financing



Source: Author's data processing

4.2.9. Challenges

The final factor identified in this study is challenges, which encompass many categories expressed by respondents regarding the difficulties in purchasing and adopting electric vehicles. These challenges include Limited Government Involvement, Uncertainty, Battery Issues, Unnecessity, Lack of Workshop/Garage, Cost/Financing, Not the Main Vehicle, Lack of Financing Campaign, Economic Condition, Lack of Manufacturers Ecosystem, Resale Value, Lack of Infrastructure and Ecosystem, Mileage Capability, Quality and Durability, Insufficient Benefit Literacy, Different Charging Types, Behaviour and Adaptation, Few Segment Options, Lack of Government Campaign/Socialization, Trust, Size/Dimension, Charging Time, and Longer Time Travel.

Table 4.10 Thematic Analysis of Challenges

Theme	Codes	Text
Challenges	Limited Government Involvement in small regions	- <i>Mulan (OCV3): "The only thing lacking is that the government may still play a role in large cities like Jakarta or Semarang, where there are likely many electric car enthusiasts. Therefore, the focus remains on these big cities. In smaller cities we visit, there really</i>

		<i>isn't any government involvement regarding electric cars."</i>
Challenges	Uncertainty	- Ajo (IIMS 2025): <i>"I don't want to switch to an electric one just yet because I'm still concerned about maintenance, battery issues, and costs, etc.</i> Akram (OCV4): <i>Third, we believe there are still many unknowns regarding this electric car when we purchase it later. For example, does it have a battery? What if we travel out of town? What if the battery gets damaged? And so on."</i> - Fajri (OCV5): <i>"Additionally, the process for replacing this battery remains unclear. In the future, after being used for, say, 10 years, will all the batteries have degraded? Will they be unable to be replaced by the manufacturer, or will they simply become waste? That is also unclear."</i> - Zalfa (OEVI): <i>"And maybe odd-even, but I'm not sure what will happen next if people have electricity.</i> Gilbert (OCV7): <i>If there is a flood, some concerns remain. Based on my experience testing an electric bike, I once got caught in the rain, and my electric bike broke down. Additionally, if an electric car is submerged, will it still function properly? This is something to consider in the context of Indonesia."</i> - <i>"Furthermore, the selling price remains uncertain. If it gets sold again, what will that look like? Will it be difficult or easy? Are people interested, or not yet? "</i> - Afrizal (OCV10): <i>"There are still rumors circulating that maintaining electric cars after five years will be more difficult than maintaining gasoline-powered cars. Consequently, people remain very comfortable with conventional vehicles.</i> - Faiq (OCV11): <i>There are many electric bikes, from what I've seen. If people say they don't know either, the battery is quite expensive. Later, after two years, it will be soaked and damaged, and buying a new battery costs about as much as buying a new bike, among other things."</i> - Fredi (OCV12): <i>"Well, that's our concern; no one has experienced that yet because this electric vehicle is new—it's not even five years old. While the battery life, if I'm not mistaken, can last up to eight years, what will happen</i>

		during those eight years? We still don't know; it's still unclear, right? Maybe that's why people are waiting and seeing." - "So, most people are still waiting, except perhaps those who don't consider the cost."
Challenges	Battery Issues	- Mulan (OCV3): "I don't really know. Maybe it fell, I think. Because it's also used. Maybe. You can think of it like a cellphone, as it has battery health. If we frequently charge it and use it, the battery health will surely decrease over time. This might also apply to electric cars. So the farther we go, it definitely won't reach 300 km or its maximum for 100%." - Dika (EVIND4): "So this is the biggest challenge, namely, public concern about batteries, sir." - Tono (OCV9): "I know of a problem that exists in electric cars, oh sorry, all electric vehicles. That's one issue, namely the battery. Most of the average people I know, including some of my colleagues, have experienced this. It applies to motorcycles, but this certainly does not exclude the possibility in cars as well." - Imas (EVIND2): "Okay, but let's clarify: IP68 refers to a battery's ability to withstand being fully immersed in 1.5 meters of water for 30 minutes and then being reinstalled in its chassis, not to a situation where the car is submerged in that depth of water. In my personal opinion, I always advise customers that we do not recommend this under any circumstances. Even though our cars are claimed to be able to drive through floods at 40 km/hour within 30 minutes, it shouldn't be for an extended period. I believe that the SOC or battery standards across all cars are similar. While 30 minutes is a considerable duration, it means the battery is running, not soaking. Therefore, I always emphasize that regardless of the electric car technology you have, you should avoid flooding. Because even if the battery and chassis are safe, water will inevitably cause rust and corrosion, which can be detrimental later." - "For AION, the battery is essentially the heart of the electric car. When the battery health decreases or an accident occurs, it raises many questions from customers. The solution offered to us is a lifetime battery warranty, similar to Wuling. The only difference is that if something happens to any

		components within the battery, even if the overall condition remains safe, we replace all components in one pack, rather than per module. As for the contract manufacturer, I prefer not to mention the brand, but I will say they use cell batteries. So, if one becomes damaged, they only replace the affected cell. While module replacement could be an option, it isn't feasible because Indonesia lacks the necessary technology and skilled labor to perform such repairs."
Challenges	Unnecessity	- Akram (OCV4): "There's no thought of needing to shift; it's still sufficient to use this (conventional one). If the goal is efficiency, we refuel during off-peak hours, such as very late at night or very early in the morning. If there's an odd-even restriction, we can take GoCar or GrabCar. When the situation doesn't align—for instance, our (license plate) is even while (the date) is odd—we ride a motorbike. So, it seems like the urgency isn't felt yet." - Harsi (OCV8): "If I am a person whose main consideration is needs. To have something, the focus is on needs, not just on looking futuristic or different; it's not that simple if I consider needs. So far, thank God my unit is still good enough to support activities, so if it is decided, oh yeah, this is the time to buy, I don't think so yet. This is the time to buy, I don't think so yet. Yes, my mind is already open regarding mobility." - Afrizal (OCV10): "When it comes to electric vehicles, I notice that their use is more common outside the city, possibly on islands like Sumatra. There aren't as many users on Sumatra as there are in Java, particularly in large cities like Jakarta. This might be because the mindset of those in that region is that electric cars are not yet necessary." - "I don't feel any urgency to switch from a gasoline-powered car to an electric one."
Challenges	Lack of Workshop/Garage	- Akram (OCV4): Secondly, earlier, many workshops haven't received it yet. They need to make spare parts and prepare it like that. - Gilbert (OCV7): "Then there's the availability of the workshop. First, perhaps a regular workshop for maintenance. There are also some available for modifications and accessories." - "Maybe they need to start building the workshop area earlier. Don't just cater to a specific brand. For example, if I have one

		brand and there's a repair shop nearby with a different brand, I can still go there." - Tono (OCV9): "The second issue pertains to technicians in Indonesia. As electric cars are relatively new, many people are unaware of the challenges they present. In these situations, we typically approach the official dealer. However, these factories are primarily situated in large cities. Consequently, residents in remote areas may find it quite difficult to purchase, service, or repair their vehicles." - Faiq (OCV11): "When we're in the village and our car breaks down, the repair shops around our house don't necessarily understand electric cars. So, yes, not every workshop understands."
Challenges	Cost	- Dendy (OCV2): "We are also constrained by financing issues. If we automatically replace the vehicle, we will also need to pay for a new one, and that could be a consideration as well." - Mulan (OCV3): "Firstly, if you ask us why we haven't decided to buy an electric car yet, it's because we simply don't have the money for one." - Akram (OCV4): "The second suggests that there is spending that feels more like a priority. People say that buying a car now is an unwise investment unless we truly need it urgently."
Challenges	Being the Second Vehicle	- Fajri (OCV5): After extensive research, it seems that Evs are now suitable for second vehicles - But it's true that the person who bought it was for the second vehicle - Gilbert (OCV7): In Surabaya, many people are already using it, especially my neighbors; a lot of them are already using it, but from what I've noticed, it's definitely not the first car. - Fredi (OCV12): Well, this is the most important point. Electric vehicles can't yet be used as primary vehicles. Why? Because Electric vehicles have limited range. - Imas (EVIND2): Then, so far (EV) is not for the first car. - Agustian (FIN3): Since the car's price is still relatively high, the primary target remains customers who are not buying an electric car for their first vehicle; it could be their second or third car, perhaps they want to give it a try.

		<i>Therefore, it hasn't yet become their main vehicle.</i>
Challenges	Lack of Financing Campaign	- Akram (OCV4): "So, in general, banks and financing institutions have not had a massive campaign to encourage people to shift from petrol vehicles to electric vehicles." - Afrizal (OCV10): "I believe, for that matter, that banks are especially trying to entice people to switch or come up with tempting offers to encourage buying electric cars. However, I think it's still far, yes, still very lacking." - "In fact, I see that they are likely more interested in offering vehicles that are easier to sell (conventional ones)."
Challenges	Economic Condition	- Faiq (OCV11): "We are significantly affected. After examining the village, we can conclude that the money we have today is intended for general needs. The funds we currently possess are sufficient to cover our basic necessities. Therefore, while considering the purchase of an electric motorbike, we realize that if it breaks down in 2-3 years, replacing the battery feels akin to buying a new motorbike. We also reflect on the electric motorbike option. It's wiser to buy a used motorbike; a second-hand bike for 5 million already represents a long-term investment."
Challenges	Lack of Manufacturers Ecosystem	- Fredi (OCV12): "But again, people believe that electric vehicles are all about batteries. That's all; that's it. Why are there so many options, like VinFast, the price is cheap. But why doesn't it boom (minimal population)? Why isn't it selling? Why isn't it happening? Because it comes back to people's trust in a vehicle—after all, a vehicle isn't used for just 1-2 years; it can last up to 5 years. That really affects the sustainability of the product." - Joko (OEV4): "Because we see manufacturers that are not present, yes. The factories that are here tend to finish quickly, then close. Yes, this is what the government must pay attention to: what will happen to the people who have bought electric cars." - "But we also recognize which products we can use. The possibility of their sustainability will take a long time Indonesia." - Umair (OEV5): "In my opinion, the only problem is that the market is still dominated by one brand from one country, resulting in a lack of variety in the ecosystem. If it continues to grow over time, I believe everything will

		<i>become quite similar. For consumers, this means fewer choices, leading to confusion as they're all quite alike. I hope that in the future, brands from Japan and Europe will start producing cars that can compete in terms of price and quality with products from China."</i>
Challenges	Resale Value	- <i>Mulan (OCV3): "So, the selling price will definitely be lower."</i> - <i>Gilbert (OCV7): "Then the selling price is still unknown, right?"</i> - <i>Umair (OEV5): "Then third, the resale price. Sell value. It remains a preference and a question for many. Is this sufficient? Will it be good enough? Or will it decline? That's what should cause delays. In many European countries, that's also an issue."</i> - <i>Fredi (OCV12): "There could also be another concern: the selling price. Will electric vehicles be like cellphones? Yes. When a battery is bloated or its service life has significantly decreased, does its usage also decline? Can it simply be thrown away, or can it be replaced, albeit at a very high cost?"</i> - <i>Roy (OCV13): "Well, we don't want to buy something, then try to sell it again but it doesn't sell and ends up becoming scrap and useless."</i>
Challenges	Lack of Infrastructure and Ecosystem	- <i>Fajri (OCV5): "The electric vehicle market in Indonesia currently produces more sales than it contributes to infrastructure development."</i> - <i>"The ecosystem has not been fully established yet."</i> - <i>Gilbert (OCV7): "The first thing that comes to mind is that if I'm on a long journey, right? We're okay in Surabaya, as we're starting to build. But if I'm in Madura and suddenly want to charge in the middle of the road, what I think about is probably the infrastructure, right?"</i> - <i>Harsi (OCV8): "Then the second thing is, if we talk about refueling, wow, this is in East Kalimantan. What's more, it's really difficult. How ironic is it that there's an area that still doesn't have electricity? We never imagined that this vehicle would suddenly break down or die in the middle of the forest."</i> - <i>Tono (OCV9): "Is the infrastructure for electric cars in this country adequate? This includes spare parts, services, and electric charging stations. Are they all evenly distributed?"</i>

		- Afrizal (OCV10): “Moreover, the infrastructure in Palembang, in particular, is not yet very conducive to switching to electric cars, as the charging stations are quite rare.” - Faiq (OCV11): “Electric vehicles. In my opinion, electric vehicles may not be suitable for us in the village or in rural areas. This is because, within our village, the availability of charging stations, similar to gas stations, is quite limited. Therefore, in our view, electric vehicles are not a good fit for villagers. In fact, in our area, if possible, we prefer to use diesel.” - Roy (OCV13): “It will take time if we add infrastructure, right? Currently, the infrastructure for charging electric vehicles is still quite rare and difficult to access.” - Ruby (OCV6): “It will take time if we add infrastructure, right? Currently, the infrastructure for charging electric vehicles is still very rare, and it’s still difficult.” - Abdullah (OE2): “If I see it (the ecosystem), it is still not as aggressive as the sales of gasoline cars sales.” - Imas (EVIND2): “The second issue is the condition of Indonesian roads—there are puddles everywhere. We still call them puddles, even though they’re half a tire deep. Yesterday, I explained this to a customer. “Miss, there is a flood,” I said, referring to half a tire, but she insisted it wasn’t a flood; it was just puddles. I was surprised, too, because in Depok there aren’t any puddles; Depok is relatively high, so puddles. This brings up the point about the structure of Indonesian roads, which I believe favors SUVs over MPVs.” - “Java Island is alright, but in Kalimantan, in the remote areas, I don’t think electric cars are appropriate. First, the roads don’t support them, and second, the distances (from area to another) are very far.” - Tio (FIN2): “If one observes the development of electric vehicles, it becomes evident that the ecosystem remains underdeveloped.”
Challenges	Mileage Capability	- Abu Bakar (OCV1): “I’m a bit worried if I go far away to an area where there is no station.” - Dendy (OCV2): “For instance, a simple example is what if, suddenly, a person forgets to measure how many meters of electricity are needed and runs out halfway. The availability of charging stations, or whatever they are called, may not be as widespread or as

