CHAPTER I

INTRODUCTION

1.1 Background

Climate change is a crucial global issue that affects human life. Global warming is an implication of climate change, which results in atmospheric instability. The increase in greenhouse gases causes global warming. Rising temperatures are only the beginning of climate change. The increase in global temperatures, elevated sea levels, and the prevalence of floods and storms due to extreme weather will significantly alter the conditions of habitats that formerly supported diverse kinds of animals, plants, and other organisms (Haryanto & Prahara, 2019).

Climate change and greenhouse gas emissions have significant impacts on public health, the environment, and communities globally. Elevated greenhouse gases help to reflect and absorb low energy radiation released by the Earth's surface back to the surface. Greenhouse gases that drive climate change consist of carbon dioxide (CO_2) and methane (CH_4). Both of these gasses are produced when motorized vehicles run on gasoline. According to Global Methane Tracker 2024 by the International Energy Agency (IEA) methane emissions contribute to approximately 30% of global temperature increases since the Industrial Revolution, with the energy sector (including oil, natural gas, coal, and bioenergy) responsible for over a third of these emissions. Global Carbon Project revealed that emissions from fossil fuels alone are

expected to reach approximately 36.8 billion tons. This figure highlights the persistent challenge of curbing emissions despite increasing commitments to net-zero goals.

Humans are the primary causes of global warming, largely via the burning of petroleum and coal. The combustion of fossil fuels generates greenhouse gas emissions, which trap solar heat and raise the Earth's temperature. These risks are a major issue, especially in Indonesia. As one of biggest the emitter of greenhouse since 2015 according to Carbon Brief Profile Indonesia is among the world's highest emitters of greenhouse gases, primarily due to its reliance on coal for energy production, deforestation, and peatland degradation (Dunne, 2019). To minimize emissions, the transportation industry must be electrified utilizing renewable energy, specifically electricity (Ramadhan & Khoirunurrofik, 2024). Consequently, government is enacting diverse policies aimed at mitigating emissions originating from transportation industry. Advancements in electric vehicles have played a significant role in facilitating pollution reductions in numerous countries.

In 2016, Indonesia ratified the 2015 Paris Agreement as a legal document for administering state government. This ratification was enacted under Law Number 16 of 2016, which pertains to the endorsement of the Paris Agreement under the United Nations Framework Convention on Climate Change (Utami, 2022). Under this contract, the Indonesian government has committed to reducing emissions of around 880 million tons of carbon dioxide (CO_2) by 2030.

Table 1.1 Greenhouse Gas (GHG) Emissions per Type of Fuel
in Indonesia (2021-2030)

Source: State Electricity Company

Fuel Type	Greenhouse Gas Emissions 2021-2030 (Million Tonnes of CO2)									
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Fuel Oil	9	9.3	3.9	2	1.4	1.5	1.5	1.6	1.7	1.7
Gas	27.9	31.1	31.9	30.7	27.9	27.8	28.8	31.2	32.3	34
Coal	222,2	228.6	242.7	257.8	247.6	261.4	271.92	278.5	288.1	298.9

Electric Vehicles (EVs) have been marketed as a viable short-term automotive solution to decrease reliance on fossil fuels and the associated greenhouse gas (GHG) emissions from conventional vehicles (CVs) (Egbue & Long, 2012). Unlike typical internal combustion engine vehicles, electric vehicles (EVs) eliminate the need for fossil fuels by employing electric propulsion systems. The proliferation and integration of electric vehicles are closely linked to sustainable transportation frameworks, seeking to diminish greenhouse gas emissions and alleviate the environmental consequences associated with traditional automotive technology.

The Indonesian government is investigating novel approaches to encouraging pro-environmental behavior among its residents. One example of this effort is the use of electric vehicles. A critical component of this approach is the shift from fuel-powered cars to electric vehicles, which aims to reduce transportation's environmental effect. The transition from fuel-powered cars to electric vehicles (EVs) offers significant reductions in transportation-related environmental impacts. Research suggests that EVs can cut carbon emissions

by up to 50% compared to traditional gasoline vehicles, particularly when they are charged with renewable energy. This reduction is due to the lower direct emissions from EVs, as they do not rely on burning fossil fuels. For example, the U.S. Environmental Protection Agency (EPA) states that electric cars produce zero tailpipe emissions, which directly reduces air pollution and greenhouse gases, contributing to improved air quality and a reduction in global warming potential. In addition, a study by the International Council on Clean Transportation (ICCT) highlights that, over the lifetime of an electric vehicle, the total emissions are significantly lower than those from conventional vehicles, even when accounting for the emissions produced during battery manufacturing. A key factor is the continued shift to cleaner electricity grids, which further reduces the overall carbon footprint of EVs as renewable energy sources like wind and solar power become more integrated into energy systems. Furthermore, adopting electric vehicles on a large scale could lead to a reduction of over 6 billion metric tons of CO_2 emissions annually by 2050 globally, as per estimates from the International Energy Agency (IEA).

This initiative is consistent with Presidential Regulation Number 79 of 2023, which modifies Presidential Regulation Number 55 of 2019, with the goal of improving energy efficiency, security, and conservation in the transportation sector, along with achieving clean energy, air quality, and environmental sustainability, in conjunction with Indonesia's pledge to

decrease greenhouse gas emissions, necessitating the rapid implementation of electric vehicles.

Jakarta is recognized as one of the major global cities contributing significantly to carbon dioxide (CO_2) and methane (CH_4) emissions since 2015 (Wijaya et al., 2017) . The city faces challenges in managing its urbanization and energy needs, compounded by Indonesia's reliance on fossil fuels and deforestation issues. Jakarta's emissions are driven by its high population density, rapid urban growth, and reliance on coal-powered energy. Coal accounts for around 60% of Indonesia's electricity generation, making cities like Jakarta significant contributors to CO_2 emissions (World Bank Group 2023). Transportation plays a major role, as the city has extensive traffic congestion and heavy use of personal vehicles. This contributes to poor air quality and elevated greenhouse gas emissions (Hasjanah, 2023). Methane primarily originates from landfills, waste management issues, and the agricultural sector. Jakarta's inadequate waste processing infrastructure exacerbates methane release from decomposing organic matter in landfills (Aprilia, 2021).
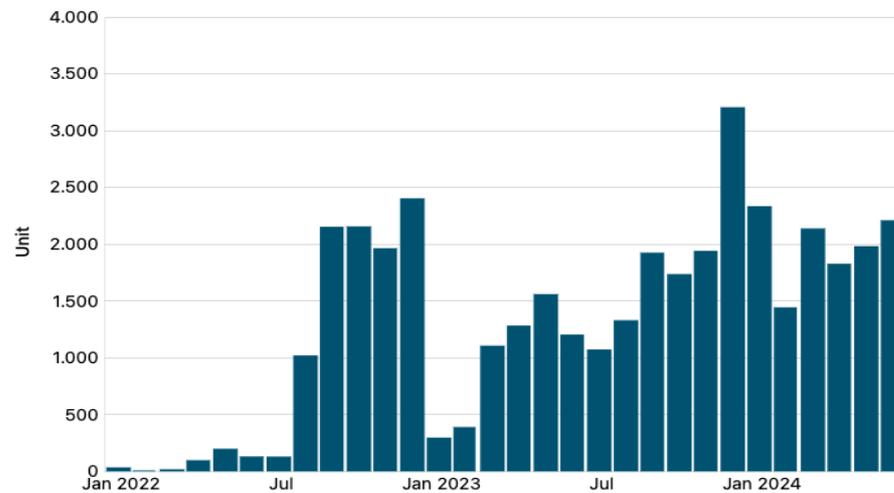
**Figure 1.1 Wholesale Sales Volume of BEV Electric Cars in
Indonesia per Month (January 2022-June 2024)**
Source: Databoks

Based on data from Databoks in the graph above, the sales volume of electric cars has continued to increase since 2022. The highest sales volume was seen in January 2024 with a number approaching 3500 units. This number is very large when compared to sales of electric cars in the period from January to June 2022, which did not reach 500 units. However, according to The Global Electric Vehicle Market Overview In 2024 published by Virta (2024) the number of sales of EVs in Indonesia is still relatively low compared to other large countries. As the country with the 4th largest population, Indonesia was only able to donate 334,969 units in the first semester of 2024. This is a very different figure when compared to sales of other large countries such as China and America which were able to reach 1 million units and even reached 8 million units in China. Electric vehicles (EVs) substantially benefit public administrations in advancing environmental sustainability and economic efficiency. Their adoption facilitates the mitigation of noise and greenhouse

gas emissions, aligning with climate action and energy conservation objectives. Moreover, enhancing electric vehicle charging infrastructure and integrating with smart city technologies may optimize urban planning and network administration, hence fostering more efficient and resilient municipal services.

Regrettably, electric vehicles remain considerably more costly than conventional vehicles due to their reliance on batteries, and the supporting infrastructure, such as EV charging stations, still needs to be extensively available in Indonesia. Hu et al. (2023) asserts that the majority of citizens adopt a wait-and-see approach on electric vehicles (EVs). Consequently, it is essential to investigate the correlation between incentive schemes and the intention to acquire electric vehicles.

