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RESEARCH ARTICLE

Scenario Planning of Pertamina Patra Niaga Business Strategy to Address the Growth of the Indonesian Electric Vehicle Market

Wawan Sulistyo Dwi Istanto* and Sonny Rustiadi

ABSTRACT

PT Pertamina Patra Niaga is facing an era of energy transition, and one of the biggest phenomena is the adoption of electric vehicles (EVs). Massive EV adoption will impact Patra Niaga's future business, and they must prepare a strategy to deal with these changes. This research aims to determine the factors that influence EV adoption in Indonesia and propose strategies that need to be carried out by Patra Niaga. The literature review shows that internal and external factors are very influential in determining Patra Niaga's strategy. The research design is qualitative, with data obtained from primary sources from interviews and secondary data sources, including industry documents, reports, and journals. Using the scenario planning method with the PESTEL approach, the paper identifies four possible scenarios for the future of EV adoption in Indonesia. The possible scenarios are green tech frontier, policy-driven change, market-led innovation, and stagnant development. Environment analysis conducted both external analysis and internal analysis. The research uses Porter's Five Forces to identify rivalry among the industry players for external analysis. Meanwhile, the internal analysis uses the use VRIO Framework to identify the competitive advantage of the company and the strength and weakness analysis to determine the opportunities and threats for the company. Finally, the research uses the BCG Matrix to develop a strategy for each scenario. Based on the BCG Matrix, the proposed strategies are to invest more in the EV infrastructure where the scenario is green tech frontier, to invest or divest where the scenario is policy-driven, to keep the EV infrastructure business running where the scenario is market-led innovation, and to s liquidated where the scenario is stagnant development. The chosen strategy is suggested to be implemented based on the probability of occurrence for each of the scenarios within a timeframe from the year 2024 to 2035 by involving various divisions in the company, including marketing, business development, and project leader of the EV division.

Keywords: EV adoption, PESTEL, Porter's five forces, scenario Planning.

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School of Business Management, Bandung Institute of Technology, Indonesia.

**Corresponding Author:*
e-mail: wawan_istanto@sbm-itb.ac.id

1. Introduction

Indonesia is committing to achieve net-zero emissions by 2060 or sooner, and energy policy is shifting away from fossil fuels and toward clean energy. Indonesia is committed to reducing greenhouse gas (GHG) emissions by 31.89% from business-as-usual conditions (BAU) in 2030. With international support, this target can be increased to 43.20% (Ministry of Environment & Forestry, 2022). Governments and private companies can help to overcome this challenge by providing incentives and subsidies for renewable energy development (IEA, 2021).

In the transportation sector, the energy transition can be seen from the increasing trend in the use of electric vehicles. With 2 million electric vehicle sales in the first quarter of 2022, a 75% increase over the same time in 2021, the market for electric vehicles has continued to grow rapidly (IEA, 2022). Electric Vehicles are a cleaner alternative to traditional gasoline-powered vehicles and can significantly

reduce carbon emissions (Tonachel, 2015). By incentivizing the use of EVs, Indonesia can achieve its NDC goals and stimulate growth in the EV industry, create jobs, and reduce its dependence on fossil fuels (Taylor, 2021). However, infrastructure readiness for the EV Ecosystem in Indonesia is still nascent (Mahalana *et al*., 2021).

2. Business Issue

The increase in sales of electric vehicles will certainly affect the need for fuel and electricity to drive the vehicle. PT Pertamina Patra Niaga, a company that provides fuel for conventional vehicles/internal combustion engine (ICE) vehicles, must prepare its business to support the electric vehicle ecosystem. As a company that expects positive growth from the running business, it is currently a challenge for SH C&T to develop EV Charging Stations and BSS businesses. Various companies can use this research. Therefore, the research question in this study is the following item:

a) What key factors could influence the proliferation and growth of EV commerce in Indonesia?
b) What are the potential opportunities and threats that Pertamina Patra Niaga may face due to the growth of electric vehicle commerce?
c) What are the possible future scenarios for Pertamina Patra Niaga in 2035 due to the potential for electric vehicle adoption in the Indonesian market?
d) What would be the proposed strategy for PT Pertamina Patra Niaga to address the possible scenario in 2035?