		numerous as gas stations, which could be a drawback.” - Mulan (OCV3): “Additionally, the distance is limited. Most can only be used within the city due to their short range. If you need to venture outside the city, you must locate another SPKLU, making it complicated.” - “For example, it’s relatively safe in the city. However, if you go out of town, it’s not safe at all for electric cars.” - Gilbert (OCV7): “The first thing that comes to mind is whether, for instance, it’s a long journey. We’re fine in Surabaya, starting to wake up. But if I’m in Madura, suddenly while driving, I might want to charge it.” - Fredi (OCV12): “Electric vehicles have a limited range. How far can they go on a single charge? For example, if we forget and suddenly need to go somewhere in a hurry, we might find ourselves waiting to charge it first. The fastest charging takes at least half an hour, while others may take up to two hours or even seven hours, depending on the charging method.” - “Sometimes, we are told by (the factory) that the range is 300 km. However, that’s usually just on paper. It actually depends on road conditions and how you drive the car. Essentially, the real range could be only half, or 60%, of that.” - Abdullah (OEV2): “I’m afraid that there won’t be any (SPKLU) suddenly. On the road, right? Where? Where is there any? If you go to Tasik, you only get there and don’t go back. Are there any SPKLUs in Galunggung? Not yet. One SPKLU has several connectors. There are several types, too. There are AC, CCS, fast charging, and low charging.” - Andi (GOV): “In my opinion, yes, sir, I once read that there was a study from the electric motorbike association, one of the findings being fear of running out of battery on the road.” - Hifzi (OEV3): “For example, when I went to Bali, in the Banyuwangi area, there were still a few SPKLUs, and only slow charge. So it’s uncomfortable, I’m nervous, “How will I charge it later?” That’s what makes me a bit worried.” - Joko (OEV4): “Even on long trips, I might never have used this for long journeys.
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		<i>Yesterday, when there was talk about going home, I was still a bit nervous.</i> - Johan (EVIND3): <i>The first thing they questioned was the distance.</i> - Anonymous in IIMS 2025: <i>“Interested in Evs but still have concerns about safety and range, not entirely convinced.”</i>
Challenges	Quality and Durability	- Gilbert (OCV7): <i>“Then if it floods, I think so. There are still concerns like that because it goes back to my experience testing with an electric bike. I once got caught in the rain, and my electric bike died, bro. Especially if an electric car gets flooded, right? There could be a short circuit or not. So maybe that’s it. I’m just thinking about the conditions in Indonesia.”</i> - Harsi (OCV8): <i>“So, for the second point, the track or terrain. It seems this electric car hasn’t been tested for traversing the forest terrain of East Kalimantan, right? If you want to use it more broadly, it needs to be tested on various terrains.”</i> - Afrizal (OCV10): <i>“I also noticed that in some of the older electric cars, if there is a crash or collision, the risk might be a bit more fatal compared to conventional or gasoline cars. This is because they contain a lot of electricity. Additionally, regarding the battery, we know that if it catches fire, it is incredibly difficult to extinguish.”</i> - “In Indonesia, these Japanese products are known for their robust performance, making them well-suited for the challenging road conditions. The terrain is often uneven, and the roads can be damaged.” - Tio (FIN2): <i>“But if an electric vehicle is exposed to flooding, it may be damaged immediately.”</i>
Challenges	Insufficient Benefit Literacy	- Tono (OCV9): <i>“When it comes to taxes, it still seems unclear. I haven’t conducted any surveys in that regard.”</i> - Afrizal (OCV10): <i>“I am also not an electric car user. For that reason, the price and various factors contribute to this. This implies that the public is still not fully informed about what the experience of using or owning an electric vehicle is really like.”</i> - Faiq (OCV11): <i>“Well, I don’t know about the benefits yet. The issues that come to mind are mostly negative.”</i> - “For me personally, to spark interest, the first negative issue must perhaps be addressed

		<i>first, particularly those from companies in that field. Whether it's right or wrong, if it can be resolved, then we can move towards the positive information."</i> - <i>Imas (EVIND2): "But for those of us in marketing, the hardest part is providing information about the benefits of switching from conventional cars to electric vehicles."</i> - <i>Agustian (FIN3): "In Jakarta, people are relatively better educated about electric vehicles (but are not in other regions)."</i> - <i>Johan (EVIND3): "Well, right now in marketing electric cars, we may need to educate customers more. Many consumers are unaware of the significance and benefits of electric vehicles."</i>
Challenges	Different Charging Types	- <i>Andi (GOV): "One of the problems is the differences between each brand. When PLN supplies, they need to follow a specific standard, since the charging is different, especially when discussing cars. When it comes to battery swaps, the battery for each brand varies as well."</i> - <i>Abdullah (OEV2): "One SPKLU has several connectors. There are several types, too. There are AC, CCS, fast charging, and low charging."</i>
Challenges	Behaviour and Adaptation	- <i>Dendy (OCV2): "Well, maybe until now I still use a car that runs on gasoline or fossil fuels, because it's a process; changing from one habit to another takes time."</i> - <i>Mulan (OCV3): "Secondly, I still prefer gasoline cars because their usage doesn't require us to think about purchasing."</i> - <i>Tono (OCV9): "With the rise of electric bicycles, electric cars, and others, it does not rule out the possibility of a shift from gasoline-powered vehicles to electric ones. A similar phenomenon occurred in the past; we never predicted that many manual transmission motorcycles with clutches would gradually give way to automatics. In fact, nowadays, the majority are automatic. Just like that."</i> - <i>However, "what I've noticed is that our society still tends to deny new things. People don't immediately accept them until a majority are using it, and then they follow suit."</i> - <i>Afrizal (OCV10): "But people are still afraid to switch. That's because they are worried about the long term."</i> - <i>"While the needs of Indonesians in general require electric cars that can accommodate a</i>

		lot of luggage and families, they also need vehicles that can navigate poor road conditions. This is particularly relevant in Palembang, where the roads in the city center are still full of holes.” - Fredi (OCV12): “And another person who is probably prestigious. “Wow, I have to buy an electric vehicle anyway.” Yes, there is a point; people are different, and their backgrounds or desires vary. This is also a subject of study: people’s behaviors vary.” - Andi (GOV): “I’m observing other countries. Later on, specifications for electric vehicles and electric motorbikes will include home charging. However, in Australia, SPKLU is just intended to alleviate their concerns, like that.” - Abu Bakar (OCV1): “Well, I think this is a promising alternative vehicle for the future. Like it or not, technology will change. In the past, only influential people had cell phones. But now, even my handymen have cell phones. The widespread use of cell phones is due to the rapid advancements in technology.” - Ruby (OCV6): “And that’s exactly what it has developed into. Of course, we are all in a process of adapting to the changes that exist. Perhaps in the future, other types will emerge.”
Challenges	Few Segment Options	- Umair (OEV5): “Mostly five-seat vehicles, and predominantly SUVs. Primarily SUVs and five-seat models. So, we were looking for a three-row, seven-seater at that time. It was new and significantly reduced from the M6. At that time, we hadn’t really considered it when it first came out; we just said, “Oh, this is good.” And it also met our needs.”
Challenges	Lack of Government Campaign/Socialization	- Abdullah (OEV2): “I don’t see it yet. I have my own awareness, and some friends may also share it through word of mouth. But do we often see it in public campaigns? Or in advertising? Billboards? Billboards that use Videotrons? Yes, let’s use them.” - Andi (GOV): “Secondly, for us at the beginning, it was a prescept, but now it’s starting to be recognized as a new technology, right? Indeed, people are still not familiar with it in that way. Yes, will it break down or not, especially since we are in a country that is prone to flooding like that? Indeed, socialization remains a challenge for us.”

		- Hifzi (OEV3): “And actually, the government started it (EV projects). That’s why electric vehicles finally emerged, starting with electric motorbikes, and then there were electric cars. That was the government. If the government launched a campaign or implemented a program, it might encourage the public to have a greater awareness of electric vehicles.”
Challenges	Trust	- Imas (EVIND2): “People’s trust in electric cars is still lacking.” - Johan (EVIND3): “The obstacles might include, for example, that we have educated consumers, but some consumers may still be uncertain about that. That’s okay. Next time, they might be open to considering electric cars.” - Umair (OEV5): “Look at the level of trust in the brand itself. First of all, there are many showrooms and workshops; they’re everywhere and located in affordable, strategic places, not in the interior or far away. That’s one reason. The second is the familiarity of the product and the brand in the world, especially in the West.”
Challenges	Size/Dimension	- Akram (OCV4): “I’ve also driven an EV, it’s really compact. That’s for a really small family. We can’t bring the children, we can’t bring the parents.” - Afrizal (OCV10): “Any electric car whose price has begun to decrease and is affordable is classified as a small electric car or city car.”
Challenges	Charging Time	- Zalfa (OEVI): “Maybe it’s a habit, because an electric vehicle shouldn’t be charged until it’s almost empty. It takes a long time to charge; it could take 1 hour. For example, I forgot to charge it at night, and the next morning it was only at 7%. I was afraid it would run out, even though there was free towing. That’s all.” - Fredi (OCV12): “Suppose we forget suddenly and are in a hurry to leave; it turns out we have to wait to charge it first. This could take half an hour, two hours, or even up to seven hours, depending on the charging method.” - “But if it’s an electric vehicle, it may vary. While waiting, it can take 2 hours to charge. So, we end up just staring blankly for those 2 hours.” - “Or we might end up eating and drinking. Therefore, it can actually become more costly. Since we’re just sitting around playing games

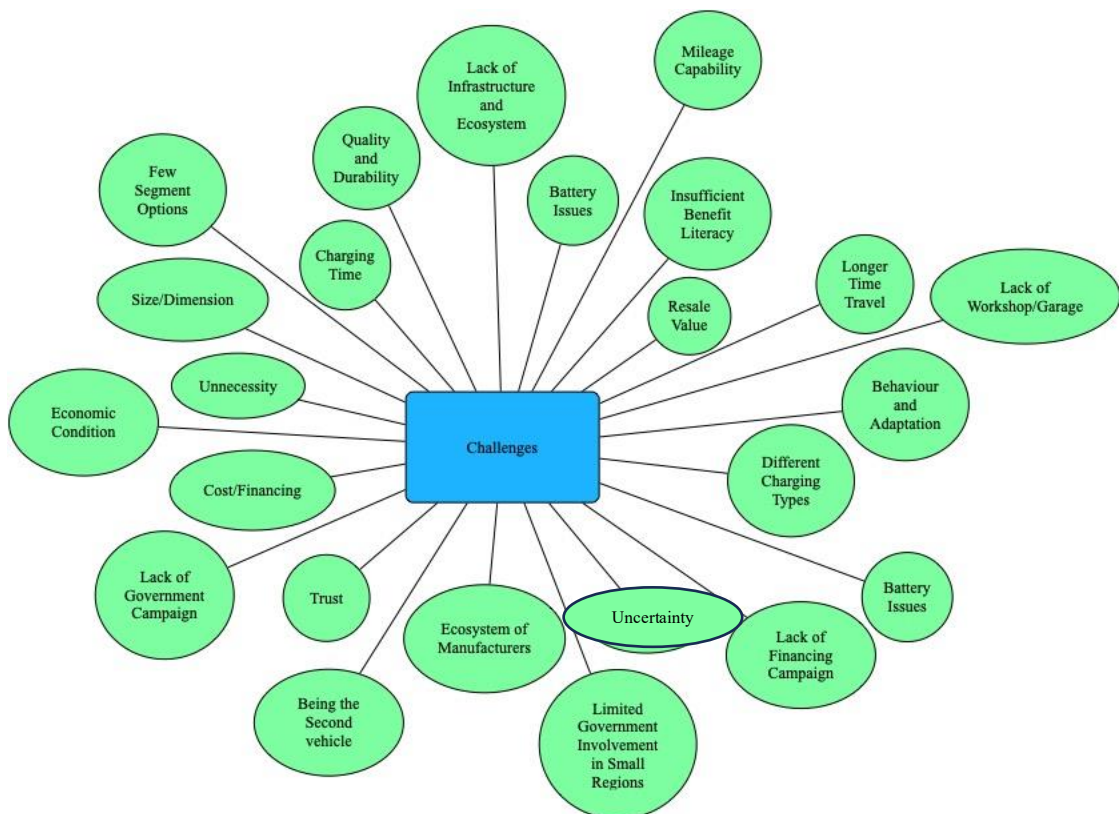
		<i>or whatever. Usually, we prefer to eat. It could be from the charging perspective. Charging time and travel time are still significant concerns for being the primary vehicle, Mas Faqih."</i> <i>- Roy (OCV13): "Well, that's the downside. For example, if we run out of fuel, we just go to the gas station to fill up. At most, if there's no queue, it will be done in 5 to 10 minutes. We're full again, and we can go far. But with electric vehicles, there's a downside: we have to charge them, which can take at least half an hour at the fastest. From what I've heard, the power can be significant. Or sometimes the power is a bit insufficient, but it can last for 1 to 2 hours. Well, that's the downside."</i> <i>- Ruby (OCV6): "Second, the duration of electric charging is still too lengthy. There is no fast charging option that is truly fast. In an emergency, or in situations where speed and high mobility are crucial, this becomes important. Therefore, user-friendliness related to this usage is essential. If we have to wait for up to 30 minutes or even an hour, the additional cost of waiting for an hour could exceed the expense of charging the electric vehicle itself. I believe these are some of the observations I made, along with what I heard and saw regarding the actual conditions that need improvement."</i> <i>- Abdullah (OEV2): "Because if we're waiting for our vehicle to be full, we sometimes have coffee like that. Then we go for a walk and so on. Will the cost be more expensive, or in urgent circumstances, does he look for, oh, I forgot."</i> <i>- "Until it's full, my charging starts from 0. Once, it was very low when I got home at 20%; when it charged, it only took 7 hours (Wall Charging)."</i> <i>- Joko (OEV4): "What we worry about using electric vehicles outdoors without preparation is that after charging them at home, they might run out, and we'll have to wait in line for a long time."</i> <i>- Umair (OEV5): "I worry that it might influence others. For instance, yesterday, I accidentally left the car in the showroom because I had another meeting elsewhere, which forced me to search for online parking. In the end, the person had to wait for me to arrive; that's all. So, it affects other people."</i>
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Challenges	Longer Travel Time	- Fredi (OCV12): “Yeah, it’s the same as before—the travel time. In Indonesia, there are several occasions when people go out together. For example, during Eid celebrations or extended school holidays. People travel together, which can increase travel time because we often have to wait in line to charge.”
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Source: Author’s data

A large number of codes emerged from this theme. These factors suggest that new technologies require numerous elements to reach the market, while society needs to adapt to these new technologies. Those challenges also indicate that the electric vehicle industry and the government should work more closely together to create solutions that enhance the ecosystem.

Figure 4.9 Thematic Analysis of Challenges



Source: Author’s data processing

4.3. Discussion

Following the presentation of the interview results from 27 respondents, which were developed using thematic analysis, this section will discuss those results. In addition to the author's analysis, each theme in this section contains triangulated data sourced from interviews and other documents, such as field observations, photographic evidence taken directly by the author, related articles, statements from automotive experts, related seminar results, or statements from annual and sustainability reports from related banks and multi-finance companies.