This study categorizes EV-related policies into two classifications based on Wang's (2017) policy framework and the current Indonesian context: convenience policy and financial incentive policy. The financial incentive and convenience policies might encompass most cities in Indonesia, particularly Jakarta. This classification could comprehensively encompass the existing policies about electric vehicles in Jakarta.

Table 1.2 Central and Local (Jakarta)'s Financial Incentive Policies

Release Time	Type	Policies	Department	Details
November 2023	Local	Jakarta Governor Regulation Number 38 Year 2023	Jakarta Governor	This legislation offers numerous substantial incentives for electric vehicle owners, notably the 0% Motor Vehicle Tax (PKB), the elimination of the

Release Time	Type	Policies	Department	Details
				progressive tax, and the exemption from the Motor Vehicle Transfer Fee (BBNKB) for EVs.
February 2024	Central	Regulation of the Ministry of Finance Number 8 Year 2024	Ministry of Finance	Government-provided Value Added Tax (VAT) subsidies for the acquisition of specific four-wheeled Battery-Based Electric Motor Vehicles (KBLBB) and select electric buses in 2024.
February 2024	Central	Regulation of the Ministry of Finance Number 9 Year 2024	Ministry of Finance	The government fully absorbs the Luxury Goods Sales Tax (PPnBM) on imports of four-wheeled completely built-up (CBU) and completely knock down (CKD) electric cars (KBL) at a rate of 100%. This provision applies exclusively to the January-December 2024 tax period.

Source: Legal Documentation and Information Network (JDIH)

These regulations were implemented to promote governmental policies aimed at transitioning from fossil fuels to electricity, attract investment, enhance domestic manufacturing of battery-powered electric vehicles, and facilitate the acceleration program for battery-powered electric vehicles. They require government support in the form of fiscal incentive policies.

Table 1.3 Central and Local (Jakarta)'s Convenience Policy

Release Time	Type	Policies	Department	Details
September 2019	Local	Regulation of the Governor of Jakarta Number 88 Year 2019	Jakarta Governor	This policy outlines the list of types of vehicles exempt from Jakarta's odd-even policy. There are 13 lists of vehicles exempt from odd-even, one of which is an electric vehicle.
May 2021	Central	Republic of Indonesia Police Regulation Number 7 Year 2021	Police	This policy discusses the color of electric vehicle license plates in Indonesia. This regulation stipulates five types of special license plates for electric vehicles, with different primary colors and lists.
January 2023	Central	Regulation of the Ministry of Energy and Mineral Resources Number 1 Year 2023	Ministry of Energy and Mineral Resources	This circular instructs shopping center managers to provide priority parking spaces and Public Electric Vehicle Charging Stations (SPKLU) for electric vehicles.
April 2023	Central	Circular Letter No. 3 of 2023	Ministry of Trade	This rule requires SPKLU to be offered at conveniently accessible places that do not impair traffic flow and include specific parking areas. SPKLU sites that are recommended include residential areas, offices, malls, and other retail complexes, as well as those near arterial highways, toll road rest areas, petrol

Release Time	Type	Policies	Department	Details
				stations (SPBU), parking lots, and other open places.

Source: Legal Documentation and Information Network (JDIH)

Governments have implemented several initiatives to enhance citizens impression of convenience, as illustrated in Table 1.3. The enactment of these convenience regulations may enhance citizens' perception of the ease of using electric vehicles, thereby augmenting their propensity to use EVs. This aligns based on the findings of the research by Hu et al. (2023) which states that convenience policy has the most influence among incentive policies.

The majority of individuals see charging issues as a key barrier to the acceptance of electric vehicles. A stated by Antaranews.com (2024), as of February 1, 2024, the Special Region of Jakarta, once the capital of Indonesia, has 3,263 Public Electric Charging Stations (SPLU), demonstrating great interest among Jakarta inhabitants in adopting electric cars. The State Electricity Company (PLN) assists the Jakarta Provincial Government in sustainable initiatives to establish Jakarta as a Global City. Wang et al. (2017) indicated that charging infrastructure significantly affects citizens' adoption of electric vehicles (EVs).

Jakarta, a rapidly growing metropolis in Indonesia, faces significant challenges with traffic congestion and air pollution, driven by high population density and increasing vehicle ownership (Retnaningtyas, 2024). The city's efforts to address these issues include Jakarta Governor Regulation Number 38 of 2023 and Regulation Number 88 of 2019, which emphasize the

government's commitment to environmental solutions and better urban mobility. Despite the growing awareness of electric vehicles (EVs), adoption rates remain lower than expected, with citizens' knowledge and perceptions playing a crucial role in encouraging EV use (Permana et al., 2023; Wang et al., 2021).

Previous studies have explored factors influencing EV adoption, focusing on environmental concerns, perceived usefulness, financial incentives, and barriers such as infrastructure. However, the role of convenience policies has been largely overlooked (Permana et al., 2023; Supriadi et al., 2024). This study builds on the Theory of Planned Behavior (TPB), incorporating factors like financial and convenience incentives, consumer attributes, and government policies (Hu et al., 2023). The research aims to examine how these factors affect Jakarta citizens' intentions to adopt EVs, particularly focusing on the impact of financial and convenience incentives on their attitudes and purchase intentions.

Researching Jakarta is intriguing because of its status as a large, modern metropolis in Indonesia, marked by substantial urbanization and a complicated transportation network. Jakarta faces pressing challenges related to traffic congestion and air pollution, which are exacerbated by high population density and increasing vehicle ownership (Retnaningtyas, 2024). The presence of Jakarta Governor Regulation Number 38 of 2023 and Regulation Number 88 of 2019 establishes a distinctive framework for examining public interest in

electric vehicles, as it signifies the government's dedication to tackling environmental challenges and enhancing urban mobility.

According to Permana et al. (2023), while there are numerous empirical research on the uptake of electric cars and their benefits, the adoption rate remains lower than expected. Citizens' knowledge and comprehension of electric vehicles (EVs) are critical factors in promoting their spread and progress (Wang et al., 2021). To build effective policies, policymakers must first understand citizen factors. Previous research has suggested countermeasures for citizen attitudes, environmental issues, environmental self-image, perceived behavioral control, price-value evaluations, subjective norms, perceived usefulness, perceived risk, infrastructural barriers, monetary incentive policies, perceived utility, financial incentive policies, (Permana et al., 2023; Supriadi et al., 2024). However, they have overlooked the variable of convenience policy.

The expanded Theory of Planned Behavior (TPB) paradigm suggested by Hu et al. (2023) is used in this study to analyze the factors influencing people' intentions to use electric vehicles (EVs). Hu et al. found that four types of incentive policies (financial, informational, convenience, and road privilege) and three consumer attributes (environmental, innovative, and facial traits) impact purchasing intentions for electric cars (EVs). According to Permana et al. (2023), government incentive programs impact buying inclinations. In this study, financial incentives and convenience policies are highlighted as crucial considerations.

The major goal of this research is to investigate the influence of two types of incentive schemes on people's plans to buy electric vehicles (EVs). This study provides several substantial benefits. Specifically, previous research has stressed the importance of the financial incentive policy while ignoring it (Permana et al., 2023; Supriadi et al., 2024). This study analyzes the impact of two policy kinds on people' attitudes and intentions about the purchase of electric vehicles (EVs), thereby enhancing the comprehension of public adoption of EVs from a policy perspective. This study examines potential citizens in Jakarta to investigate their attitudes towards electric vehicles (EVs) and intentions regarding adoption. This study examines potential citizens in Jakarta to investigate their attitudes towards electric vehicles (EVs) and their intentions regarding EV adoption.

The author aims to demonstrate the effect of financial incentive policies and convenience policies on citizens' intentions to adopt electric vehicles (EVs), mediated by attitudes towards EVs. The research is titled "Study of Citizen Intention to Adopt Electric Vehicle in Jakarta".

1.2 Research Question

Drawing from the background regarding the Study of Citizen Intention to Adopt Electric Vehicle in Jakarta, this research aims to address seven research question which will be answered in this research:

1. Does financial incentive policy influences attitude towards EVs in Jakarta?

2. Does financial incentive policy influences intention to adopt EVs in Jakarta?

3. Does financial incentive policy influences attitude towards EVs and intention to adopt EVs in Jakarta?

4. Does convenience policy influences attitude towards EVs in Jakarta?

5. Does convenience policy influences intention to adopt EVs in Jakarta?

6. Does convenience policy influences attitude towards EVs and intention to adopt EVs in Jakarta?

7. Does attitude towards EVs influences intention to adopt EVs in Jakarta?

1.3 Research Objective

According to the problem formulation, there are seven objectives which will be answered in this research:

1. To determine the influence of financial incentive policy on attitude towards EVs in Jakarta.

2. To determine the influence of financial incentive policy on intention to adopt EVs in Jakarta.

3. To determine the influence of financial incentive policy on attitude towards EVs and intention to adopt EVs in Jakarta.