The research objectives are to examine the factors that could impact the adoption and growth of EVs in Indonesia, to evaluate opportunities and threats of electric vehicle sales growth for Pertamina Patra Niaga, to analyze potential future scenarios that could be faced by Pertamina Patra Niaga in 2035 due to electric vehicles adoption in the Indonesian market and propose strategy to PT Pertamina Patra Niaga in order to face the scenario planning of electric vehicle adoption in 2035.

3. Literature Review

A scenario is an internally consistent view of the future—not a forecast but one possible future outcome (Porter, 1985). A scenario is a possible outcome, not what will (predict) or ought to (propose) take place in the future. The most recent information and trends in politics, economics, social life, culture, and the environment serve as the foundation (Agung *et al*., 2014). Shell is one of the pioneer companies to apply the scenario planning concept to prepare their business strategy. Because of Shell's success with the scenario planning approach, many other organizations started to utilize the concept. Since the oil shock made it impossible to envision a secure future, most Fortune 1000 companies began using scenario planning in one way or another by the late 19th century (Ringland, 1998). Furthermore, Schwartz (1991) explains the concept that the future is not pre-set and is the foundation of scenario planning. Scenario planning can be divided into the following steps: identify the key uncertainties, develop scenarios, evaluate the scenarios, and develop strategies.

The key focal issue of the research is the rate of adoption of electric vehicles. To determine the factors that influence the adoption rate of EVs, the researcher used PESTEL analysis. PESTEL analysis is a tool for analyzing the external factors that affect a company's performance and prospects. It stands for the six analysis-related dimensions: political, economic, social, technological, environmental, and legal factors. One can recognize the opportunities and challenges that the macro environment presents by looking at these elements and developing plans of action to deal with them (Bush, 2019).

External and internal factors are very influential in determining Patra Niaga's strategy in facing the growth of EV Adoption. The Porter Five Forces model is a framework for examining an industry's competitive landscape. Five forces make up this model, which Michael Porter created in 1979: the threat of new entrants, the negotiating power of suppliers, the bargaining power of consumers, the threat of substitute goods or services, and the ferocity of competitive rivalry (Khurram, 2020). The VRIO analysis is a tool used in strategic management to evaluate a company's resources and skills and decide whether it can sustain a competitive advantage. Value, Rarity, Imitability, and Organization are the letters that make up the acronym (Ariyani & Daryanto, 2018). The SWOT analysis evaluates internal and external variables and present and anticipated future situations (Kenton, 2023). Strength-weakness analysis is a framework used to assess a company's competitive position and to create strategic planning from internal factors. The conceptual framework of the research uses the internal and external factors shown in Fig. 1.

4. Methodology

The research design is qualitative, with data obtained from primary sources from interviews and secondary data sources, including industry documents, reports, and journals. Data Collection methods provide the chance to learn about the research problems firsthand and to develop original thoughts (Bhandari, 2023). The Primary data was obtained from in-depth interviews with external stakeholders (regulator or government, industry), top management of PT Pertamina Patra Niaga, and another related party. In contrast, secondary data was obtained from the company's annual report, consultant reports, and other information related to electric vehicle adoption in Indonesia.

5. Results

5.1. PESTEL Analysis

The political aspects that may influence electric vehicle (EV) adoption in Indonesia include government policies related to incentives for the EV industry, EV sales, and tax policies for EV sales. Changes in government policy associated with energy transition and EV infrastructure may impact the EV adoption rate in Indonesia and, finally, the Pertamina Patra Niaga strategy for EV infrastructure