4.3.1. Cost of Ownership

The data obtained from this study indicate several points. Regarding price, there is a change in the pricing of electric vehicles. The literature review in Chapter 2 leads to the conclusion that the cost of electric vehicles remains relatively high, with the number of available brands and variants being significantly lower compared to the period following the completion of this study. Fitra Eri, through the OtosiaDotCom YouTube channel (2025) stated: *“If the car is made in China, then it’s no problem, but if the car isn’t made in China, the price is still high.”* Several factors may contribute to this situation. Firstly, market competition is increasing as more electric vehicle brands enter the Indonesian market, along with the introduction of new variants by both established and emerging manufacturers. The influx of additional brands is partly a response to the government’s call to the electric vehicle industry to address the pricing disparity. Andi (GOV), a staff member at the Ministry of Industry, stated during an interview: *“If you remember, in 2022 there were perhaps only two models available, namely the Wuling Air EV priced between 200-300 million and the IONIQ 5 priced at 700 million. This has been a concern for us as growth has been rather slow. Initially, there was a surge in purchases, but this trend has since declined, primarily because most consumers are looking for vehicles priced between 70-80% below 400 million. Therefore, we are encouraging an increase in the variety of models and variants available. Subsequently, after evaluation, feedback from the industry indicated that additional time was required to establish manufacturing facilities. We thus provided CBU (Completely Built Up) incentives, contingent upon their commitment to building a factory. Consequently, brands such as Citroen, AION, MG, VinFast, and BYD have begun to emerge, as they tend to be priced within this range, effectively bridging the gap between the IONIQ and Air EV. It is anticipated that in 2023-2024, a notable spike in sales will be observed.”*

From Andi (GOV)'s presentation, it is evident that the government offers incentives to the global electric vehicle industry, thereby allowing manufacturers to deliver their products to Indonesia without the initial requirement of establishing a factory, and without incurring excessive taxation. In addition to the *Completely Built Up* (CBU) incentives provided by the government, certain electric vehicle manufacturers, such as Wuling and Hyundai, have already established factories in Indonesia. Furthermore, several others, including BYD, are set to follow suit with the construction of a manufacturing facility in Subang, West Java. The establishment of an electric vehicle factory in Indonesia will facilitate the domestic assembly of vehicle components, or *Completely Knocked Down* (CKD) systems, aligned with the Local Content Requirement (TKDN) policy. It is anticipated that this development will further reduce the pricing of electric vehicles while simultaneously creating employment opportunities for local workers.

The study also finds several expectations regarding the price of electric vehicles. Abu Bakar (OCV1) said, *"The price is kept as affordable as possible for everyone. I've also heard that cars in Indonesia are significantly more expensive than in Malaysia, for instance."* In line with Abu Bakar (OCV1), Abdullah (OEV2) also said, *"The price should be more competitive so that people can buy electric cars."*

Government policies aimed at facilitating the electric vehicle industry are intrinsically linked to the Nationally Determined Contribution (NDC) target for 2030, whereby the Indonesian government is committed to reducing carbon emissions by 31.89% to 43.2%. In pursuit of this objective, the government has set a target to have an electric vehicle population of 15 million units by 2030, comprising 2 million electric cars and 13 million motorcycles.

However, challenges may arise as electric motorcycle subsidies cease in 2024, according to the Ministry of Finance (2023). This could hinder the goal of reaching 13 million electric motorcycle units by 2030, given that only around 172 thousand new electric motorcycles have been registered (Ayuningrum, 2024). Andi (GOV) stated in an interview that tax incentives for electric motorcycles are set to expire in 2030 or 2031. He remarked: *"So, at most 2030-2031, but for things like PPN (VAT), it is evaluated every year. If our market still needs it, we continue the initiative, and that is reviewed annually; if PPnBM continues, it will last at least until 2030."* He also mentioned, *"Essentially, the government is initiating several measures to foster market growth. Since this is a new venture, a stimulus is essential to accelerate adoption. Once the market is established, I believe we can allow it to function as a free market. However, we will keep evaluating, likely adjusting*

the support amount, and possibly implementing disincentives for conventional vehicles, including potential tax increases; discussions like that have occurred.”

Vehicle owners are keenly anticipating subsidies and tax incentives, as shown in the table above. This sentiment was reiterated multiple times during interviews, reflecting their perception of the taxes related to vehicle ownership as quite heavy. Dika (EVIND4) expressed, *“maybe from me personally, for the government, the VAT (incentive) might be increased again, sir. I think many lower-middle class people also want to have an EV car.”*

Concerning battery replacement costs, interviews and field observations indicate that electric vehicle brands typically offer battery warranties lasting up to 8 years or even a lifetime. While the potential expense of replacing a battery weighs heavily on people’s minds, these warranty schemes effectively alleviate concerns in the short to medium term. However, uncertainties about battery compatibility and post-warranty costs remain.

When it comes to charging costs, all responses confirm that charging is significantly cheaper compared to fueling with gasoline or diesel. The affordable charging cost is tied to the overall reasonable electricity prices. As highlighted in Chapter 2, Indonesia boasts some of the world’s lowest electricity rates, averaging around 0.1 USD per kWh.

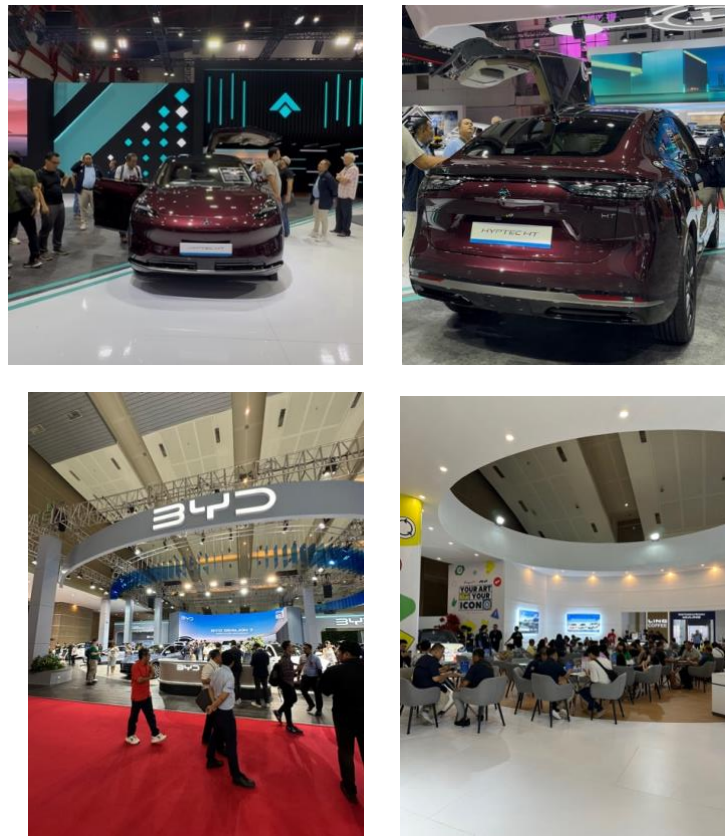
On the topic of vehicle repairs, the statements presented indicate a positive outlook, suggesting that repair costs are lower and processes considerably simpler. This can be attributed to the fact that electric vehicle components are less complex than those of conventional vehicles.

4.3.2. Functionality

Functionality is a key factor in the decision to purchase and adopt electric vehicles, as highlighted in this study. As time progresses and technology advances, vehicles must become more innovative to facilitate mobility, whether for short or long distances.

The study's findings show a consensus that electric vehicles are generally more sophisticated and comprehensive compared to conventional cars, aligning with observations at IIMS 2025 and PEVS 2025 at JIEXPO Kemayoran, Jakarta. The electric vehicle booth at IIMS 2025 drew more visitors than the conventional one.

Figure 4.10 Indonesia International Motor Show (IIMS) 2025



Source: Photographed by the Author

Regarding range capability, this study reveals differing perspectives on the subject. Over the years, electric vehicles, particularly cars, have improved significantly in range. Some owners, like Hifzi (OEV3), who drives a BYD SEAL, report traveling hundreds of kilometers. He noted, *"With IDR 250 thousand Rupiah, we can (get) a range of 650 kilometers. And that's real. So, yesterday I tested it from Jakarta to Jogja."* Additionally, Fitra Eri shared his 'xperiences with the IONIQ 5 on his YouTube channel, stating, *"This car (IONIQ 5) has also been used for multiple long journeys, including trips to Semarang, Cirebon, Tasikmalaya, and Anyer—all completed without needing to charge along the way."* On the other hand, some owners have not yet undertaken long trips. For instance, Joko (OEV4), who owns an MG 4 EV, mentioned, *"I have never used it for a long journey."*

Yesterday, when I went home (mudik), I felt a bit nervous. Eventually, I decided to use my conventional vehicle.”

In addition to features and range capabilities, passenger capacity is a major consideration when buying an electric vehicle, as it affects the ability to transport family members in one vehicle. Meanwhile, most electric vehicles, particularly cars, are dominated by the SUV segment, where the majority accommodate five passengers. There are not many electric vehicle variants that can carry more than five passengers. Based on the author's observations, there are only two electric cars with a capacity of seven passengers priced below 500 million Rupiah: the BYD M6 and GAC AION Y. For other models, prices can reach one billion to nearly two billion Rupiah.

Regarding safety, some believe that the advanced features of electric vehicles can enhance safety. However, others remain concerned about the battery component as a potential risk if something goes wrong with the vehicle. Recently, a BYD SEAL caught fire while parked at its owner's home in Palmerah, West Jakarta, due to suspected battery leakage (Syarifudin, 2025). If this issue is not addressed, it may affect the public's willingness to adopt electric vehicles, as passenger safety is paramount, even though the integrated features and technology are thought to improve safety.

As for comfort, performance, and practicality, the analysis found positive sentiments in these areas. Electric vehicles offer technology that enhances comfort, with little to no sound or engine vibration felt while driving. The performance of electric vehicles is considered immediate and responsive, making it easier for drivers to accelerate. Their practicality is also a significant advantage, as drivers do not have to wait at gas stations to refuel and need not worry about the quality of fossil fuels, which has recently been a topic of public debate.

4.3.3. Vehicle Identity

Firstly, the term 'identity' here refers not to the letters or numbers associated with the vehicle, but to unique characteristics specifically linked with electric vehicles. This study identifies two primary aspects related to electric vehicles: appearance and technology. The appearance is subjective and plays a significant role in someone's vehicle purchase decision, focusing on both the exterior and interior design. Most people find electric vehicles visually appealing, perceiving this as a blend of futurism and luxury. The technology present in electric vehicles, as far as the author has noticed, is seldom found in conventional cars within the same class and price range. Innovations such as 360-degree cameras, Advanced Driver Assistance Systems (ADAS) for self-driving capabilities under specific conditions, lane correction, surrounding vehicle detection, and adaptive cruise

control enhance driving experiences. There are also voice command features that let drivers control various settings like windows and music simply by speaking. This interest in technology is highlighted through reviews by influencers on social media, including Fitra Eri and Ridwan Hanif, as well as firsthand observations at events like IIMS and PEVS 2025, where many visitors showed a keen interest in the new technologies offered across various electric vehicle brands. Supporting this view, Joko (OEV4), an electric vehicle owner, commented, *“Navigating the (EV) technology is quite awkward. There are so many incredible features since almost all electric cars incorporate truly remarkable technology. However, it’s mostly found in high-end or luxury (conventional) vehicles. As time goes on, we’re definitely getting better at adapting to these changes.”* The advanced technology in electric vehicles is a significant draw for buyers, with Imas (EVIND2) from GAC AION noting, *“(EV owners) want to explore new technology; indeed, it is simply (has more advanced) technology.”*

Electric vehicles are frequently viewed as luxury items due to their features and technology. Observations indicate that electric vehicles use higher-quality materials than traditional ones. For instance, they often incorporate leather for seats—whether genuine or synthetic—use softer dashboard materials instead of plastic, and exhibit robust build quality, all of which contribute to a luxurious appearance. Additionally, the inclusion of a large touchscreen panel for navigation enhances this luxurious feel. Fredi (OCV12), a conventional vehicle owner, remarked, *“If you consider the interior, it appears more luxurious than fuel-powered vehicles at a similar price point, doesn’t it?”* He believes that electric vehicles offer more than conventional ones within the same price range. This sentiment is echoed by Johan (EVIND3), a salesperson from Chery, who noted that Chery is partnering with Jaguar and Land Rover to develop electric vehicles, both renowned for crafting luxury cars. He stated, *“But now Chery is collaborating with Land Rover and Jaguar. So that’s what we show to our consumers: that Chery today is different from the Chery in the past.”*

Figure 4.11 Chery J6 EV & Some EVs from the MAB at IIMS & PEVS 2025



Source: Photographed by the Author

Nonetheless, some individuals find certain electric vehicles unappealing. Akram (OCV4), a traditional vehicle owner, noted, *“Think of the Wuling Air EV. We know its design, and frankly, it’s not my favorite.”* Ultimately, beauty is subjective. The author aims to present the study’s findings, emphasizing that while electric vehicles are frequently viewed as futuristic, individual opinions on aesthetics will vary based on personal taste.

4.3.4. Policy and Regulation

Government policies and regulations significantly contribute to the promotion of electric vehicle adoption. Essentially, the government has opened avenues for electric vehicles to penetrate the Indonesian market. Beyond advancements in automotive technology, the Indonesian government emphasizes electric vehicles as a crucial measure to reduce carbon emissions, aligning with its commitment to the Paris Agreement. This commitment includes a target of Nationally Determined Contribution (NDC) by 2030 and achieving Net Zero Emissions by 2060.

To encourage the public to embrace electric vehicles, the Indonesian government has implemented strategic initiatives, including various relaxations. The government offers subsidies and tax incentives, meaning electric vehicle owners only pay a minimal portion

of the typical taxes. For the Luxury Goods Tax (PPnBM), incentives include a complete tax exemption, resulting in a 0% PPnBM rate, which usually ranges from 10% to 200% based on the type and value of the vehicle. Regarding the 12% Value Added Tax (PPN), electric vehicle owners only need to pay 2%, as the remaining 10% is a government incentive provided that the purchased vehicle includes 40% domestic components (TKDN). Alongside these two incentives, electric vehicle owners benefit from a complete exemption from the Motor Vehicle Tax (PKB) and Motor Vehicle Transfer Tax (BBNKB), with the values of PKB and BBNKB differing across regions in Indonesia. Two-wheeled vehicles also benefit from governmental support, receiving a 7 million Rupiah discount off the original price. The study's findings indicate that these incentives greatly benefit electric vehicle owners and are a significant factor in their decision to purchase an electric vehicle.

The government also provides relaxation for electric vehicle owners and users by removing odd-even restrictions. Fitra Eri, an automotive expert, through Xstudio (2022) YouTube channel has proved this relief: *“One of the most fun parts is receiving a blue plate, which means you're no longer subject to the odd-even (restriction)”* which allows electric vehicles to operate on any date, ensuring individuals do not face limitations on their movement. As indicated in the thematic analysis table, this freedom is a significant advantage, especially for those living or working in Jakarta, where adhering to these restrictions often requires vehicle adjustments or ownership of multiple cars to navigate odd and even dates freely. Unfortunately, maintaining two cars is costly due to initial purchase prices, fuel expenses, maintenance, and substantial annual taxes, making the exemption from these restrictions economically beneficial for electric vehicle owners. Umair (OEV5) has stated: *“First of all, the most important consideration is actually the ease of mobility in Jakarta. Because my wife and I work in South Jakarta, then we tend to move around there, South Jakarta, Central Jakarta, even though we live in Bekasi. So, we are a bit tired of this odd-even regulation. So, usually before (having) an electric car, we have to find another route to get to the office when it's raining or when it doesn't match the vehicle's license plate. Well, we thought about it, it seems like it's time to switch to electric. That's the first reason, because of the odd-even.”*. *“In my opinion, the government is very helpful in encouraging people to have electric cars. Especially the regulation that in Jakarta is free of odd-even, that's what really helps. We don't get nervous, we don't have to think about what date is today? Is today odd or even? If the road we pass is restricted or not. Wow, that's really confusing, especially for people who have quite high mobility in Jakarta, during rush hour. So yes, that really helps.”* Tax incentives benefit the electric vehicle industry, with a 0% import duty for CBU vehicles, down from 50%, easing

import costs and expanding options. These measures are well-received, but their duration depends on the rise in electric vehicle numbers. Current targets aim for 15 million by 2030, but only 200,000 are in use, highlighting a significant gap.