4. To determine the influence of convenience policy on attitude towards EVs in Jakarta.

5. To determine the influence of convenience policy on intention to adopt EVs in Jakarta.

6. To determine the influence of convenience policy on attitude towards EVs and intention to adopt EVs in Jakarta.

7. To determine the influence of attitude towards EVs on intention to adopt EVs in Jakarta

1.4 Research Usability

It is anticipated that this research will provide benefits both theoretically and practically, including the following:

1.4.1 Theoritical Usability

This research aims to contribute to advancing public administration science, particularly within the education sector. This research could serve as a guide for future research endeavors.

1.4.2 Practical Usability

a. For the author, this research offered an opportunity to gain new insights into knowledge. Consequently, the findings of this study may provide a framework for alternative research methodologies and serve as a benchmark for subsequent investigations.

b. For citizens, this research may offer insights into the Study of Citizen Intention to Adopt Electric Vehicles, aiding the public in accessing information and enhancing interest in the adoption of electric vehicles.

c.   For institutions, this study may serve as a valuable input for institutions seeking solutions to address challenges in the Study of Citizen Intention to Adopt Electric Vehicles in Jakarta.

1.5 Literature Review

Table 1.4 Literature Review

NO	TITLE, AUTHOR, & JOURNAL	METHOD	RESEARCH RESULT	RESEARCH ANALYSIS
1.	**Ramadhan & Khorunurrofik (2024):** Does The BBN KB Incentive Policy Increase Ownership of Battery-Based Electric Vehicles? Indonesia Case Study. *Journal of Economics, Technology, and Business.*	Quantitative	The BBN KB incentive program has a notable effect on the rise in electric vehicles ownership, especially battery-powered electric car, in Indonesia.	This study focuses on the effectiveness of BBN KB (vehicle registration tax) incentives in promoting the possession of electric vehicles in Indonesia. The similarity lies in the focus on government incentives and their influence on consumer ownership of electric vehicles, a central theme in the current research. However, Ramadhan & Khoirunurrofik specifically analyze ownership rates, whereas the current study is more concerned with the intention to adopt EVs and how incentives affect this intention.
2.	**Supriadi, *et al* (2024):** Study of Electric Vehicle Purchase Intentions in Generation-Z: An Expanded Theory of Planned Behavior Approach. *Journal of Business Management Economic.*	Quantitative	Subjective norms have a positive effect on the chance of buying an electric vehicle. Environmental concerns, perceived behavioral control, attitude, and monetary incentive schemes have minimal effect on this intention.	Both studies use the Theory of Planned Behavior to examine EV adoption intentions. Another similarity is the hypothesis that attitude positively affects purchase intention. The differences are in the

NO	TITLE, AUTHOR, & JOURNAL	METHOD	RESEARCH RESULT	RESEARCH ANALYSIS
				demographic focus and the breadth of variables considered, as shown by Supriadi et al. The research from Supriadi expanded TPB with environmental concerns and monetary incentive policies as independent variables. In addition, the target respondents of Supriadi et al. were Generation Z, while the target respondents of the current study do not have a generational provision.
3.	**Hasudungan,** *et al* **(2023):** The Impact of Government Incentives on Electric Vehicle Adoption in the Metropolitan Jakarta Area. *Journal of Development Economics.*	Quantitative	Electric vehicle subsidies, infrastructure, tax incentives, and age substantially influence electric vehicle uptake. This study indicates that prospective consumers recognize and respond favorably to governmental initiatives aimed at decreasing initial and maintenance expenses associated with the switch to electric vehicles in the Jakarta metropolitan region.	This study explores the influence of government incentives on electric vehicle adoption in the metropolitan Jakarta region (Bekasi, Tangerang, Depok, Jakarta, and Bogor), which closely aligns with the current research focus on policy impact. Both studies share a quantitative approach and the same geographical scope, but this study is more specific only to Jakarta. However, Hasudungan et al. is not based on TPB, while

NO	TITLE, AUTHOR, & JOURNAL	METHOD	RESEARCH RESULT	RESEARCH ANALYSIS
				the current study is based on TPB.
4.	**Permana, et al (2023):** Analysis of factors influencing consumers towards purchasing intention of electric vehicles in Indonesia. *Indonesian Journal of Business and Management Innovation.*	Quantitative	Perceived usefulness, perceived ease of use and price value have a beneficial impact on attitudes toward acquiring an electric automobile. Furthermore, attitudes toward purchasing behavior, perceived pricing value, and financial incentive programs have been shown to positively influence purchase intention, but perceived risk and infrastructural constraints have a negative impact on this intention.	This study examines the elements that influence the purchase intention of electric vehicles in Indonesia, comparable to the present study's focus on customer intention. Both studies employ a quantitative approach to market analysis in Indonesia. However, Permana et al. concentrate on general consumer attitudes and external influences, whereas the current study focuses on the effect of government policies and incentive programs in determining purchasing decisions.
5.	**Chonsalasin, *et al* (2024):** Exploring the Influence of Thai Government Policy Perceptions on Electric Vehicle Adoption: A Measurement Model and Empirical Analysis. *Smart Cities.*	Quantitative	Concrete government policies, especially those that build EV infrastructure and provide explicit regulatory support, as well as good communication of these policies, have a significant impact on public preparedness to accept EVs. The findings underscore the essential influence of perceived governmental	Both studies emphasize the role of government policies in influencing EV adoption. Chonsalasin et al. highlight the importance of tangible government policies in shaping public willingness to adopt EVs, such as financial incentives, tax reductions, and support for

NO	TITLE, AUTHOR, & JOURNAL	METHOD	RESEARCH RESULT	RESEARCH ANALYSIS
			dedication and financial incentives on consumer choices.	domestic products. The differences are that Chonsalasin et al. focus more on the perception of government policies and their direct impact on EV adoption without explicitly framing their analysis within the TPB. While both studies address EV adoption, they are set in different geographical and cultural contexts. Chonsalasin et al. focus on Thailand, whereas current research centers on Jakarta, Indonesia.
6.	**Wang, *et al* (2021):** The influences of incentive policy perceptions and consumer social attributes on battery electric vehicle purchase intentions. *Energy Policy*.	Quantitative	The outcomes of structural equation modeling research with 261 potential customers reveal that consumers' views of financial incentive policies, convenience policies, and information supply policies impact their attitudes regarding battery electric vehicles (BEVs) and purchase intent. Furthermore, three consumer social characteristics—environmental concerns, social norms, and self-awareness—are more influential than	Both studies are based on the Theory of Planned Behavior (TPB) paradigm, with an emphasis on EV adoption intentions and the influence of policy as independent factors. The distinction is that Wang et al. incorporate incentive policy views and consumer social factors into their study model. Apart from that, Wang et al. research was conducted in China,

NO	TITLE, AUTHOR, & JOURNAL	METHOD	RESEARCH RESULT	RESEARCH ANALYSIS
			policy judgments. Attitudes about battery electric vehicles (BEVs) are the most important factor influencing plans to acquire them.	while the current study was conducted in Jakarta, Indonesia.
7.	**Huang & Ge (2019):** Electric vehicle development in Beijing: An analysis of consumer purchase intention. *Journal of Cleaner Production.*	Quantitative	Consumers' propensity to purchase electric vehicles in Beijing is heavily influenced by attitudes, product perceptions, and monetary incentive programs, as well as cognitive status and perceived behavioral control.	Both studies use the Theory of Planned Behavior (TPB) paradigm, with an emphasis on EV adoption intentions and the impact of policy as independent variables. The contrast is that Huang and Ge developed a purchase intention effect mechanism model for EV based on product perception, customer cognitive state, and incentive policy measures (both non-monetary and monetary). Huang and Ge's research took place in Beijing, China, whereas the current investigation was conducted in Jakarta, Indonesia.
8.	**Wang, et al (2018**): Policy implications for promoting the adoption of electric vehicles: Do consumer's knowledge, perceived risk and financial incentive policy	Quantitative	Consumers' understanding of electric vehicles (EVs) is positively and significantly associated with attitude, perceived utility, and intention to adopt EVs, but negatively and strongly associated with perceived	Wang et al. and the current study both use TPB theory and aim to evaluate factors that impact customers' intentions to adopt EVs. However, Wang et al.'s study focuses on the effects of

NO	TITLE, AUTHOR, & JOURNAL	METHOD	RESEARCH RESULT	RESEARCH ANALYSIS
	matter?. *Transportation Research Part A.*		risk. Perceived danger lowers the perceived attitude, utility, and inclination to use electric vehicles. Nonetheless, the data imply that the financial incentive scheme has little impact on people's intentions to use electric automobiles. Furthermore, the findings suggest that customers' lack of awareness of electric cars (EVs) and their perception of increased dangers connected with EVs may be psychological hurdles to their acceptance.	consumer understanding of EVs, perceived utility, perceived risk, and present financial incentive programs. Only financial incentive programs are equivalent to independent variables. In addition, Wang et al.'s research was done in China.
9.	**Han,** *et al* **(2017):** The intention to adopt electric vehicles: Driven by functional and non-functional values. *Transportation Research Part A.*	Quantitative	Consumers' propensity to purchase electric vehicles in Beijing is heavily influenced by attitudes, product perceptions, and monetary incentive programs, as well as cognitive status and perceived behavioral control.	Han et al. applied the Theory of Planned Behavior (TPB), which is also employed in this study. One of the same hypotheses holds that customers' attitudes regarding EVs have a favorable impact on their intention to adopt. However, the purpose of this study is to look at customers' intentions to embrace electric cars (EVs) in terms of consumption value. In addition, Han et al. performed a survey in Hefei, China, whereas the current

NO	TITLE, AUTHOR, & JOURNAL	METHOD	RESEARCH RESULT	RESEARCH ANALYSIS
				study was conducted in Jakarta, Indonesia.
10.	**Wang, et al (2017a):** The impact of policy measures on consumer intention to adopt electric vehicles: Evidence from China. *Transportation Research Part A.*	Quantitative	Consumers' environmental concerns influence the association between two types of policy initiatives (financial incentives and convenience factors) and their intention to buy electric vehicles.	This study analyzes how policy measures impact consumers' propensity to use electric automobiles in China. The similarity lies in the shared focus on policy impacts on EV adoption, but the critical distinction is the geographical scope. While Wang et al. center their study in China, the current research examines these policies in Jakarta, Indonesia, thereby contributing a different cultural and economic perspective. Both studies utilize a quantitative approach to measure consumer intention, but the policy context differs significantly.

Source: Processed from various articles (2024)

In conclusion, this literature review highlights the diverse approaches taken by researchers to examine factors influencing electric vehicle (EV) adoption, particularly in the context of financial incentive policy and convenience policy. While Chonsalasin (2024), Supriadi (2024), Hu et al. (2023), Permana et al (2023), Wang et al. (2021; 2018; 2017a), Han (2017), and Huang (2019) explored the incentive policies through an extended Theory of Planned Behavior (TPB), other studies like Hasudungan et al. (2023) and Ramadhan & Khoirunurrofik (2024), do not adopt TPB. These studies that use TPB share a common foundation but differ in their geographical scope and the specific variables included in the analysis, such as the role of government policies and external incentives.

The current research builds on these findings by narrowing the focus to Jakarta, Indonesia, and integrating financial incentive policy and convenience policy in influencing the citizens intention to adopt EVs through their attitude towards EVs. While Han (2017) also used TPB to functional and non-functional values in influencing customers to adopt EVs, the current study takes a more focused approach by examining the specific financial incentive policy and convenience policy in influencing citizen intention. However, limited studies from Indonesia have ignored the convenience policy. This study modifies the expanded Theory of Planned Behaviour (TPB) paradigm. It integrates financial incentive policy and convenience policy in influencing citizens intention to adopt EVs through their attitude towards EVs.

1.5.1 Public Administration

Administration, as articulated by A. Dunsire and referenced by Donovan and Jackson (in Keban, 2008: 2), exhibits variability in its definition, encompassing direction, governance, execution of activities, oversight of operations, formulation of principles for public policy implementation, analytical activities, decision-making processes, policy deliberations, collaborative efforts in the production of public goods and services, and serving as a domain for academic and theoretical inquiry. The author cites Tracker's viewpoint (Donovan and Jackson, 1991: 10) that administration is a dynamic and ongoing activity aimed at achieving objectives through the coordinated and cooperative use of citizens and resources.

Public refers to the collective aspect of governance, emphasizing the role of government in serving the community. The concept of "public" encompasses the responsibilities and obligations of governmental bodies to engage with and serve the citizenry effectively. Chandler and Plano (1998: 29-30) define public administration as a process that organizes and coordinates public resources and personnel to conceive, implement, and manage public policy decisions.

Public administration is to institutionalize management approaches that align with the principles of effectiveness, efficiency, and the satisfaction of community needs.

Bartholomew (1959), as cited in Abdul Kadir's book, defines public administration as the execution of the public will articulated in law and the orchestration of collective efforts to realize public policy.

From the various definitions of public administration given above, it could be concluded that public administration is interpreted as the process of a group of citizens formulating and determining various policies that will later be implemented to meet the needs of society and achieve state goals efficiently and with social justice. The relation to this definition in this study is the actions of citizens who have a role in implementing the financial incentive policy and convenience policy in Jakarta.

1.5.2 Public Administration Paradigm

The public administration paradigm encompasses the framework that guides the understanding and practice of managing public affairs. This paradigm could be distinguished into several streams, including the classical approach, which emphasizes efficiency and control; the behavioral approach, focusing on human interaction within organizations; and the managerial approach, which prioritizes outcomes and policy impacts. This paradigm provides a foundation for understanding how public policies are formulated, implemented, and evaluated and influencing how public officials interact with society.

The field of public administration has evolved through various paradigms, reflecting changes in the understanding of governance, management, and policy implementation. Nicholas Henry (1975) outlined

five critical paradigms that have shaped the development of public administration. These paradigms provide a framework for understanding how public policies, such as the adoption of electric vehicles (EVs) in Jakarta, are formulated and managed.

Paradigm I: The Politics-Administration Dichotomy (1900-1926). This paradigm, initially proposed by Woodrow Wilson (1887), emphasized the separation between politics and administration. Administration was viewed as a neutral entity focused on efficiently implementing policies made by politicians. The core idea was that public administration should function independently from political influence, ensuring that policies are carried out effectively and impartially. This notion laid the foundation for understanding public administrators' role as technocrats prioritizing efficiency over political considerations.

Paradigm II: Principles of Administration (1927-1937). During this phase, public administration was seen as a field governed by universal management principles, as scholars like Henri Fayol, Luther Gulick, and Lyndall Urwick articulated. This paradigm focused on applying scientific principles to improve organizational efficiency in the public sector. The emphasis was on standardization, hierarchy, and formal structures to enhance performance. Public administration was considered a mechanical process where best practices could be universally applied to manage public organizations efficiently.

Paradigm III: Public Administration within the Context of Political Science (1950s - 1960s). In the post-World War II period, public administration was increasingly regarded as a component of political science. This paradigm recognized the complex interplay between politics and administration, where public administrators operate within a political context. It acknowledged that political dynamics could not be entirely separated from administrative processes. Scholars emphasized the role of power, politics, and governance in shaping public administration. This perspective allowed for a more nuanced understanding of how policies are influenced by political actors and how public administrators navigate these political realities.

Paradigm IV: Public Administration as Administrative Science (1960s - 1970s). By the 1960s, public administration was increasingly seen as a distinct discipline, influenced by other social sciences like sociology and organizational psychology. This paradigm emphasized the study of organizational behavior, decision-making, and human interaction within public institutions. The focus shifted from rigid structures to understanding how human behavior impacts the efficiency of public organizations. This era laid the groundwork for theories about how individuals and groups within the public sector contribute to organizational effectiveness and policy outcomes.

Paradigm V: Public Administration as Public Management (1970s - Present). The New Public Management (NPM) approach has shaped the

most recent paradigm, which borrows management techniques from the private sector to improve public sector performance. This paradigm emphasizes efficiency, innovation, and outcomes, focusing on accountability, cost-effectiveness, and service delivery. The shift from process-oriented to results-based administration reflects a growing emphasis on public sector organizations' performance and the impact of policies on citizens. For instance, policies promoting the adoption of electric vehicles (EVs) in Jakarta exemplify the application of results-driven public administration. The government's efforts to encourage EV usage align with the modern emphasis on measurable outcomes and the strategic management of public resources.

1.5.3 Public Policy Definition

In general, policy refers to the behavior of an actor to solve a problem. The actor is an official, a group, or a particular institution. There are many limitations or definitions of what is meant by public policy in political science literature. Each of these definitions emphasizes a different aspect of the issue. According to Thomas R. Dye (in Kadir, 2020), A constraint on public policy is that government actions or inactions are indicative of its response to diverse social and economic difficulties encountered by society.

A better definition of public policy would include not only proposed actions but also government strategies and actions. Public policy refers to the actions taken by the government or public institutions to

address societal issues and promote the welfare of the public. This concept includes the processes of policy formulation, decision-making, implementation, and evaluation.

William Dunn's framework for public policy making, as articulated in his 2003 work, outlines a comprehensive process that consists of several distinct stages. These stages are critical for understanding how policies are developed, implemented, and evaluated within a governmental context. Dunn delineates five principal stages: assessment/evaluation (policy evaluation), monitoring (policy implementation), recommendations (policy adoption), forecasting (policy formulation), and problem formulation (agenda setting) (Rahmah & Kirana, 2023; Buana & Juwita, 2021).

The first stage, agenda setting, involves identifying and defining the issues that require governmental attention. This stage is crucial as it sets the agenda for subsequent policy actions. It requires a thorough analysis of social, economic, and political contexts to prioritize the most pressing problems.