4.3.5. Environment

The environment is closely linked to electric vehicles, which are promoted as a key solution for lowering carbon emissions. As outlined in the initial sections of the study, traditional vehicles remain major contributors to carbon emissions in urban areas. Additionally, the government aims for a 31.89% reduction in carbon emissions through its initiatives and a 43.2% decrease with global support.

The study's findings reveal that electric vehicles are expected to play a significant role in reducing carbon emissions and aiding the government's commitment to its Nationally Determined Contributions (NDC) under the UNFCCC. Nevertheless, a crucial question arises: how substantial is the government's role in meeting the target of 15 million electric vehicles by 2030? This concern stems from the fact that, according to the Ministry of Industry, the current number of electric vehicles is only about 207 units (CNN Indonesia, 2025), which is significantly short of the goal, necessitating heightened government efforts. Currently, the government only offers subsidies for electric motorbikes until 2024, and there is no definitive plan regarding the continuation of these subsidies. While tax incentives for electric cars are still in effect, they have not yet provided adequate support. To effectively increase the electric vehicle population, the provision of subsidies and tax incentives is crucial, especially since the use of electric vehicles is relatively new and the public requires adaptation and assistance to embrace this shift in habits.

While electric vehicles are largely praised for their role in lowering carbon emissions, some respondents raised concerns about the source of electricity, which predominantly comes from fossil fuels like coal, known for harming the environment. Harsi (OCV8) commented, *"But the question is, where do the resources or energy sources come from? That's probably debatable."* Echoing Harsi (OCV8), Fajri (OCV5) expressed a desire for clean energy sources, stating, *"if possible, in addition to the fact that electric vehicles produce zero emissions, the source of electricity itself can also be renewable, replaced with an environmentally friendly alternative."* Beyond the reliance on dirty electricity sources, the battery manufacturing sector and the management of used electric vehicle batteries also pose significant carbon emission risks. Zalfa (OEV1) remarked, *"But on the one hand, it is said that making the (EV) battery causes pollution in the factory, so it is simply relocating the pollution, they say."* The issue of electricity sourcing is a

dilemma. Electric vehicle owners benefit from lower electricity costs since PLN mostly generates electricity from coal. However, a rapid shift to renewables could raise prices due to the expensive transition and high maintenance costs, potentially increasing the overall cost of owning electric vehicles.

Perhaps insights from Zagy Berian, Founder of the Society of Renewable Energy (SRE) Indonesia, can shed light on these concerns. During a seminar titled Empowering Sustainable: Transitioning from Gasoline to Electric Vehicles and Decarbonization for Local Communities, Zagy emphasized that although Indonesia is navigating its energy transition and continues to rely heavily on coal, allowing emissions from conventional vehicles to persist in the atmosphere will only exacerbate global warming. He warned that the future costs associated with environmental damage will be significantly higher. Zagy's remarks may provide clarity regarding the role of electric vehicles in promoting environmental sustainability.

Figure 4.12 Certificate of Participation in the SRE IPB University Seminar



Source: Author's Document

Besides the fact that electricity sources are still not completely clean, concerns about electric vehicle waste are also widely discussed. Waste management from electric vehicle and battery production, as well as unused electric vehicles, remains an issue. The pursuit of innovation has pushed manufacturers in China to rush the release of the latest models at a rapid pace, leading consumers who are eager for the newest technology to dispose of their two- or three-year-old electric vehicles to make room for newer models. (Arradin 2025).

Accelerating electric vehicle adoption must be accompanied by the ability to manage environmental impacts sustainably (Karim & Ferdian, 2025). According to the Institute for Essential Services Reform (2025), it is estimated that by 2030, Indonesia will have approximately 12 GWh of used batteries requiring proper management, based on an IESR study. Cases of uncontrolled electronic waste have occurred before, such as in Riau in 2004 and Bogor in 2015, due to lead-acid battery waste polluting the environment. Unfortunately, Indonesia currently lacks a clear regulatory framework for handling electric vehicle battery waste (Hasjanah, 2025).

Several countries have implemented policies to manage waste from electric vehicle batteries by tracking and recycling batteries since 2014, while the European Union aims to recover 80% of lithium from used batteries by 2031. One method for handling EV battery waste is recycling. Battery recycling employs two main methods: hydrometallurgy and pyrometallurgy. The recycling process separates valuable materials such as cobalt, nickel, manganese, copper, and iron, which can be reused in the manufacturing of new batteries or other industries. Besides recycling, used batteries can be reused or repurposed as stationary energy storage, such as in wind and solar turbines, or as emergency systems during power outages (Putri, 2024).

Therefore, Indonesia needs a regulatory framework, innovative measures, and strict oversight to maximize the role of electric vehicles in cutting carbon emissions.

4.3.6. Motives

Similar to previous factors, an individual's motives for adopting electric vehicles are significant, as people may have personal reasons or be influenced by various factors that encourage them to make this switch. This study identified several motivations for adopting electric vehicles, including economic, personal, social, and environmental consciousness. Generally, economic considerations play a crucial role in a person's decision to purchase an electric vehicle. Financial capacity often dictates whether someone decides to buy an electric vehicle or postpone such a purchase. A survey from GoodStats explicitly stated that 64% of respondents stated that they wanted to buy an electric vehicle for economic reasons (Reynaldy, 2024). Electric vehicles are known for their lower fuel costs because they don't require gasoline but instead use rechargeable batteries. Some electric vehicle owners believe they derive better value from their cars because they can avoid owning multiple vehicles for travel. Imas (EVIND2), a salesperson at AION, noted, *"Surely the reason consumers buy EVs is that they're tired of paying high taxes and feel exhausted by the idea of having to change; juggling two cars can be tiring. It's more about*

value for money than the benefits previously mentioned regarding the environment.” Others evaluate the costs associated with preparing for retirement, as highlighted by Joko (OEV4), who stated, *“Well, at first glance, calculating the costs, it seems more worthwhile to use an electric car because I need to save money. I also thought about retirement, which means my income from the office will decrease over time. So, with an electric car, there’s a guarantee for maintenance and more.”* Additionally, some individuals like Abu Bakar (OCV1) find themselves unable to afford an electric vehicle, saying, *“To be honest, I currently don’t have enough budget to purchase an electric car. I’m still using a gasoline car.”*

Beyond economic considerations, personal drive and enthusiasm also play a role in motivating someone to purchase an electric vehicle. Abdullah (OEV2)’s statement exemplifies this: *“The EV is still expensive, but I decided to go for it anyway. I chose the MINI because I replaced my old car, which was also a MINI, the petrol one.”* He adds, *“I bought the first-generation electric car from MINI. It’s the first edition of MINI that I use.”* For example, the MINI Cooper Electric costs around one billion Rupiah, a considerable amount for a vehicle, especially since there are cheaper electric vehicle options available. Yet, a person’s preference and attachment to a specific brand often remain the primary factors in their choice. Rey (EVIND1), a representative of MINI Cooper, noted in an interview, *“We can’t call MINI Cooper a (regular) car because in general, MINI Cooper customers have their own segment. For instance, when someone buys an electric MINI, it’s not just about the electrics, but about the MINI brand itself. The appeal of MINI lies in its model, and it stands apart from ordinary cars; when individuals are attracted to MINI, they are drawn to the brand rather than what it offers.”* Additionally, social influences significantly encourage people to buy electric vehicles. Factors within one’s social environment—such as neighbors, colleagues, and social media—can sway a person’s decision. Zalfa (OEV1), the owner of a BYD M6, remarked, *“Honestly, I am more influenced by YouTube influencers like Fitra Eri and others, as they recommend electric cars.”* Echoing Zalfa (OEV1), Hifzi (OEV3) expressed, *“The social environment is very influential. External factors carry more weight. Therefore, education from YouTube and influencers is crucial. Honest reviews are essential for making purchasing choices.”* Dendy (OCV2) shared, *“Initially, when socialization began to flourish, testimonials from friends with electric vehicles might have encouraged us to consider getting one at some point, right?”*

Additionally, environmental concerns also play a role, as electric vehicles are often seen as a solution for emission reduction. Mulan (OCV3) stated, *“I really want to have an*

electric vehicle. Why? First, as mentioned earlier, it is environmentally friendly. In today's era of globalization, it is essential to reduce pollution. One way to start is by using an electric vehicle."

These findings indicate that the four factors can separately, or even concurrently, motivate someone to purchase an electric vehicle. A person's motivations may vary based on their financial, personal, social, and environmental circumstances.

4.3.7. Facilities and Services

As public interest in electric vehicles rises, the provision of facilities and services is crucial, given that electric vehicles have distinct technical features compared to traditional vehicles, necessitating specific infrastructure and maintenance systems.

Data analysis from this study highlights several facilities of significant public concern. Foremost among these is the need for dedicated electric vehicle workshops. While conventional vehicle workshops are commonly found—ranging from brand-specific service centers to general repair shops capable of handling various makes—electric vehicle workshops are considerably scarcer in the community. Electric vehicle owners report that maintenance and repair for their vehicles is generally less complex than for conventional ones, which makes the current number of workshops seem reasonably adequate. However, the limited availability of both specialized and general electric vehicle workshops raises concerns about the overall maturity of the electric vehicle ecosystem, as many people still express anxiety about finding suitable service options. Beyond workshops, questions surrounding service availability and spare parts persist. Based on the author's observations, the public is still adjusting to new technologies that differ from traditional ones. Many individuals assume that the challenges faced with conventional vehicles will be identical in the electric vehicle context. As such, greater reassurance and confidence in purchasing electric vehicles would arise from a more developed network of workshops and services enough.

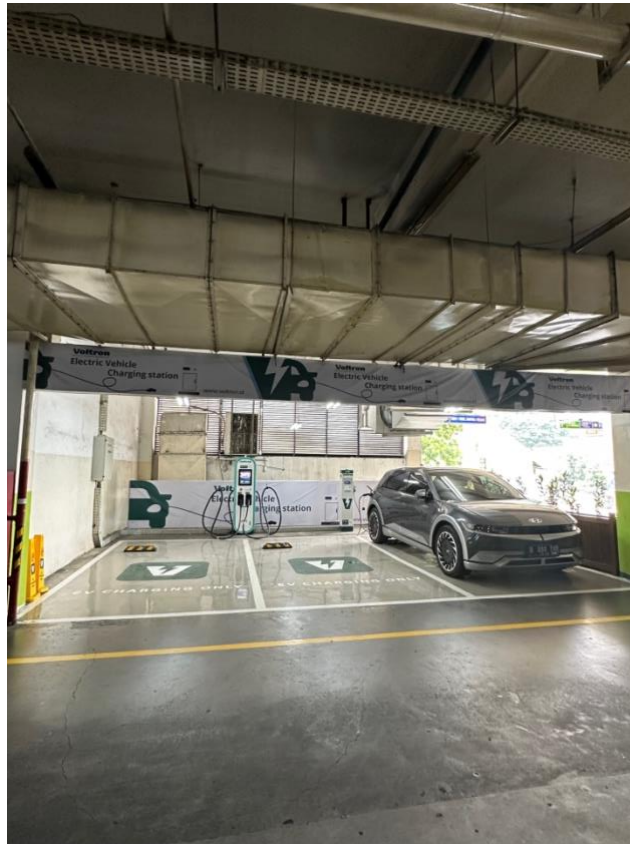
In addition to offering workshops and services, the author emphasizes the crucial role of Public Charging Stations (SPKLU). PT PLN reports that as of March 2025, there are approximately 3,772 SPKLU units across Indonesia. These stations are distributed throughout Java, Sumatra, Kalimantan, Bali, Nusa Tenggara, Maluku, and Papua (Adji, 2025). Nevertheless, the author's observations indicate that this distribution is not uniform across regions. According to the same data source, SPKLU are found in 2,515 locations, with detailed distributions as follows: Java has 2,667 SPKLU across 1,645 locations; Sumatra has 442 SPKLU in 364 locations; Kalimantan has 217 SPKLU in 170 locations;

Sulawesi has 148 SPKLU in 125 locations; Bali and Nusa Tenggara have 246 SPKLU in 167 locations; Maluku has 25 SPKLU in 25 locations; and Papua has 27 SPKLU in 19 locations.

According to interviews and field observations conducted by the author in various parts of Bogor and Depok, several important points need to be noted. Electric vehicle owners tend to seek out SPKLU that offers high power (fast charging), while the Wall Charging installed at home provides only 7,700 Watts (7.7 kW). In contrast, fast charging SPKLU can offer between 100 and 150 kW, making the at-home charging times significantly longer. With a fast charging unit, electric vehicles, particularly cars, can achieve a full charge in 40 minutes to 1 hour and 30 minutes, whereas home charging may take over 7 hours, depending on the battery capacity of each vehicle. Observations indicate that the number of fast charging units is still insufficient for a single city. Zalfa (OEV1), an electric vehicle owner, also expressed a similar sentiment. *“There are quite a few fast chargers with capacities up to 120 kWh in outer cities; yesterday, there was only one in Cirebon. In Depok, there are many, but fast chargers are (only) available in some locations.”*

Field observations highlight an intriguing issue: the lack of a dedicated operator at each SPKLU to assist consumers with charging. A parking attendant at a popular mall in Bogor City noted that not all electric vehicle owners are familiar with how to use SPKLU, requiring assistance during the charging process. Moreover, when consumers face long queues due to the absence of special SPKLU staff, conflicts can arise as individuals claim they were first in line. Another concern is that some vehicle owners leave their cars parked at SPKLU, obstructing or delaying others who wish to use the facility. The lack of a queuing system and dedicated personnel poses significant challenges for SPKLU consumers.

Figure 4.13 An SPKLU at a Parking Area of a Mall in Bogor City



Source: Photographed by the Author

Examining the data and phenomena mentioned, it is clear that the number of SPKLU and its operational system in Indonesia is far from ideal. For example, Sumatra Island, which is extensive, has only 442 SPKLU units, while Kalimantan has just 217 units. Afrizal (OCV10), a resident of Palembang, remarked, *“In my opinion, the main drawback is the charging station, which is particularly lacking in this area (Palembang). Additionally, I have visited PLN several times. PLN has SPKLU, right? It often goes by, and it is very quiet. Very quiet.”* Meanwhile, Harsi (OCV8), who lives in East Kalimantan, said, *“There is an anomaly and irony for us in the regions regarding the use of electric vehicles. There are still people who complain because their homes lack electricity or already have it, but not for 24 hours. This issue still exists in East Kalimantan.”* Moreover, the number of SPKLU units that can be monitored via the PLN Mobile application does not always match what is displayed. Some units may be inactive or malfunctioning, and there are instances where these units are neither monitored nor adequately maintained. This issue undoubtedly requires a solution.