The second stage, policy formulation, focuses on developing potential policy options and their anticipated outcomes. This stage often involves using data and predictive models to assess the likely impacts of various policy alternatives.

Following forecasting, the policy adoption stage involves formally adopting a specific policy. Decision-makers evaluate the proposed options

and select the most appropriate course of action based on various criteria, including feasibility, cost-effectiveness, and alignment with public values.

The fourth stage, policy implementation, focuses on implementing the adopted policy. This stage is essential for ensuring that the policy is executed as intended and that resources are allocated effectively. Monitoring involves tracking progress and compliance with established standards.

Finally, the policy evaluation stage is critical for determining the effectiveness of the policy. This stage involves analyzing the outcomes of the implemented policy toward the initial objectives set during the problem formulation stage. Evaluation criteria may include effectiveness, efficiency, equity, and responsiveness, which help policymakers understand the impact of their decisions and inform future policy-making processes.

Dunn's model of public policy-making provides a structured approach that encompasses the entire policy cycle, from identifying issues to evaluating outcomes. Each stage is interconnected, emphasizing the importance of a systematic policy development and implementation approach.

Ultimately, public policy serves as a tool for governments to respond to public needs and societal issues through coordinated action.

Based on the stages of public policy that have been mentioned, the researcher will examine the implementation of the financial incentive policy and convenience policy in Jakarta.

1.5.4 Public Policy Implementation

Public policy implementation is a critical area of study that seeks to understand how policies are executed in practice. According to Van Horn and Van Meter, policy implementation comprises the measures performed by public and private institutions to attain the aims and objectives indicated in past policy choices. According to Elwan (2023), this definition underscores the complexity of the implementation process, which involves various stakeholders and requires coordination to ensure that the intended outcomes are realized effectively. The model proposed by Van Horn and Van Meter emphasizes the importance of establishing clear standards and objectives and the necessity of resources and communication among implementing organizations to facilitate successful policy execution.

The implementation process, as described by Van Meter and Van Horn (in Kosasih et al., 2023), is not a simple linear transition from policy formulation to execution; it is influenced by a number of factors, including the characteristics of the implementing organizations, the perspectives of the implementers, and the political, economic, and broader social context. Furthermore, the Van Meter and Van Horn models highlight the need of

feedback channels throughout the implementation stage. Effective communication among stakeholders might decrease misconceptions and increase cooperation, which is vital for addressing obstacles that may develop during implementation. The model also suggests that the complexity of the policy could impact the ease of implementation; more complex policies often require more robust coordination and communication among various agencies (Wilansari et al., 2022).

To achieve policy objectives, policy design and execution must be adequately prepared and planned. The statement refers to this study, namely the adoption of financial incentive and convenience policies in Jakarta. The Indonesian national government and Jakarta's municipal government launched these unique measures. Citizens have an important part in the program's implementation.

1.5.5 Theory of Planned Behavior

The concept of planned behavior might serve as a theoretical framework for policy execution. TPB may assist citizens in understanding and forecasting the influence of motivation on conduct over which they have no direct control. The theory of planned behavior (TPB) is widely used in research to determine a person's intentions. Ajzen proposed this concept in 1991. According to the Theory of Planned Behavior, three factors influence citizen behavior: attitudes toward the behavior, perceived behavioral control, and subjective norms, all of which combine to create

citizen intentions. Hu et al. (2023) divided these factors into four categories of incentive policies (road privilege policy, convenience policy, information policy, and financial incentive policy) and three categories of consumer traits (innovative trait, environmental trait, and face trait) regarding the intention to purchase electric vehicles based on attitudes toward EVs.
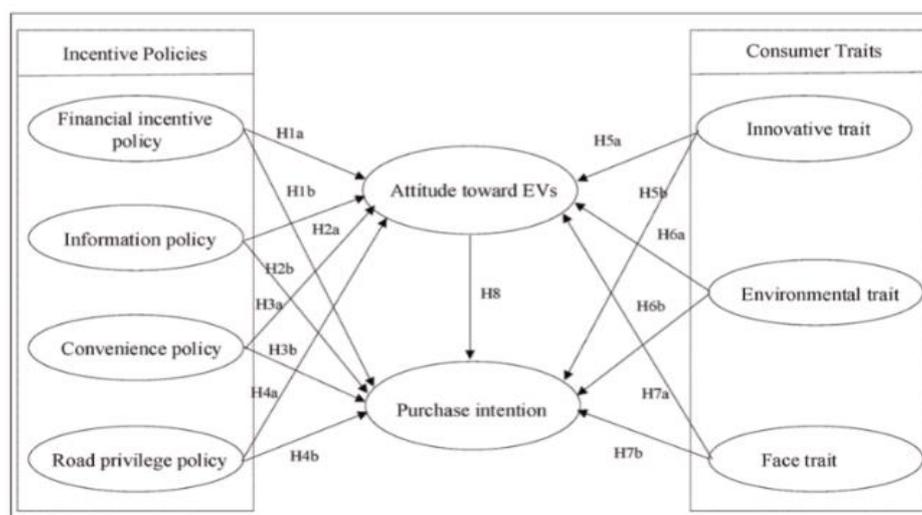

Figure 1.2 Research Model by Hu et al. (2023)
Source: https://doi.org/10.1016/j.enpol.2023.113559

The description of the factors above is explained as follows:

a. Hu (2023) defines financial incentive policy as government-implemented initiatives to minimize the cost of purchase and upkeep for citizens. Hu et al. (2023) cites Bjerkan et al. (2016), Khan et al. (2020), Zhuge et al. (2020), and Liu et al. (2021) such as providing free parking, direct subsidies on the price, exemptions from value-added taxes (VAT) and purchase taxes, as well as reductions in insurance premiums.

b. Hu et al. (2023) explains the information policy as ensuring that individuals are well-informed about electric vehicles, covering aspects such as their performance, cost-effectiveness, quality, charging time, driving range, and other relevant factors.

c. Hu et al.(2023) defines the convenience policy as measures that make it easier for electric vehicle (EV) owners, such as providing access to charging stations, offering dedicated parking spaces, removing the need for annual inspections, building more charging stations, and lifting license plate restrictions based on number parity (even and odd).

d. Road Privilege Policy: According to Hardman (2019), Zhuge et al., (2020), and Xian et al., (2022), Hu (2023) the road privilege policy is characterized by providing electric vehicle owners with access to high-occupancy vehicle (HOV) lanes, dedicated bus lanes, and other exclusive lanes, as well as exempting them from general traffic restrictions.

e. Consumer Innovation Trait: According to Chao et al. (2022), Li et al. (2021), and Tunçel (2022) in Hu et al.(2023), as the tendency of individuals to adopt new products more quickly than the general population. Previous research highlights the significance of this trait in the adoption of innovative products.

f. Environmental Traits: Kim et al. (2018), as mentioned in Hu et al. (2023), which can be seen as an alternative to the term 'environmental

propensity'. This trait suggests that an individual's environmental concerns and their openness to innovation could influence their decision to adopt electric vehicles.

g. Hu et al. (2023) indicates that psychological factors, such as the desire for reputation, social recognition, and self-image, influence individuals' decisions to use electric vehicles (EVs).

h. Ajzen (1991), referenced in Hu et al. (2023), defines attitude towards EVs as an individual's favorable or negative assessment of an action, which plays a vital role in predicting behavioral intentions.

i. Hu et al. (2023) defines intention to embrace EVs as customers' intention or tendency to acquire electric vehicles.

According to prior research, Permana et al. (2023) stated that fiscal incentive policies influence the intention to use electric vehicles (EVs). Nonetheless, prior research (Permana et al., 2023; Supriadi et al., 2024) overlooked the variable of convenience policy. Hu's research (2023) indicates that the convenience policy has the most substantial impact among incentive strategies.

According to Wang et al. (2021) and Hu et al. (2023), incentive policies influence attitudes toward electric vehicles. This discovery indicates that the policy is crucial in influencing citizens' perceptions about electric vehicles. Attitudes regarding electric vehicles significantly impact the intention to adopt them, aligning with findings from prior research (Hu et al., 2023; Wang et al., 2021). If individuals possess a favorable

disposition towards electric vehicles, this sentiment is likely to translate into a intention to purchase.

The study examines the impact of financial incentives and convenience-based policies on individuals' intentions to adopt electric vehicles, with their attitudes toward EVs serving as an intermediary factor. Applying the Theory of Planned Behavior, the research seeks to evaluate how these policies influence people's willingness to embrace electric vehicles.

1.6 Research Variables and Operational Definition

1.6.1 Research Variables

Sugiyono (2020) defines research variables as features, characteristics, or values of individuals, things, or activities that exhibit specific changes established by researchers for the purpose of investigation and subsequent conclusion formulation. This study utilizes the following variables:

1. Independent Variable

    Sugiyono (2020) defines independent variables as those that influence or induce alterations in dependent variables (bound). The independent variables in this research are Financial Incentive Policy (X1) and Convenience Policy (X2).

2. Dependent Variable

As per Sugiyono (2020), dependent or bound variables are those that are affected by or arise from independent (free) variables. The dependent variable in this research is the Intention to Adopt Electric Vehicles (Y).

3. Mediating Variable or Intervening Variable

Sugiyono (2020) defines mediating factors as those that influence the relationship between the independent and dependent variables, resulting in an indirect link that is neither observable nor measured. The mediating variable in this research is Attitude towards EVs (Z).

1.6.2 Operational Definition

Operational variables, including concepts, dimensions, indicators, and measures, are employed to delineate research variables. Furthermore, this seeks to enhance comprehension and prevent misinterpretation.

The operational definitions of the variables in this research are presented in the subsequent table:

Table 1.5 Operational Definition

Variables	Variable Definitions	Indicators	Sub-Indicators
Financial Incentive Policy (X1)	The financial incentive policy denotes fiscal	1. **Tax reductions** refers to the financial incentives	1. Motor Vehicle Transfer Fee (BBN KB)

Variables	Variable Definitions	Indicators	Sub-Indicators
	measures enacted by governments to diminish the expenses associated with purchase and maintenance for residents (Hu, 2023).	offered by the government to lessen the overall cost of acquiring electric vehicles (Hu, 2023)	2. Value Added Tax (VAT) 3. Sales tax on luxury goods (PPnBM) BEV and PHEV
Convenience Policy (X2)	The convenience policy is defined as facilitating ease of use for citizens utilizing EV (Hu, 2023).	1. **EV Usage Policy** refers to the regulatory frameworks that govern the usage of electric vehicles (EVs) and their integration into urban transport systems. (Hu, 2023)	1. Unconstrained by the regulation of license plate with even and odd numbers. 2. Special license for BEVs
		2. **Infrastructure Support Policy** refers to policies to assess the extent to which infrastructure, especially for electric vehicles (EVs), is available and accessible to consumers. (Hu, 2023).	1. Special parking space for BEVs 2. Construction of charging stations
Attitude towards EVs (Z)	Ajzen (Hu, 2023) defines attitude as the	1. **EV necessity** refers to the perceived need	1. Technological advancement

Variables	Variable Definitions	Indicators	Sub-Indicators
	extent to which an individual assesses a behavior positively or negatively, serving as a crucial psychological determinant in forecasting behavioral intentions.	or urgency for citizens to adopt EVs (Hu, 2023).	2. Economic considerations 3. Awareness of global trends
		2. **Attitudinal Loyalty** is defined as the psychological commitment and emotional attachment a citizen has towards a brand, which influences their intention to repurchase and advocate for the brand. (Hu, 2023)	1. Brand trust 2. Personal values and lifestyle alignment
		3. **Positive Perception** refers as the favorable evaluation and interpretation of a brand or product, which significantly influences citizen purchase intentions (Hu, 2023).	1. Post-purchase influence 2. Level of comfort 3. Social influence
		4. **Government Policy Support** is defined as the level of assistance and incentives provided by	1. Awareness of infrastructure development 2. Trust in government

Variables	Variable Definitions	Indicators	Sub-Indicators
		government entities to promote the adoption and purchase of EVs (Hu, 2023).	
Intention to adopt EVs (Y)	Intention to adopt EVs refers to the willingness or predisposition of citizens to purchase electric vehicles (Hu, 2023).	1.**Policy effectiveness** is defined as the perceived quality and impact of government policies on the adoption of EVs (Chonsalasin, 2024)	1. Awareness of government policies 2. Perceived effectiveness of policies in supporting
		2.**Policy alignment** refers to the degree to which governmental policies are consistent with public perceptions and expectations regarding EV adoption. (Chonsalasin, 2024)	1. Confidence in policy stability 2. Public campaigns and education 3. Alignment with national goals
		3.**Policy credibility** refers to the extent to which the public believes that government policies are effectively implemented and aligned with their	1. Perceived accessibility of financial incentive policy 2. Perceived accessibility of convenience policy

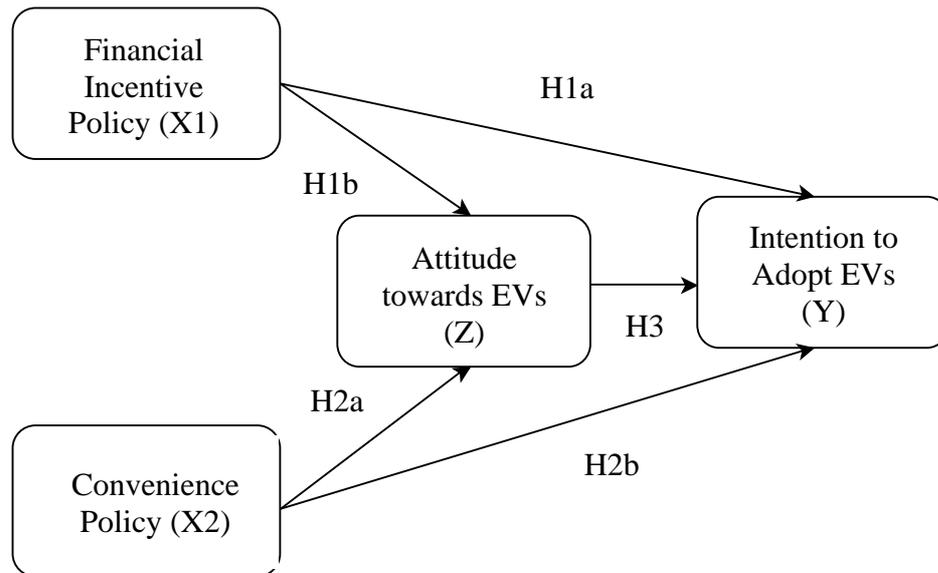| Variables	Variable Definitions	Indicators	Sub-Indicators
		stated intentions (Chonsalasin, 2024).	

Source: Processed by Researcher (2024)

Figure 1.3 Research Model
Source: Processed by Researcher (2024)

1.7 Hypothesis

A hypothesis serves as a provisional solution to numerous issues that will subsequently undergo testing, typically framed inside a question model. The designation 'temporary' is attributed to the solution as it relies solely on theoretical relevance, rather than empirical actuality derived from the gathered facts. Consequently, hypotheses are also considered theoretical responses to experimental questions, not empirical responses based on real evidence (Sugiyono, 2008). The following are the hypotheses used in previous studies:

1.7.1 The influence of incentive policies on attitude towards EVs and intention to adopt EVs

A significant drawback of electric vehicles that diminishes public enthusiasm in their adoption is their elevated cost relative to traditional automobiles. The government's strategy for electric vehicles involves implementing comprehensive measures, specifically subsidies for potential citizens, to encourage the proliferation and advancement of EVs.

The uneven distribution of charging facilities, among other drawbacks of electric vehicles, diminishes citizens' willingness to embrace them. To address this issue, the government has implemented various policies aimed at enhancing citizens' impression of ease, including the establishment of charging stations referred to as convenience policy. The enactment of these convenience policies enhances citizens' comfort in utilizing electric vehicles, hence augmenting their inclination to embrace them.

Ajzen and Fishbein (in Wang et al., 2021) assert that citizen attitudes originate from their beliefs, as posited by the Theory of Planned Behavior. Government incentive schemes fundamentally offer further advantages to the community, reinforcing citizens' affirmative convictions. Consequently, experts assert that incentive programs will directly influence citizens' sentiments. In addition, Wang et al. (2021) examined financial incentive measures, including subsidies for direct purchases and preferential tax policies, aimed at reducing purchase costs

and encouraging greater adoption of electric vehicles (EVs) among residents. This is consistent with what was stated in Hu et al.'s (2023) research. The research titled "Policy Driven or Consumer Trait Driven? Unpacking the EVs Purchase Intention of Consumers from the Policy and Consumer Trait Perspective" posits that financial incentive policies positively affect attitudes towards electric vehicles (EVs) and the intention to adopt them. This study posits that convenience policy positively affects attitudes toward electric vehicles (EVs) and the intention to adopt them. As a result.

H1a : Financial incentive policy (X1) positively influences attitude towards EVs (Z) in Jakarta.

H1b : Financial incentive policy (X1) positively influences intention to adopt EVs (Y) in Jakarta.

H1 : Financial incentive policy (X1) positively influences attitude towards EVs (H1a) and intention to adopt EVs (H1b) in Jakarta.

H2a : Convenience policy (X1) positively influences attitude towards EVs (Z) in Jakarta.

H2b : Convenience policy (X1) positively influences intention to adopt EVs (Y) in Jakarta.

H2 : Convenience policy (X2) positively influences attitude towards EVs (H2a) and intention to adopt EVs (H2b) in Jakarta.

1.7.2 The influence of attitude towards EVs on intention to adopt EVs

According to Ajzen and Fishbein (in Wang 2021), attitude is an assessment and tendency of a person's behavior based on his morality and values. A more positive attitude correlates with a stronger acceptance of environmentally friendly behaviors. In this context, if citizens have a positive attitude towards electric vehicles, this attitude will likely turn into a purchase intention.