Figure 4.14 An SPKLU was Used to Rest and Sell Drinks at Certain Times



Source: Photographed by the Author

In addition to the current SPKLU issues mentioned by Andi (GOV), a staff member at the Ministry of Industry, *“Actually, later on, electric vehicles and electric motorbikes will be charged at home. However, in Australia, they recognize that people still need public charging stations. Public charging stations are simply to address their concerns.”* Andi (GOV)’s statement implies that the habit of charging electric vehicles should be like a person’s habit of charging their gadgets at home, so that SPKLU is only needed at certain times and conditions.

According to Andi (GOV), Wall Charging offers a practical solution for electric vehicle owners. This type of charger is installed on the wall of a home to recharge an electric vehicle’s battery. Interviews reveal that Wall Charging has a maximum capacity of 7.7 kW, which may result in longer charging times. Installation of Wall Charging is typically included with the purchase of an electric vehicle, although some options are available separately. If not bundled into the vehicle purchase, the installation cost is approximately 14 million rupiah. Hifzi (OEV3) stated, *“Yes, it’s free (included in the*

purchase).” “It is Practical. It seems we don't need to worry. When you get home, just charge it. For that person, too, we don't have any additional costs other than the fees for PLN.” Umair (OEV5) also stated, “For BYD, the M6 does not come with a wall charging bonus, so we have to purchase it ourselves. However, the dealer provides facilities, assistance, and recommends brands that are compatible with the car. This support helps us find someone who sells the equipment and connects us with PLN for registration. While the price of the wall charger is quite high if we buy it ourselves, I believe it is a long-term investment.” “It's a convenience, yes. So, because of convenience and flexibility.” The data indicates that electric vehicle owners should develop new habits and consistently prepare and calculate their battery and range estimations.

4.4. Challenges and Expectations

The author categorizes the challenges encountered in adopting electric vehicles, as explained in the previous table of challenges. This includes issues faced by conventional vehicle owners, electric vehicle owners, the electric vehicle industry, the government, as well as the banking and multi-finance sectors.

Table 4.11 Challenges Faced in Adopting Electric Vehicles

Conventional Vehicle Owner	Electric Vehicle Owner	Electric Vehicle Industry	Government	Banks and Multi-finance
- Unnecessity - Cost - Economic Condition - Insufficient Benefit Literacy - Behaviour and Adaptation - Trust	- Being the Second Vehicle - Longer Travel Time	- Uncertainty - Battery Issues - Lack of Workshop - Lack of Manufacturers Ecosystem - Resale Value - Mileage Capability - Quality and Durability	- Limited Government Involvement in Small Regions - Lack of Infrastructure and Ecosystem - Lack of Government Campaign	- Lack of Financing Campaign

		- Different Charging Types - Few Segment Options - Dimension of EV - Charging Time		
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Source: Author's data processing

Based on the table of challenges presented above, it can be concluded that numerous common obstacles impede the further penetration of electric vehicles into the Indonesian market. These challenges include economic and financial constraints and infrastructural deficiencies. Gaikindo (2021) also stated that the price and infrastructure are significant barriers for the Indonesian market. Besides that, social and cultural resistance, technological limitations, regulatory and policy barriers, industry-related obstacles, and individual behavioral resistance are also crucial challenges for electric vehicles.

The multitude of challenges indicates that electric vehicles still require substantial development and support. Concurrently, the market must be granted adequate time to adapt to this novel and complex technology. The shift to electric vehicles requires thorough preparation, including substantial financial costs, behavioral adjustments, and facing largely unfamiliar challenges.

Consequently, various suggestions and aspirations have been explicitly articulated by respondents and sourced from other references. It is anticipated that these insights can offer viable solutions and valuable considerations for all stakeholders involved in the advancement of electric vehicles. The summarized suggestions and hopes are presented in the table below.

Table 4.12 Expectations Found in Interviews and Observations in Adopting Electric Vehicles

Conventional Vehicle Owner	Electric Vehicle Owner	Electric Vehicle Industry	Government	Banks and Multi-finance
- Literacy	(None)	- Building the Factory	- Government Incentives for Banks and Multi-finance	- Access to Financing

		- More Affordable Price - Advertisement - Innovations - Safety - More Price Range - More Variants - Lifetime Warranty - Creating National Car - Advancing Specifications - Increasing Automotive Exhibitions - Research and Development - Rental Scheme	- Extending Subsidies and Tax Incentives - Advertisement - Supporting Infrastructure and Ecosystem - Joint Venture - Boosting National Economy - Increasing Automotive Exhibitions - Creating used EV Markets - Boosting EV Campaign - Increasing and Maintaining Charging Station (SPKLU) - Using Clean Energies - Local Content Requirement (TKDN)	- Financing Campaign - Financing Scheme Innovations - Low Interest Rate - Financing Promotion - Faster Process - Extending Payment Tenor
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Source: Author's data processing

4.5. Financing

Financing plays a crucial role in promoting electric vehicle adoption within society. The availability of financing options from banks and multi-finance institutions offers essential solutions to facilitate vehicle mobility, whether for motorbikes or cars.

This study will focus on banks and multi-finance companies that are part of the First Movers group, which includes those that the OJK and eight banks have collaborated with to create a program aimed at prioritizing sustainable banking.

The First Movers program for 2021-2025 encompasses three key objectives: enhancing the availability of eco-friendly funding, boosting the demand for sustainable financial products, and strengthening oversight and coordination in the implementation of sustainable finance (FoSSEI 2022).

First Movers comprises eight banks: PT Bank Mandiri (Persero) Tbk, PT Bank Negara Indonesia (Persero) Tbk, PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank Central Asia Tbk, PT Bank Muamalat Tbk, PT Bank BJB Tbk, and PT Bank Arta Graha Internasional Tbk. Additionally, this study examines PT Bank Syariah Indonesia Tbk, which resulted from the merger of PT BRI Syariah, PT BNI Syariah, and PT Bank Syariah Mandiri, leading to the establishment of PT Bank Syariah Indonesia Tbk.

To assess the progress of First Movers, the author reviews programs related to electric vehicles, including financing and other initiatives that support their adoption, based on the financial statements (AR) and sustainability reports (SR) from each bank and its subsidiaries, including multi-finance companies directly supervised by the main entity bank.

Table 4.13 First Movers Programs, Strategies, and Financing Values Related to Electric Vehicle

No	Banks and Multi-Finance Companies	Related Reports
1.	Mandiri, Mandiri Utama Finance (MUF) and Mandiri Tunas Finance (MTF)	- Electric Vehicle Financing Value: from IDR 248.90 billion in 2023 to IDR 1.25 trillion (6,780 units) in 2024 (403.69.69%) (SR MUF 2024) - Accelerate electric vehicle financing while still ensuring quality to support healthy portfolio growth. (SR MUF 2024) - Encourage and increase financing for green electric vehicle products through literacy programs, marketing events, and collaboration with various brand holders. (SR MUF 2024) - Strive to expand and develop marketing programs for financing Electric Motor Vehicles (EV and Hybrid) to support the Indonesian Government's initiative to promote electric vehicle usage. This aligns with the goal of SDGs 13 Preventing the Impact of Climate Change. (SR MUF 2024) - The Company realizes financing in the Sustainable Finance program through the distribution of funds

		for 2 (two) products, namely electric motor vehicle financing and financing in the productive sector. By the end of 2024, Mandiri Utama Finance aims to control 6. 62% of the national market share for automotive financing of electric motor vehicles. (SR MUF 2024) - The Electric Vehicle (EV) program is specifically designed for Company debtors applying for financing for electric and hybrid vehicles in the form of new cars or motorbikes. Debtors who apply for electric vehicle financing will receive travel vouchers as prizes for the 30 fastest applicants each month. (SR MUF 2024) - Additionally, the Company' s support was also realized through Mandiri Tunas Finance' s participation in the 2024 PEVS (Periklindo Electric Vehicle Show). The 2024 participation follows last year' s, where the Company served as the main sponsor of PEVS for 2 consecutive years. During the event, the Company offers various attractive promotional programs, making it easier for visitors to acquire their dream electric vehicles. By becoming the official leasing partner of PEVS, Mandiri Tunas Finance supports the government' s initiative to develop electric cars in the country. (SR MTF 2024) - Other adjustments made by the Company relate to electric vehicle financing. Unlike conventional or fuel- based car financing, electric vehicle financing is subject to specific provisions, including distinctive interest programs and other promotions. (SR MTF 2024) - As part of its commitment to achieving carbon neutrality, Bank Mandiri has adopted various climate change mitigation technologies. These initiatives include the installation of solar panels to increase the use of renewable energy and electric and hybrid vehicles in operations, and the implementation of green building concepts. Through these efforts, Bank Mandiri successfully reduced GHG emissions by 33% compared to the baseline year. (404 units of EV and Hybrid vehicles, 8 EV charging stations, 26 charging units installed, 870 units of solar panel). (SR Mandiri 2024) - Sustainable Investment: EV Financing: 910 IDR billion in 2024 and 393 IDR billion in 2023. (SR Mandiri 2024)
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2.	Bank Rakyat Indonesia (BRI) & Bank Rakyat Indonesia Finance (BRI Finance)	- BRI Finance actively supports the government's efforts to develop green automotive technologies by providing financing for battery-based electric motor vehicles (KBLBB) for BRI Group employees, state-owned enterprises (BUMN), and the government, in accordance with Presidential Instruction Number 7 of 2022. (SR BNI Finance 2022) - In efforts to reduce carbon emissions, the Ministry of Industry encourages an increase in the population of electric vehicles (EV) and hybrids. Aligning with the government's focus on financing companies as a Non-Bank Financial Industry (IKNB) sector, BRI Finance has contributed by offering KBLBB financing for both cars and motorcycles, expanding partnerships with several KBLBB dealers and providers, and utilizing KBLBB as operational vehicles. Moving forward, BRI Finance, with support from the parent company, will expand the distribution of KBLBB financing and enhance the infrastructure for public electric vehicle charging stations (SPKLU) at various locations in Indonesia. (SR BNI Finance 2022) - In 2022, the company launched a program specifically for electric vehicles (EV), offering 0% interest and a 10% down payment to support the acceleration of electric vehicle adoption in Indonesia. (SR BRI Finance 2022) - In 2022, BRI Finance distributed IDR 5.60 billion for EV financing. (SR 2022) - As a concrete step, within the operational arena, BRI is implementing various initiatives to impact emissions by reducing the use of fossil-based fuels and increasing the number of electric operational vehicles. By the end of 2023, BRI operated 118 electric vehicles and 150 electric motorbikes. BRI also has a public electric vehicle charging station located at the head office. In addition, as many as 93 BRI work units have used solar panels as a form of renewable energy for electricity use. (SR BRI 2023) - PT BRI Multi-finance Indonesia (BRI Finance) reported a significant increase in electric vehicle financing distribution in the first quarter of 2024, soaring 419% year-over-year to IDR 20 billion (Sinambela & Perwitasari, 2024).
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3.	Bank Negara Indonesia (BNI) & Bank Negara Indonesia Finance (BNI Finance)	- The financing program designed to support sustainable finance by BNI Finance for January to December 2023 marks the launch of an electric motor vehicle financing initiative. In 2023, 22 cooperation agreements have been established with dealers providing electric motor vehicles (SR BNI Finance 2023). - BNI is rejuvenating operational vehicles by gradually transitioning to electric-based options (e.g., Board of Directors' cars). (SR BNI Finance 2023) - Additionally, BNI is implementing a cooperation scheme for Public Electric Vehicle Charging Stations (SPKLU) through a Partnership Investor Own Investor Operate (IO2) model with PLN. The development of SPKLU represents BNI's commitment to promoting the use of Battery-Based Electric Motor Vehicles (KBLBB) in Indonesia, which will positively impact the environment (SR BNI 2023). - The financing for Battery-Powered Electric Motor Vehicles (KBLBB) in 2024 is projected to reach 126.5 billion Rupiah, covering a total of 469 units, compared to 69.1 billion Rupiah for 204 units in 2023 (SR BNI Finance 2024). - Furthermore, financing for the environmentally friendly transportation sector totaled IDR 2.3 trillion (SR BNI 2024). - The financing for Battery-Powered Electric Motor Vehicles (KBLBB) in 2024 is set at 126.5 billion Rupiah for 469 units, while in 2023, it was 69.1 billion Rupiah for 204 units (SR BNI Finance 2024).
4.	Bank Central Asia (BCA) & Bank Central Asia Finance (BCA Finance)	- Participating in the development of Indonesia's electric vehicle ecosystem, which reached IDR 1, 275 billion, represents nearly a fivefold increase year- over- year. (SR BCA 2023) - In 2023, BCA's electric vehicle financing surged to IDR 1, 275 billion, reflecting a growth of 365. 8% year- over- year. (SR BCA 2023) - Financing for Sustainable Business Activities: Environmentally Friendly Transportation totaled IDR 9, 447 billion. (SR BCA 2024)