In previous studies (Hu, 2023: Wang, 2021; Huang & Ge, 2019), demonstrated a positive correlation between attitude and the purchase intention of electric vehicles. Consequently, the subsequent hypothesis is posited:

H3   : Attitude towards EVs (Y) positively influences intention to adopt EVs (Y) in Jakarta.
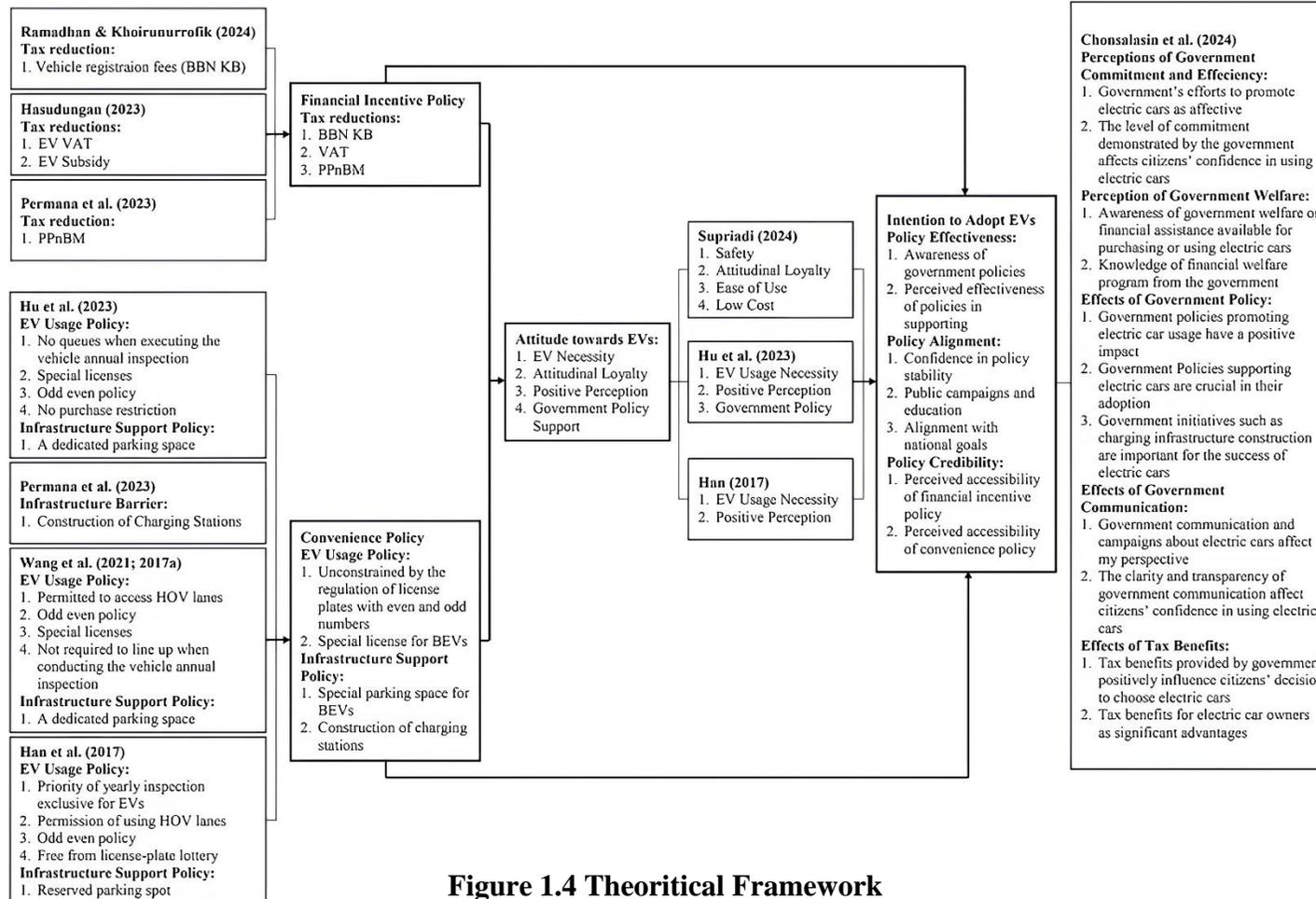
1.8 Theoritical Framework

Figure 1.4 Theoritical Framework
Source: Processed by Researcher (2024)

1.9 Research Methods

1.9.1 Research Type

This research is explanatory with a quantitative approach using numerical data or numbers. According to Sugiyono (2020), explanatory research is a research method that intends to explain the position of the variables studied and the influence between one variable and another. This researcher uses the explanatory research method mainly to test the proposed hypothesis, so this study is expected to explain the relationship and influence between the independent and dependent variables in the hypothesis.

1.9.2 Population and Sample

1.9.2.1 Population

According to Sugiyono (2020), the definition of population refers to the entire group of individuals or entities that possess specific characteristics relevant to a particular study. This extensive category functions as the foundational framework from which the author derives conclusions based on the characteristics and qualities of the subjects being studied. he population may include diverse components, such as citizens, organizations, or other entities, and the author delineates according to the study's aims. This definition underscores the necessity of precisely defining the population to guarantee that the findings are representative and relevant to the broader context being studied.

Based on data obtained from DetikOto (2024), as of April 3rd, 2024, the number of electric car users in Indonesia was 133,225 units. In this study, no specific data was found regarding the sales of electric vehicles (EVs) in Jakarta. As a result, this study uses the proportional method formula to estimate the number of EV owners or potential adopters. This method involves utilizing available data on the total vehicle population in Jakarta and assuming that the distribution of EVs mirrors the broader vehicle population. If the proportion of Jakarta's population is then compared to the total Indonesian population, Jakarta contributes a proportion of 0.04%. Therefore, after being calculated using the proportion formula, the number of electric cars in Jakarta's population is 5,329 units. Each of these calculations will be presented in the following formula.

$$UJ = UI \times \frac{PJ}{PI}$$

$$UJ = 133.225 \times \frac{11.135.191}{281.603.800}$$

$$UJ = 5,329 \text{ unit}$$

Description:

UJ = Number of Users in Jakarta

UI = Number of Users in Indonesia

PJ = Population of Jakarta

PI = Population of Indonesia

In this research, population consists of individuals residing in the region who have the potential to adopt electric vehicles. The research will include online surveys using Google Forms, targeting a varied demographic of inhabitants, including various genders, age groups, residences, income levels, educational backgrounds, and vehicle ownership statuses. This approach enables data gathering from a broad demographic, hence permitting a thorough study of citizen intentions and the determinants affecting electric vehicle adoption in the area.

1.9.2.2 Sample

Cooper and Schindler (2014) describe sampling as the procedure of picking a group of individuals from a larger population to infer characteristics of the entire population. This approach is vital in research as it enables researchers to infer characteristics of a community without surveying every individual, which may be difficult or unfeasible. Sampling offers a feasible method for data collection, guaranteeing that the chosen sample accurately reflects the population, therefore improving the reliability and validity of the research outcomes.

The proper sample size for a research of electric car users in Jakarta is 5,329 units. The sample size is determined using Slovin's formula, which specifies the number of respondents to be included in this study. Slovin's formula is a basic statistical approach

that determines the appropriate sample size for a research investigation. It offers a quick estimate of the minimum sample size necessary to represent a larger population, considering a specified level of precision. The principle underlying Slovin's formula is that as the sample size increases, the margin of error in the results decreases. In other words, a larger sample size will yield more accurate and reliable results. However, there is a trade-off between precision and the resources needed to gather data from a larger sample (Machali, 2021).

$$n = \frac{N}{1 + Nd^2}$$
$$n = \frac{5329}{(1 + 5329 \text{ x } 0{,}1^2)}$$
$$n = 100$$

Description:

d   = precision/error tolerance value (assuming a 10% error rate)

n   = sample size

N   = population size

Based on the data from DetikOto and applying Slovin's formula with a 90% confidence level to the population of 5,329 electric vehicles in Jakarta, it was determined that a sample size of 100 respondents is required for this study.

1.9.3 Sampling Technique

Sugiyono (2008) defines probability sampling as a technique wherein each member of the population possesses a known, non-zero likelihood of being chosen for the sample. This strategy is crucial for guaranteeing that the sample accurately reflects the population, enabling researchers to generalize their findings with more confidence. Probability sampling methods encompass strategies such as simple systematic sampling, stratified sampling, and random sampling, all aimed at reducing bias and improving the validity of research outcomes.

Simple random sampling, as articulated by Sugiyono (2008), is a simple probability sampling method wherein each individual in the population possesses an equal probability of selection. This approach is direct and efficient, particularly when the population is homogeneous, as it typically yields representative samples. This study utilized simple random sampling to acquire a statistically representative sample of the target population, hence improving the generalizability of the author's findings. One hundred respondents were randomly selected to ensure that the sample accurately reflected the diverse characteristics and attitudes of the broader population.