		- Additionally, electric vehicle financing rose by 84% year- over- year, hitting IDR 2, 348 billion, demonstrating public interest in environmentally friendly transportation. (SR BCA 2024) - To further support the electric vehicle ecosystem, BCA has established two public electric vehicle charging stations to enhance access to electric energy charging. (SR BCA 2024) - Furthermore, according to the Sustainable Finance program initiated by OJK, BCA Finance observes that the supporting infrastructure for electric cars in Indonesia remains inadequate, leading to a relatively small consumer market share in this segment. (AR BCA Finance 2024) - Additionally, externally, the limited understanding of consumers or outside parties regarding sustainable business activities, combined with market conditions and currently low domestic demand for electric motorcycles, presents challenges that impact the distribution of financing for the green portfolio. As a proactive measure, the Company is dedicated to continuing to explore the potential for optimal electric motorcycle financing and to adjusting internal policies, including risk management, in line with the ever- evolving LST regulations. (AR BCA Finance 2024) - The volume of new financing recorded by the Company highlights its capacity to penetrate the financing market for environmentally friendly vehicles, achieving performance metrics that exceed the target percentage for sustainable finance set in the 2024 RAKB, which is 15% of total financing for the year. In relation to the target, the realized new financing for environmentally friendly vehicles in 2024 reached 27% of the total financing of IDR 45.45.09 trillion, representing 183% of the 2024 RAKB goal. (AR BCA Finance 2024)
5.	Bank Syariah Indonesia (BSI - A New form of BRI Syariah)	Electric Vehicle Financing (Cars and Motorbikes): (SR 2024) 2022: 7.5 billion Rupiah 2023: 41.4 billion Rupiah 2024: 171.86 billion Rupiah BSI has also utilized electric vehicles as part of its efforts to reduce fuel consumption and has installed

		charging stations to provide energy for electric vehicles. (SR 2024) - BSI OTO Glow (Green Vehicle for Growth): DP (down payment) starting from 0% and Glow Special Gift in the form of a vehicle electric charging balance deposit of up to 1 million Rupiah (BSI, 2025) - BSI has partnered with several electric vehicle brands to expand product options for customers. Furthermore, BSI OTO has partnered with Mandiri Utama Finance Syariah for vehicle financing. Several car brands participating in the BSI OTO event include BYD, BMW, CHERY, Daihatsu, Denza, Honda, Mercedes-Benz, Suzuki, Toyota, and Hyundai (BSI, 2025). - BSI has developed several strategies to attract public interest in Sharia-compliant and environmentally friendly vehicle financing. These include competitive margins starting at 2.22 percent and zero percent down payments, with a maximum financing term of seven years (Ilhami & Nurganingsih, 2023).
6.	Bank Muamalat	- Bank Muamalat currently operates a Public Electric Vehicle Charging Station (SPKLU) located in the basement. This initiative aims to facilitate charging for employees, customers, and the general public, demonstrating Bank Muamalat's commitment to promoting environmentally friendly vehicles in Indonesia. (SR 2024) - The Bank distributes financing to manufacturers of electric and environmentally friendly transportation. In 2024, it allocated financing to the environmentally friendly transportation sector, amounting to IDR 461.03 billion. (SR 2024) - Bank Muamalat can provide a special electric vehicle financing program for employees, inside and outside the bank, with incentives and a streamlined process. It can be customized to employees' needs and financial capabilities with affordable installment plans and flexible terms (Bank Muamalat, 2024)
7.	Bank Artha Graha Internasional (AGI)	- In addition, the bank has a discussion on environmentally friendly transportation financing, which is one of the key pillars in the transition to more eco-friendly mobility. We support public

		transportation projects, infrastructure development for electric vehicles, and other innovative initiatives aimed at reducing emissions and enhancing energy efficiency in the transportation sector. Through this approach, we not only help decrease air pollution and reliance on fossil fuels but also improve accessibility and sustainability of mobility for the community. (AR BAGI 2024)
8.	Bank Jabar Banten (BJB)	- As part of its efforts to reduce emissions, bank bjb has adopted the use of electric vehicles. During the reporting period, bank bjb has operated 2 (two) electric vehicles. In the future, bank bjb is committed to increasing the number of electric vehicles as part of its support for reducing GHG emissions. (SR 2024) - As a form of support for the energy transition, this building provides EV Charging facilities for customers who own electric vehicles. (SR 2024) - The BJB Motor Vehicle Credit (KKB) Electric Vehicle program is an initiative by bank bjb to promote the adoption of electric vehicles in Indonesia. By providing credit with competitive interest rates (3.5% flat per year for cars and 4% flat per year for motorbikes), this program aims to facilitate electric vehicle ownership while supporting environmental conservation efforts. In addition to attractive interest rates, bank bjb offers flexible credit terms: 12–60 months for cars and 12–48 months for motorbikes, allowing adjustments based on the debtor's financial capabilities (Khoirunnisa, 2024)

Source: Processed by the Author

The table above indicates significant variation in interbank financing, ranging from instances with no reports to amounts exceeding 2.3 trillion Rupiah. The initiatives and programs of the banks and multi-finance companies mentioned are diverse, yet the annual and financial reports primarily present normative information, highlighting that the penetration of electric vehicles by banking and multi-finance sectors remains limited. Notably, Bank Mandiri and BCA are more actively involved in the electric vehicle sector compared to other banks.

In the case of Bank Artha Graha, despite efforts to locate secondary sources for its total financing value, the information remains elusive. Its annual report does not disclose any electric vehicle financing figures.

Meanwhile, Islamic banking, represented by Bank Muamalat, reported a financing value of 461 billion Rupiah, although this amount was allocated to manufacturers rather than consumers. This aligns with the statement made by Hamdi (FIN2), Head of Financing Operation Quality Assurance, in an interview. *“Because in the last few years, Muamalat’s condition has been struggling. I think, because of that, maybe the treatment is different from other banks that are in prime condition or healthy.”* In the meantime, BRI Syariah, now transformed into Bank Syariah Indonesia, allocates 171 billion Rupiah for financing electric vehicles. Tio (FIN2), the Area Operations & Service Manager at the BSI South Tangerang branch said, *“Electric vehicles cannot be facilitated for all brands. For financing at BSI, we have a list, so many electric brands may still be unavailable. This might relate to the regulations of the product owner, meaning that the products available at BSI are brands A, B, and C. In contrast, almost all conventional cars can be at BSI; it’s organized. He also said, “BSI conducts some analysis during the implementation of regulations, although I don’t fully grasp the specifics. For instance, brand A is approved, and brand B is as well. This may pertain to collaboration with the manufacturer. The crucial aspect is the list of products we offer. Essentially, we await the regulation and analysis from a specific team at BSI to finalize that collaboration.”*

The current findings suggest that banking and multi-finance companies are keeping pace with the electric vehicle ecosystem’s development. As the ecosystem improves, prices decrease, and public acceptance rises, the significance of financing will also grow. This message was also communicated by BCA in its annual report: *Meanwhile, the low level of understanding among consumers and external parties about sustainable business activities, along with insufficient market conditions and domestic demand for electric motorbikes, presents challenges that significantly impact the low distribution of financing for the green portfolio.*

The findings indicate that banking and multi-finance companies primarily act as intermediaries. This means they cannot directly influence government domains or the industry, nor restrict the community’s choice of vehicle types. In the context of electric vehicles, banks and multi-finance companies are awaiting industry policies and innovations to encourage community interest in purchasing electric vehicles and seeking financing options.

However, insights from interviews with banks and multi-finance firms spark optimism. Despite the underdeveloped electric vehicle ecosystem, the financial sector continues to innovate and provide solutions to existing challenges. One key hope expressed is to enhance financial accessibility, allowing individuals in remote areas to secure electric

vehicle financing. Additionally, financial campaigns are being expanded through diverse media platforms, both print and online, to raise awareness about banking products related to electric vehicles. There are also innovations in financing programs, aimed at offering options tailored to various consumer situations. Other public expectations include lower interest rates, financing promotions, expedited processes, and extended payment terms to facilitate electric vehicle adoption.

Table 4.14 Factors Influencing Banks and Consumers Related to EV Financing

Factors Influencing Banks and Multi-finance in Financing EV	Factors Influencing Consumers to Seek EV Financing at Banks and Multi-finance
Healthy and good institutions' performance Hamdi (FIN2): <i>"Because in the last few years, Muamalat's condition has been struggling. I think, because of that, maybe the treatment is different from other banks that are in prime condition or healthy."</i>	Access to Financing Abu Bakar (OCV1): <i>For national Islamic banks, the choice depends on the distance. Sorry, I'll just mention the names: BSI is nearer to my house than Muamalat. Muamalat is farther away, so I naturally choose BSI.</i>
Banks analysis and regulation Tio (FIN2): <i>We adhere to (bank) regulations. If these regulations are not yet in place, we cannot offer services. For instance, once the product owner releases the product, we will be prepared to help consumers seeking financing for that specific item. Therefore, our primary responsibility is to ensure compliance with all applicable regulations.</i>	Financing campaign Abu Bakar (OCV1): <i>A bank that gains greater public exposure becomes a more appealing choice for customers seeking financing. When it actively promotes, markets, and sells its services, it increases the likelihood of attracting public interest. After all, people tend to avoid banks that lack visibility or recognition.</i>
Robust EV ecosystem and more competitive EV price Tio (FIN2): <i>We understand that offering annual tax incentives (for EV) is feasible, while regulations on after-sales services can help keep electric cars marketable and maintain good resale value. There might also be implications for investment permits. Factory construction in Indonesia may lag behind other automakers. To my knowledge, electric car manufacturing isn't as widespread as conventional car factories. Achieving this is possible if the ecosystem is developed properly, ensuring electric cars are accessible, competitively</i>	Financing scheme Innovations Dendy (OCV2): <i>There are alternative options for people who want to own an electric car. They must be varied and competitive. The programs or schemes mentioned above must be made easier for people to access and own.</i> Fajri (OCV5): <i>I'd probably prefer BSI because it's sharia-compliant and offers a flat rate. Additionally, since it's a murobahah contract, it's considered fair. This makes repayment simpler compared</i>

<i>priced, and supported by quality after-sales service. I believe the public and banks will better adapt to this policy.</i>	<i>to conventional banks. My experience with BSI has been quite interesting so far.</i>
Incentives for banks <i>Agustian (FIN3): Banks usually hope for incentives, which often come as a reduced reserve requirement (GWM). A lower GWM means less money needs to be deposited with Bank Indonesia, freeing up excess funds that can be invested. This reduces the bank's cost of funds, allowing it to offer financing at higher margins. With a lower cost of funds, the bank can maintain the same selling price but earn a greater profit margin, making its offerings more attractive.</i>	Low interest rate <i>Mulan (OCV3): The bank offered us the option to purchase an electric vehicle with discounts on interest rates and low installments. This was what attracted my dad to choose the bank for buying an electric vehicle.</i> <i>Faiq (OCV11): However, if I can still afford Sharia, even if it involves a higher interest rate, I might choose Sharia. But if it becomes too hard, I may switch to conventional options.</i>
Solid second-hand EV market: <i>Tio (FIN2): "Sometimes banks also provide financing options for used cars. Currently, there are no electric cars on the used market; most are fuel-powered, conventional vehicles. As a result, financing for electric cars generally mirrors that of new cars, which presents a challenge."</i>	Financing promotion <i>Mulan (OCV3): Yeah, I'm hoping for some relief, maybe a promotion or something similar.</i> <i>Akram (OCV4): And we hope there will be some attractive discounts or bonuses from the financing institution. For example, if possible, faster payments or lower prices.</i>
	Faster process <i>Afrizal (OCV10): Furthermore, Sharia-compliant schemes usually involve more complexity than traditional banking. I nearly purchased a motorcycle through Sharia banking, but the process was too complicated, and it didn't go through.</i>
	Extended payment tenor <i>Akram (OCV4): Alternatively, there are other options, as long as they make things easier for us. The tenor is extended, or you can obtain discounts on specific items.</i>

Source: Author's data processing

4.5.1. Other Aspects of Financing Institutions and the Current EV Ecosystem

Currently, electric vehicle prices are perceived as quite high, even though some models and variants are reasonably affordable. This perception causes most people to hesitate before purchasing electric vehicles. According to the study data, banks and multi-finance companies tend to take a cautious approach when evaluating risks and

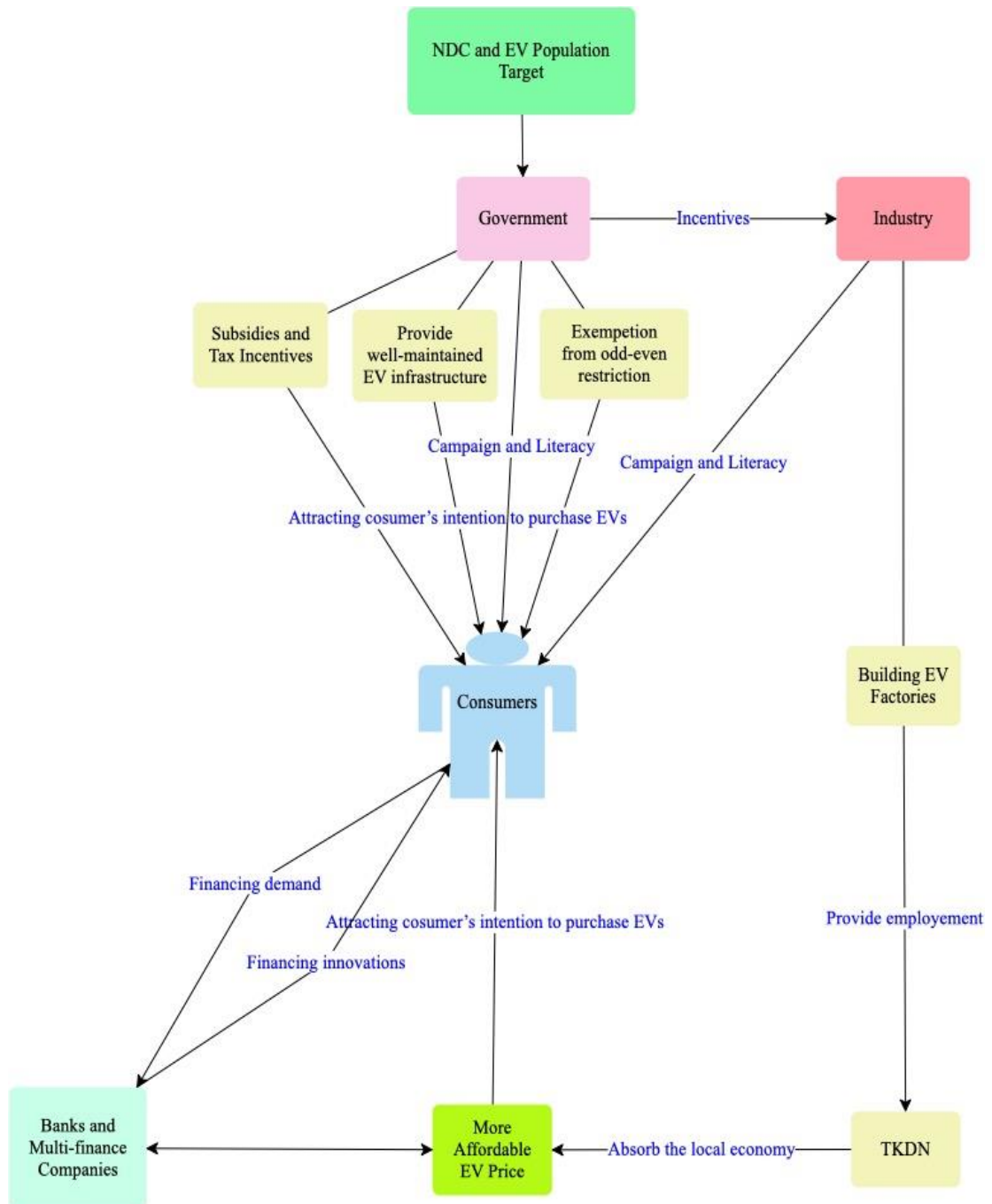
opportunities. They generally favor more affordable electric vehicles because lower prices increase the chances of consumers applying for financing, which benefits the financial institutions.

The current challenge faced by financial institutions that provide financing for electric vehicles pertains to situations where customers are unable to fulfill their repayment obligations. Typically, financial institutions undertake measures to address such issues, including identifying the underlying causes of payment difficulties, restructuring loans through extensions of the loan term and reductions in interest rates, refinancing with lower installment payments, and over-crediting (Pujawati & Kristianadewi, 2025). However, unlike traditional vehicles, where these measures may prove ineffective, financial institutions can repossess the vehicles and auction them on the used vehicle market. Nonetheless, the market for used electric vehicles remains scarce, primarily due to doubts regarding battery lifespan and other uncertainties, which hinder consumer demand (Gaikindo, 2023).