1.9.4 Data Types and Sources

1.9.4.1. Data Types

The data used by researchers is quantitative, in the form of numbers and is used to measure variables or phenomena that occur. The data type that can be measured or calculated directly as a number or number variable. Variables in statistics are attributes, characteristics, or measurements that describe a case or research object. Quantitative analysis is needed to analyze data and quantitatively measure the extent of influence between variables or other events using statistical tests.

1.9.4.2. Data Sources

This research utilizes both primary and secondary data for data collection and information gathering, namely:

1. **Primary Data**

    Primary data refers to information obtained directly by the researcher for a specific study aim, whereas secondary data is gained from existing sources. Hair et al. (2023) identify primary data collection methods as experiments, observations, interviews, surveys, enabling researchers to obtain unique data pertinent to their study inquiries. This study acquired primary data using survey research, utilizing a questionnaire as the instrument. The study was executed by disseminating questionnaires over WhatsApp and Instagram Stories to acquire varied data. Google Forms will serve as the principal

data collection tool to efficiently acquire information regarding the financial incentive policy and convenience policy's impact on citizens' intentions to adopt electric vehicles, as influenced by their attitudes towards EVs. This strategy facilitates the efficient collection of primary data from several respondents, allowing the researcher to obtain quantitative data that can be readily examined.

2. Secondary Data

Secondary sources are those that do not directly provide data to collectors, such as information gathered from other people or documents (Sugiyono, 2020).

Researchers collected secondary data from a variety of sources, including the internet, books, documents, reports, statistical data, and articles related to the adoption of environmentally friendly technologies, government policies on electric vehicles, greenhouse gas emissions, and the number of electric vehicles in Indonesia, with a particular focus on Jakarta. In addition, the study incorporated secondary data from qualitative interview findings that were part of the questionnaire.

1.9.5 Measurement Scale

Measurement scales are crucial instruments in research that allow researchers to measure and categorize variables for study. Measurement

scales are crucial instruments in research that enable researchers to measure and classify variables for study. According to Sugiyono (2020), measurement scales can be categorized into four types: nominal, ordinal, interval, and ratio. The author used the ordinal scale in this research to capture the relative ranking of responses without assuming equal intervals between them. This scale allows respondents to express their opinions or attitudes on a continuum, typically using a Likert-type. This includes measurement items based on **Appendix 2**. Hair et al. (in Hu et al., 2023) assert that while employing a Likert scale, it is crucial to determine the number of points utilized, guaranteeing uniformity across all measurement scales to effectively perform structural equation modeling (SEM).

Researchers have observed that employing a five-point scale, as opposed to a seven-point or higher scale, results in a reduced incidence of missing responses (Weijters et al., 2010). Additionally, it has been determined that both five-point and seven-point Likert scales yield equivalent mean scores when rescaled, with skewness levels remaining unchanged (Dawes, 2008). Consequently, the measurement items were assessed using a five-point Likert scale, with 1 indicating "strongly disagree" and 5 denoting "strongly agree." This aligns with other recent research, including those by Hu et al. (2023) and Wang et al. (2021; 2018; 2017), which effectively employed a five-point Likert scale.

1.9.6 Data Collection Technique

According to Sugiyono (2020), structured surveys are advantageous because they provide a systematic and standardized approach to data collection, which is crucial for achieving consistency and accuracy. The most suitable data collection technique for this research is structured questionnaires, distributed online via Google Forms to respondents who meet the criteria online via social media, such as Whatsapp and Instastory.

The questionnaire comprised screening questions, the majority of which asked respondents if they intended to adopt an electric vehicle (EV), if someone they knew had acquired an EV in the previous year, or if they had attempted to use an EV. If the respondent answered 'yes' to either question, it was presumed that they had a fundamental understanding of recent electric vehicle purchases and the associated policies; if not, the questionnaire was deemed invalid.

The use of questionnaires is a widely accepted technique in research. It allows for the systematic data collection while ensuring the questions are standardized across all respondents. This approach facilitates the collection of specific information regarding citizen intention and enhances the reliability and validity of the data obtained.

Additionally, the questionnaires were made in the Indonesian language to be easy to understand by the respondents since there are citizens from other regions to Jakarta who speak in their dialects and

different ethnicities. By employing this data collection technique, the researcher could effectively analyze the study of citizen intention to adopt electric vehicles in Jakarta, contributing valuable insights to the field of sustainable transportation.

1.9.7 Data Analysis Technique

The PLS-SEM and SmartPLS tools will be used to evaluate the data. Component analysis and regression approaches are combined in the complete approach known as structural equation modeling (SEM). SEM enables researchers to concurrently investigate the connections between latent and observable variables. Partial Least Squares (PLS-SEM) is used in this study to analyze intangible, non-quantifiable factors. A variation of Structural Equation Modeling (SEM) that assesses both measurement and structural models is Partial Least Squares (PLS) (Hair et al., 2017).

The measurement model, sometimes referred to as the outer model, and the structural model are the two models that make up the PLS-SEM analysis. While the inner model is utilized to assess the links between various latent variables, the outer model aids in comprehending the relationship between latent variables and their indicators.

1.9.7.1 Measurement Model Test or Outer Model Test

This study is carried out to establish that the measuring instrument utilized is valid and dependable for measurement. The outer model is assessed in the following manner:

1.9.7.2 Data Validity Test

   a. Convergent Validity

This indicator from the measuring model with reflexive indicators may be evaluated by the correlation between the item score and the concept score. Ghozali (2014) asserts that individual indicators exhibiting correlation values exceeding 0.7 are deemed credible. In the research of scale enhancement, loading factors ranging from 0.5 to 0.6 remain acceptable, and convergent validity is achieved when each variable possesses an AVE value over 0.5.

   b. Discriminant Validity

By looking at the cross-loadings between the indicator and its corresponding construct, this indication can be evaluated. The latent constructs may be better at predicting the indicators in their block than those in other blocks if the correlation between the construct and its indicator is greater than the correlation between the indicator and other constructs. By comparing each construct's square root of the average variance extracted (AVE) with the correlations between that construct and the other constructs in the model, discriminant validity may also be examined. If the square root of the AVE for each construct is higher than the correlations between that construct and the other variables, the model is said to have acceptable discriminant validity. Fornell and Larcker (1981), as mentioned by Ghozali 2020. Ghozali (2020) proposes a new test for

determining concept validity that leverages the AVE value. A model is deemed effective if the average variance extracted (AVE) for each construct is more than 0.50.

1.9.7.3 Instrument Reliability Test

The reliability test is conducted to demonstrate the consistency and precision of the equipment used to measure the construct. The SmartPLS tool utilizes PLS-SEM to evaluate the reliability of a reflective architecture.

a. **Evaluation of the Average Variance Extracted (AVE) root value**

Evaluation of the AVE root value with the correlation between constructs, Hair et al. (2019), who argue that convergent validity can be considered valid if the AVE value results are more than 0.50.

b. **Composite Reliability (CR) Evaluation**

Constructs could be said to be reliable if they have a CR value of more than 0.7. In Outer Model testing or analysis, the values previously described could be obtained from the run results on the PLS Algorithm.

1.9.7.4 Structural Model or Inner Model Test

The structural model illustrates the link and strength of the estimates among latent variables or constructs grounded in substantive theory. The calculations are as follows:

1.9.7.4.1 R-Square

Calculate the R-squared for each endogenous latent variable to assess the structural model's prediction performance. The R-square value is calculated to assess the structural model's goodness-of-fit. Variations in the R-square value can reflect the influence of certain external latent factors on endogenous latent variables, regardless of their size. Hair et al. (2019) divide the R-Square value into three categories: 0.75 (large effect), 0.50 (moderate influence), and 0.25 (little influence)

1.9.7.4.2 F-Square

The F-square test is performed to assess the model's goodness of fit. The f-square values of 0.35, 0.15, and 0.02 can be read as indicating weak, medium, or strong effects of the latent variable predictor at the structural level (Ghozali, 2020).

1.9.7.4.3 Q-Square

Q-square indicates predictive relevance, assessing whether a model possesses predictive significance (> 0 is favorable). Subsequently, Q2 assesses the predictive relevance of the endogenous construct. A Q-square value beyond zero signifies the values have been accurately recreated and the model possesses predictive relevance. Execute the Blindfolding process in SMART-PLS to determine the Q Square value.

1.9.7.5 Hypothesis Testing

The next step is to test hypotheses after completing various evaluations of both outer and internal models. Hypothesis testing elucidates the relationship between endogenous and external elements. This evaluation is used for route analysis. Analyzing the route coefficient evaluates the correlation between constructs. The path coefficient and p-value in the overall effects of the processed variable data may be studied simultaneously to evaluate the hypothesis test results.

A hypothesis can be statistically accepted or rejected based on its significance level. The significance level used in this investigation is 5%. If 5% is chosen as the significance level, the rejection of the hypothesis requires a confidence level of 0.05.

The hypothesis is accepted if the t-statistic value exceeds 1.64, the p-value is less than 0.05 (5%), and the coefficient is positive.