In light of this phenomenon, collaboration between financial institutions and electric vehicle manufacturers is essential to develop the used electric vehicle market. Implementing strict measures and quality assurance by manufacturers is vital for long-term roadworthiness. Automotive experts and influencers can help raise public awareness. Emerging technologies often face poor market conditions, but adopting electric vehicles involves high costs—hundreds of millions of rupiah—posing a barrier for most, unlike affordable consumer electronics. However, ongoing R&D to reduce costs and improve functionality could foster a positive future for electric vehicles and grow the used market. If such progress doesn't occur, stakeholders, including banks, may struggle to maximize financing opportunities.

4.6. Result Framework

Figure 4.15 Result Framework



Source: Author's data processing

4.7. Correlation to the Theory of Risk and Opportunity

Chapter Two opens with an exploration of Risk and Opportunity, presenting multiple definitions to establish a theoretical framework. Opportunity is typically defined as a beneficial external condition that can assist an organization in gaining a competitive edge. It is also perceived as a kind of uncertainty that may lead to positive results, such as advantages or rewards. In this framework, opportunity is regarded as a distinct variety of risk, where risks that bear negative consequences are known as threats, while those with beneficial effects are recognized as opportunities.

This study's findings reveal that both risks and opportunities are present for each involved group. Essentially, each group aims to minimize risks while pursuing opportunities. This theory has multiple applications study. For instance, conventional vehicle owners outside Java often refrain from purchasing electric vehicles due to insufficient supporting infrastructure, as the overall ecosystem remains inadequate. They steer clear of potential negative consequences associated with buying an electric vehicle without proper infrastructure. Conversely, conventional vehicle owners in Java are more inclined to seize opportunities, drawn by the relatively good infrastructure, even though many face financial constraints that prevent them from purchasing an electric vehicle. Similarly, the electric vehicle industry is eager to capitalize on Indonesia's large market potential, actively marketing electric vehicles despite the current limitations of the ecosystem mature.

Another form of applying this theory is taking risks to get opportunities. Electric vehicle owners, in essence, realize that the electric vehicle ecosystem, although considered quite good, still leaves things that cannot be answered and ascertained, such as battery issues, selling prices, uneven infrastructure, and so on. However, they still take these risks to get opportunities, namely tax relief, freedom from odd-even restrictions, much more economical battery charging costs, and other benefits that will arise from buying and using electric vehicles.

The final form of the application of the theory of risk and opportunity is to take the opportunity to avoid the risk, which is done by the government. The government's risk is high carbon emissions, which could harm the environment and tarnish its reputation for failing to tackle global challenges. To counter this risk, it is capitalizing on the electric vehicle trend. In addition to technological advancements, electric vehicles offer multiple advantages, especially in lowering carbon emissions.

Regarding banking and multi-finance, they generally adopt a cautious approach, standing in the middle and carefully assessing risks and opportunities before expanding their business. Unlike the electric vehicle industry, which quickly capitalized on the Indonesian EV market, these sectors did not rush to do so. Instead, they face other challenges, particularly the readiness of the electric vehicle ecosystem itself.

This theory concludes that risks and opportunities are always present in any situation, but their application relies on how much risks are mitigated and how many opportunities are seized. When potential risks are perceived as higher, individuals or organizations tend to avoid them, even if it means passing up uncertain benefits. Conversely, if the potential opportunities are seen as more significant, they may be pursued despite the inherent risks that could emerge later.

4.8. Correlations to the Theory of Planned Behaviour (TPB)

Following the analysis of the interview outcomes and the relevant documentation, it can be concluded that the three factors outlined in this theory—namely Attitude, Subjective Norm, and Perceived Behavioral Control—exert influence on the groups involved in this study, impacting them both positively and negatively. The following is a summary of the study results pertinent to the theory:

Table 4.15 Correlations to the Theory of Planned Behaviour (TPB)

Participants	Attitude	Subjective Norm	Perceived Behavioral Control
Owners of Conventional Vehicles	- The perception held by most conventional vehicle owners regarding electric vehicles (EVs) is generally positive, as EVs provide advanced technology and features, practicality, energy efficiency, cost-effective maintenance, and are environmentally sustainable. - However, their perception of EV pricing remains	- There is no social role that predominantly influences their desire to adopt electric vehicles.	- Relatively high prices, incomplete ecosystems, and infrastructure that is not yet fully adequate hinder their adoption of electric vehicles.

	varied; some regard the prices as quite affordable, while others still find them relatively expensive.		
Owners of Electric Vehicles	- All Electric Vehicle owners surveyed expressed their satisfaction with utilizing EVs, primarily due to the substantial reduction in energy costs and taxes.	- The influence exerted by social media, particularly by social media influencers, significantly impacts individuals' decisions regarding the purchase and use of electric vehicles (EVs).	- Tax reductions and the elimination of odd-even restrictions significantly impact their willingness to adopt electric vehicles (EVs). Additionally, the absence of sufficient public fast-charging stations (SPKLU) in urban and small areas presents major obstacles to their adoption.
Electric Vehicle Industry	- The perception of the electric vehicle (EV) industry regarding EV sales prospects in Indonesia is notably optimistic.	- The influence and demands of the market for more affordable electric vehicles (EVs), coupled with government policies, necessitate that the industry develop a comprehensive strategy for the sale of EVs.	- Tax incentives and governmental support positively influence the ease of industry in marketing electric vehicles.
Banks and Multi-finance Companies	- Financial institutions and multi-finance companies endorse the adoption of electric vehicles (EVs) within Indonesia. - The economic benefits and associated financing risks of EVs continue to be concerns for the majority of banks and multi-finance institutions.	- Banks and multi-finance institutions, particularly those within the First Mover group, are subject to governmental pressure to offer green financing options, such as electric vehicles. - However, the level of governmental pressure on most banks and multi-	- The primary reason for the limited penetration of electric vehicle financing is attributable to the insufficient EV ecosystem and infrastructure.

		finance companies concerning electric vehicle financing is relatively minimal.	
Government	- The government regards the presence of the electric vehicle (EV) market in Indonesia favorably. - Electric vehicles (EVs) in Indonesia are considered a component of strategies aimed at reducing carbon emissions.	- Governments are under increasing pressure from the public to persist in offering subsidies and tax incentives for electric vehicles.	- The government is currently assessing its fiscal capacity to sustain tax incentives beyond the year 2030. - The government continues to collaborate with the electric vehicle industry to develop a comprehensive ecosystem and infrastructure for electric vehicles.

Source: Author's data processing

4.9. Correlations to Previous Studies

Based on the presented study results, multiple correlations with prior research on electric vehicles are evident. Notable similarities and differences can be identified when comparing these findings with previous studies. The findings corroborate those of Gunawan et al. (2022), Maghfiroh et al. (2021), and Veza et al. (2022), which highlight that electric vehicles and their associated ecosystems continue to demand substantial attention from relevant stakeholders, particularly the electric vehicle industry and governmental authorities. Economic conditions of individuals, along with concerns regarding the functionality of electric vehicles, infrastructure, and overall ecosystem, remain primary obstacles to widespread adoption. This suggests that, over recent years, there has been no significant shift in perspectives on these issues. It is imperative that both governmental entities and the electric vehicle industry intensify their efforts to address and improve these challenges.

Nevertheless, this study presents novel insights. A research conducted by Febranyah (2021) demonstrated that during the initial stages of electric vehicle adoption, emotional appeal emerged as the most significant factor influencing purchase decisions, followed by functionality, vehicle identity, and cost. These findings are comprehensible, given that electric vehicle prices remained substantially high at the time of their market introduction, thereby predominantly appealing to individuals with considerable financial means, considerably surpassing the average Indonesian consumer. Conversely, this study

indicates that several dynamics have evolved, including fluctuations in pricing, growth in sales, advancement of infrastructure and ecosystems, and the expansion of associated services. Economic considerations, such as cost, the sustainability of tax incentives, and the development and maintenance of infrastructure and ecosystems, have now become the predominant factors influencing consumer behavior.

Following the findings of the study, the increase in electric vehicle exposure and price variations has led many to consider purchasing these vehicles, despite their comparatively high prices. This research evaluates the role of banks and multi-finance companies in responding to this emerging trend. Previous studies have not accounted for their role as a variable or factor affecting electric vehicle adoption.

4.10. Reflection

After presenting the results of the data analysis, the author wishes to reflect on this study's findings. This chapter highlights three primary factors that influence the adoption of electric vehicles: environmental factors, economic and social factors, and sustainability factors.

Environmental considerations likely contributed to the significant influx of electric vehicles into the Indonesian market, reflecting the government's commitment to reducing carbon emissions through its Nationally Determined Contributions (NDC) and Net Zero Emission goals. The government is focused on implementing policies and developing infrastructure to boost the electric vehicle population.

The second factor is social and economic. This is particularly evident in contrasting opinions about electric vehicles. A notable observation is that Faiq (OCV11) from Lampung, Afrizal (OCV10) from Palembang, and Harsi (OCV8) from Kalimantan share the same perspective, stating that electric vehicles are currently not suitable for the general populace in their regions due to various economic and social considerations.

Afrizal (OCV10) : *"As I have my own school, I've noticed something interesting. While electric motorbikes are seldom seen, many of our students own electric bikes. This trend indicates that electric bikes are attracting considerable interest in Indonesia, particularly in Palembang, where we frequently observe them. The primary reason is their affordability; they currently cost around 3 million Rupiah. For many Indonesians, especially mothers, this is a more appealing option than purchasing motorbikes. With motorbikes, they often face long fuel queues, which can take 5, 10, or even 15 minutes, particularly in rural areas. Given*

that their needs mostly revolve around their local neighborhoods, many find electric bikes to be a more convenient alternative than traditional motorcycles.”

Faiq (OCV11) : *“We are significantly affected. After examining the village, we can conclude that the money we have today is intended for general needs. The funds we currently possess are sufficient to cover our basic necessities. Therefore, while considering the purchase of an electric motorbike, we realize that if it breaks down in 2-3 years, replacing the battery feels akin to buying a new motorbike. We also reflect on the electric motorbike option. It’s wiser to buy a used motorbike; a second-hand bike for 5 million already represents a long-term investment.”*

Harsi (OCV8) : *“There is an anomaly and irony for us in the regions regarding the use of electric vehicles. There are still people who complain because their homes lack electricity or already have it, but not for 24 hours. This issue still exists in East Kalimantan.”*

Meanwhile, electric vehicle owners on Java Island, including Zalfa (OEV1), Joko (OEV4), Umair (OEV5), and Hifzi (OEV3), purchase and utilize electric vehicles due to economic and financial considerations, too.

Zalfa (OEV1) : *“Electric vehicles are exempt from odd-even restrictions. Additionally, regarding fuel costs, the expense amounts to 2 million. When I previously used Ayla, my monthly cost was 2 million. By switching to electricity, the cost could be halved to around 1 million, or possibly even less.”*

Joko (OEV4) : *“Well, at first glance, calculating the costs, it seems more worthwhile to use an electric car because I need to save money. I also thought about retirement, which means my income from the office will decrease over time. So, with an electric car, there’s a guarantee for maintenance and more.”*

Umair (OEV5): *“In my opinion, first, it’s economical. In terms of cost, it’s economical. At that time, I said I was tired of buying gasoline because the price kept going up. We don’t know the quality, whether it’s genuine or not.”*

Hifzi (OEV3): *“Well, electric vehicles are not a desire for me, but electric vehicles are a necessity. Why do we need them? Now we live in Jakarta. Where we*

have odd-even, that's the first thing. Because I live in the South. I have three houses. All three are in the South. Most of my office is also in South Jakarta. I go out of the alley, and I'm immediately hit by odd-even. At that time, I had two cars: one for even, one for odd. So it was confusing."

The third factor is sustainability. All participants in this study acknowledge and consider various elements that can foster the sustainability of electric vehicles in Indonesia. These include SPKLU, access to workshops, electric vehicle factories, necessary facilities, a robust EV ecosystem, and government backing through subsidies and tax incentives. Each of these factors influences the decision-making of participants in enhancing the adoption of electric vehicles.

CHAPTER V

CONCLUSION AND SUGGESTIONS

This chapter serves as the conclusion of the study, summarizing key findings and recommendations derived from the data analysis presented earlier. The conclusions aim to clearly and concisely address the research questions. Additionally, this chapter offers suggestions directed towards relevant parties, contributing practically from the research findings while also guiding future research endeavors.

5.1. Conclusion

The concluding section of this study encompasses the final data analysis and addresses the initial research questions. The primary conclusion identifies seven key factors influencing the adoption of electric vehicles in Indonesia: cost of ownership, functionality, vehicle identity, policies and regulations, motives, environmental issues, as well as facilities and services. Additionally, numerous challenges, expectations, and recommendations suggest that various enhancements are necessary for electric vehicles to attain optimal market integration. Concurrently, the market must adapt to new technologies to facilitate acceptance and familiarity. These findings comprehensively address the first research question and research objective.

Regarding the second research question and objective concerning the role of banks and multi-finance companies in financing electric vehicles, the contributions of these financial institutions to promoting electric vehicle adoption vary in terms of financing approaches and programs designed to enhance the electric vehicle ecosystem. Some institutions have achieved noteworthy results, with financing exceeding two trillion Rupiah, along with the implementation of engaging initiatives and programs targeting both consumers and industry stakeholders. Conversely, other banks have not fully maximized their potential, facing challenges with consumer financing volumes and demonstrating a lack of initiative in financing schemes and supportive actions for the electric vehicle ecosystem. The suboptimal engagement of banks and multi-finance entities in financing is closely linked to the industry's development and readiness, as well as the policies and regulations that support infrastructure development and the overall maturity of the electric vehicle ecosystem in Indonesia.

5.2. Suggestions

In this section, the author will offer recommendations based on the data analysis to stakeholders involved in this study, including conventional vehicle owners, electric vehicle owners, the electric vehicle industry, government, banks, multi-finance companies, and suggestions for future research.

5.2.1. Suggestions for Conventional Vehicle Owners

As time progresses and technology evolves rapidly, embracing new innovations becomes unavoidable. Just as individuals have adapted to mobile phones that continuously change in design and software, similar transformations are happening in the automotive industry. We have transitioned from fossil fuels to hybrid technologies that incorporate electric battery systems alongside combustion engines, and now we are shifting to fully electric vehicles. Although hydrogen-powered vehicles are already in existence, their development faces significantly more challenges than that of electric vehicles, limiting widespread adoption.

Enhancing awareness of electric vehicles and their advantages—including subsidies, tax incentives, and reductions in emissions—will benefit traditional vehicle owners. This knowledge can help them form more objective opinions about upcoming technological shifts and assess potential outcomes, both positive and negative. In doing so, they can prepare to leverage the advantages while also anticipating any potential drawbacks that may arise.

5.2.2. Suggestions for Electric Vehicle Owners

Currently, it can be observed that electric vehicle owners are trailblazers in this trend, making independent decisions to switch to electric vehicles based on their own assessments. According to the findings of this study, electric vehicle owners typically experience benefits that align with their expectations. They find that the issues they face with conventional vehicles—such as high fuel costs, complicated maintenance, substantial taxes, and movement restrictions in specific areas—are resolved by choosing electric vehicles.

Raising awareness and educating the public about electric vehicles is a straightforward way to counter negative perceptions, enabling a more balanced evaluation of their pros and cons. The ultimate objective is to encourage electric vehicles to become not just alternatives but also primary options by highlighting the benefits for their owners.

5.2.3. Suggestions for the Electric Vehicle Industry in Indonesia

This study's findings indicate that the electric vehicle industry, in collaboration with the government, is crucial for developing a mature ecosystem.

The initial recommendation for the industry is to persist in innovating and advancing research and development to enhance electric vehicle specifications. In a rapidly evolving technological landscape, combined with public anxieties regarding batteries, range, safety, and durability, along with unpredictable economic and political factors, there's significant pressure on the electric vehicle industry to swiftly address emerging challenges field.

The second recommendation is to develop additional electric vehicle options at more accessible price points. As noted in the previous paragraph, the social and economic circumstances of the community differ. At the same time, technological advancements are underway, and there is an aim to lower carbon emissions. Nevertheless, given the current variants and pricing, it remains challenging for the community to transition to electric vehicles. Generally, Indonesian society values functionality in vehicles, preferring those that can carry more passengers, are durable on all types of roads, and are fuel-efficient. Currently, most electric vehicle offerings, particularly cars, are Sport Utility Vehicles (SUVs) with a five-passenger capacity. In contrast, the most frequently purchased and utilized vehicles in Indonesia are Multi-Purpose Vehicles (MPVs), which can accommodate seven passengers and align well with Indonesian family culture. These MPVs not only offer more passenger space but have also proven to be resilient in various road conditions while remaining affordable. This type of vehicle is what Indonesians typically seek people.

The third suggestion is that the electric vehicle industry should prioritize sustainability and take responsibility for protecting consumers. Sustainability should be viewed as the industry's commitment to preserving nature and the environment for their inherent beauty and benefits, rather than treating them as mere resources that can be exploited, leading to harm for surrounding communities and broader society. Additionally, sustainability involves the industry's obligation to consumers, with vehicle brands considering the entire ecosystem of their operations—ranging from manufacturing to after-sales services, spare parts, and supporting infrastructure—ensuring that electric vehicle buyers receive adequate service and their rightful benefits without confusion or lack of solutions.

The fourth suggestion recommends that the electric vehicle industry launch a more extensive campaign across various media platforms, both print and online, and host more

automotive exhibitions to increase public awareness of the products and advantages of purchasing and using electric vehicles.

5.2.4. Suggestions for the Government of the Republic of Indonesia

Electric vehicles, regardless of their introduction timeline in Indonesia, have been embraced by only a small segment of Indonesian society. This phenomenon has also been integrated into government initiatives, aligning with the goal of reducing carbon emissions. As mentioned in earlier sections, the government aims to cut carbon emissions by 30%-40% by 2030, a commitment reported to the United Nations Framework Convention on Climate Change (UNFCCC) as part of the Paris Agreement. To meet this commitment, the government is working towards a target of 15 million electric vehicles, comprising 13 million electric motorbikes and 2 million electric cars.

However, analysis from this study reveals that the current number of electric vehicles is significantly below the government's target. Thus, this study proposes several recommendations for the government to help achieve this goal.

The initial recommendation is that the government should establish short-term targets and frameworks that align with its main objectives, aiming to develop strategies tailored to field requirements.

The second recommendation is for the government to continue offering subsidies and other fiscal incentives like VAT (PPN), PPnBM, PKB, and BBNKB for owners and users of electric vehicles in Indonesia. The study's findings show that these incentives significantly boost electric vehicle purchases. Expired subsidies for electric motorbikes can be reinstated or substituted with other fiscal incentives and implemented promptly.

The third recommendation involves enhancing the infrastructure necessary for electric vehicles, beginning with the addition of more fast charging SPKLU units and developing systems that facilitate convenience and comfort for consumers during charging. Beyond increasing unit numbers and locations, the government should also ensure the maintenance of existing SPKLU to maximize community benefits. Moreover, improvements in road conditions, drainage, and other public facilities can further strengthen the electric vehicle ecosystem.

The fourth recommendation emphasizes the need for the government, through relevant ministries and institutions, to focus on regions away from city centers, particularly those outside Java. This involves the construction, addition, and repair of facilities and infrastructure necessary for electric vehicles, as previously mentioned.

The five recommendation suggests that the government collaborate with the electric vehicle industry to raise public awareness and education about electric vehicles through a variety of advertising formats in both print and online media, while also increasing electric vehicle exhibitions, especially in regions outside Java.

The sixth suggestion highlights that the electric vehicle industry can create job opportunities and bolster the national economy. The government should collaborate with relevant stakeholders to enhance local labor absorption and support the growth of Small Medium Enterprises (SMEs) that supply materials and components for this industry. Consequently, local content requirements (TKDN) are essential for facilitating local economic growth. Additionally, through TKDN, the government can establish joint venture arrangements with foreign automobile manufacturers or independently manufacture national electric vehicles. As discussed in Chapter 2, Indonesia has attempted to develop its own electric vehicles, such as ‘Putra Petir’, but these efforts have yet to come to fruition. By implementing joint ventures and/or following sustainable governance principles that emphasize transparency and professionalism, Indonesia has the potential to mass-produce its own electric vehicles, thereby reducing prices and enhancing purchasing power for its citizens.

Lastly, the government should simultaneously start utilizing clean energy sources for electricity generation, while ensuring that electricity remains affordable for the community.

5.2.5. Suggestions for Banks and Multi-finance Companies

The final group involved in this study comprises banking and multi-finance companies, which are essential for promoting the rapid uptake of electric vehicles in Indonesia. As outlined in the previous chapter, these companies are currently in anticipation of the development and maturation of the electric vehicle ecosystem, primarily led by the industry and government. Nevertheless, there are several strategies that banking and multi-finance institutions can adopt to boost consumers’ willingness to buy electric vehicles.

The initial recommendation urges banking and multi-finance companies to promote inclusive access by offering electric vehicle financing not only in major cities but also to residents in smaller areas.

The second recommendation encourages these institutions to innovate by introducing attractive programs while ensuring their financial stability. Community expectations include financing promotions, low and fixed interest rates, and longer

repayment terms. Furthermore, a fast and straightforward process can significantly attract individuals who are considering purchasing electric vehicles.

The third suggestion advocates for banking and multi-finance firms to initiate campaigns that highlight competitive financing options for electric vehicles, making access easier for the public. Ultimately, generating interest in electric vehicles hinges on effectively conveying information, empowering individuals to foster a sincere excitement based on clearly defined, competitive, and appealing financing options.

5.2.6. Suggestions for Future Research

This study provides recommendations for the involved groups, but the author acknowledges several limitations that future researchers could address.

1. The primary groups in this research include traditional vehicle owners, electric vehicle owners, representatives from the electric vehicle industry, government officials, and banking and finance companies. However, the participant count from each group in interviews and observations may not adequately represent the entire group due to time limitations in data gathering and the complexities of the field environment. Thus, it is anticipated that subsequent research will involve a larger, more balanced number of interviews, focus group discussions (FGDs), and observations.
2. Geographically, this study primarily focuses on Jakarta and its neighboring areas. While there are participants from other major cities like Surabaya, Palembang, Lampung, and the East Kalimantan region, this sample may not reflect the population of these areas comprehensively. Future research should aim to include a broader participant base over a larger geographic range.
3. The data collection period for this study was brief, spanning from early April to mid-May 2025, which may limit the research's ability to capture long-term effects. Future studies are encouraged to extend their data collection timeframe to yield more representative results that can have a lasting impact.

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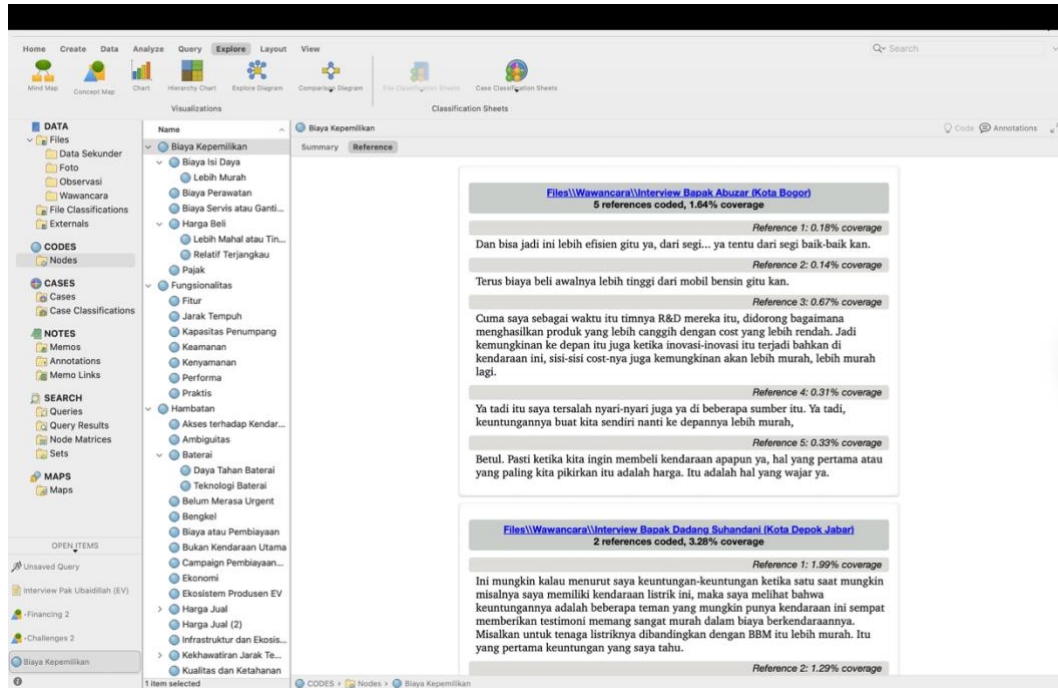
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APPENDIX

Appendix 1.1. Coding Process on NVIVO 12



Appendix 1.2. Word Frequency on NVIVO 12



Appendix 2.1. Interview Questions for Conventional Vehicle Owners

1. What do you think about electric vehicles?
2. Are you considering buying an electric vehicle? Why?
3. Are you aware of the benefits of purchasing and owning an electric vehicle?
4. What are the existing advantages of electric vehicles?
5. What are the disadvantages of electric vehicles currently?
6. What factors could increase your interest in purchasing an electric vehicle?
7. What prompts you to continue using a gasoline vehicle?
8. What is the government's role in supporting the purchase and use of electric vehicles, along with their supporting ecosystem?
9. What are your expectations for the government and the electric vehicle industry to promote the public's purchase of electric vehicles?
10. In your opinion, what role do banks and other financing institutions (multifinance) play in facilitating electric vehicle ownership?
11. Which bank or financing institution would you choose if you wanted to buy an electric vehicle? Why?
12. What are your aspirations for banks and financing institutions to encourage the public to purchase electric vehicles?

Appendix 2.2. Interview Questions for Electric Vehicle Owners

1. What are your main considerations when purchasing an electric vehicle?
2. How significantly does the price of an electric vehicle impact your decision?
3. What are your thoughts on the cost of owning an electric vehicle compared to a conventional gasoline vehicle?
4. Do you believe that the availability of charging stations (SPKLU) is currently adequate? Why?
5. What is the government's role in supporting the purchase and use of electric vehicles and their related ecosystem?
6. How do you evaluate the availability of maintenance services and spare parts for electric vehicles today?
7. To what degree do environmental factors influence your decision to choose an electric vehicle?
8. What are the primary challenges you currently face in using electric vehicles?

9. What are your hopes for the government and the electric vehicle industry to encourage more public purchases of electric vehicles?
10. In your opinion, what is the role of banks and other financing institutions in facilitating electric vehicle ownership?
11. Which bank or financing institution do you prefer when purchasing an electric vehicle? Why?
12. What are your expectations from banks and financing institutions to boost electric vehicle purchases for the public?

Appendix 2.3. Interview Questions for Electric Vehicle Industry

1. What are the primary challenges in producing and marketing electric vehicles in Indonesia?
2. What is the company's strategy for enhancing the appeal of electric vehicles in the Indonesian market?
3. What measures is the company taking to sell electric vehicles at more competitive prices?
4. How does the company address challenges related to the availability and replacement of electric vehicle batteries?
5. How is the company contributing to the improvement of charging infrastructure for EV users?
6. Does the company have plans to enhance after-sales service and spare parts availability?
7. What is the significance of partnerships with banks and financing institutions in boosting electric vehicle sales?
8. What are the largest obstacles to advancing the adoption of electric vehicles in Indonesia?
9. What is the company's strategy for raising public awareness of electric vehicles?
10. What is the government's role in supporting the electric vehicle industry in Indonesia today?
11. What expectations do you have for the government and banks/financing institutions to encourage the public's purchase of electric vehicles?

Appendix 2.4. Interview Questions for Related Government Institutions

1. What is the government's strategy for increasing the adoption of electric vehicles in Indonesia?

2. What efforts is the government making to accelerate the development of electric vehicle charging infrastructure (SPKLU)?
3. What incentive policies have been put in place to attract public interest in electric vehicles?
4. How effective are tax incentives in boosting electric vehicle sales?
5. What are the primary challenges in implementing electric vehicle policies in Indonesia?
6. How does the government collaborate with the automotive industry to promote local electric vehicle production?
7. What measures have been taken to enhance public awareness of the benefits of electric vehicles?
8. Is there a long-term plan to introduce regulations concerning electric vehicle safety and performance standards?
9. What policies are in place to lower the cost of electric vehicle ownership, including battery costs and maintenance?
10. How does the government perceive the role of banks and the financial sector in supporting the electric vehicle ecosystem?
11. What are your expectations for banks and financing institutions in the electric vehicle industry to boost public purchases of electric vehicles?

Appendix 2.5. Interview Questions for Banks and Multi-finance Companies

1. What financing products do banks offer for purchasing electric vehicles?
2. How do banks perceive the prospects for financing electric vehicles compared to conventional vehicles?
3. What are the main challenges in providing loans or credit for electric vehicles to consumers?
4. Are there any differences in credit schemes between electric and fossil fuel vehicles?
5. What strategies have been and will be implemented by banks and financing institutions to enhance the accessibility of electric vehicle financing for the public?
6. How do banks and multi-finance institutions collaborate with the automotive industry to promote the adoption of electric vehicles?

7. What incentives can be provided to consumers to generate more interest in financing electric vehicles?
8. How do risk and guarantee policies in financing electric vehicles differ from those for conventional vehicles?
9. Do banks offer special programs to support the development of the electric vehicle ecosystem, such as investments in charging infrastructure?
10. How do banks evaluate the government's role in supporting electric vehicle financing through fiscal policies or incentives?
11. What are your expectations for the government to promote electric vehicle purchases among the public?