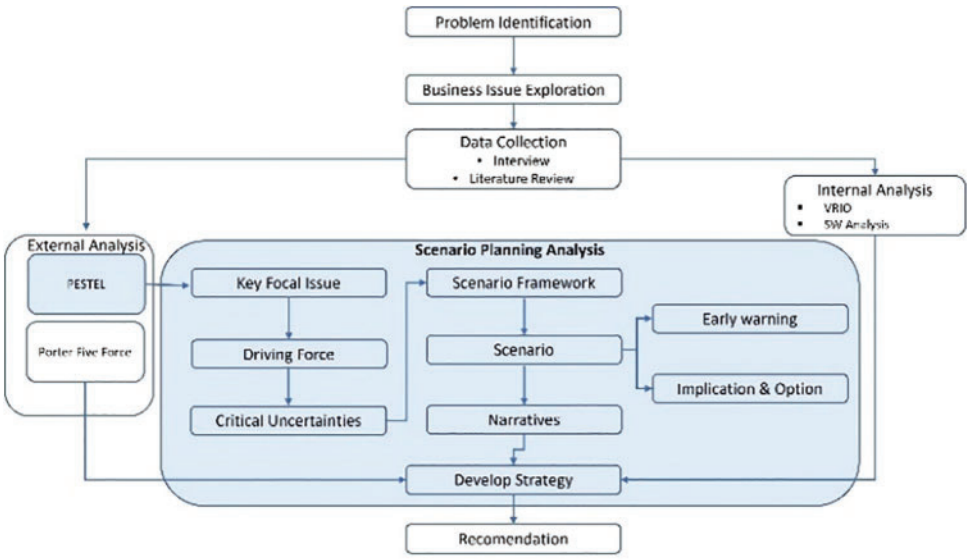

Fig. 1. Research conceptual framework.

business. The economic aspects affecting EV Adoption in Indonesia include current and future economic growth, inflation, interest rates, job growth, and unemployment. Economic conditions such as consumer purchasing power may impact the adoption rate of EVs in Indonesia and, ultimately, the Pertamina Patra Niaga business strategy to support the EV Infrastructure. Social aspects include demographics (i.e., age and gender), consumer attitudes, opinions, and purchasing trends. Indonesia's population is relatively youthful and favorable because younger workers are likelier to pick up new skills and adjust to new technologies more quickly.

1. *Analyze the technological element that may impact the electric vehicle adoption rate*: The advancement of novel battery technology is a significant element impacting the uptake of electric vehicles. These initiatives may lower the price of EVs and boost the country of Indonesia's EV adoption rate.
2. *Examine the environmental aspects that may influence the adoption rate in Indonesia*, such as battery recycling and the awareness of reducing CO_2 or greenhouse gases.
3. *EV Adoption in Indonesia*: Increasing the use of electric vehicles by 2030 may reduce carbon emissions by 20 million metric tons annually, even in the lagged scenario (Gupta & Hansmann, 2021).
4. *Analyze the legal aspects that may affect the EV adoption rate*, such as government policies on tax and incentives for both producers and customers of EVs: For EVs, the Indonesian government has decided to waive two local taxes: the vehicle tax (PKB) and the vehicle ownership transfer charge (BBNKB). The Home Affairs Ministerial Regulation (Permendagri) No. 6/2023 contains a list of these new exemptions.

However, These incentives do not apply to previously fossil fuel-powered EVs; only battery-based EVs are eligible.

5.2. *Scenario Planning*

The scenario planning analysis for PT Pertamina Patra Niaga will be conducted through four steps: 1) driving force; 2) crucial uncertainty; 3) developing scenario; 4) determining the result and creating strategy. A driving force is any substantial external element that has the potential to have a major impact on the future of EV Adoption. Based on the literature review and in-depth interviews that were used to collect the data, the study's analysis of the data produced eight driving forces that, when combined with the PESTEL framework, could be divided into six factors, as shown in Table I.

The findings of the respondent interviews were used to determine the significant uncertainties in this study. The respondents are experts from various sectors, including government, business, and management PT Pertamina

TABLE I: Driving Forces

Factor	Driving force	Brief explanation
Political	Government policy (DF1)	Decarbonization; fiscal and non-fiscal programs
Economic	Interest rate (DF2)	Higher interest rates slowing the purchase of EVs
Social	Demography by age (DF3)	Younger consumers are more willing to accept green technologies
	Demography by region (DF4)	Cities/capital are more likely to have EV charging infrastructure.
Technological	Battery technology advancement (DF5)	Longer driving ranges, faster charging times, and overall greater performance and safety drives
	New technology for vehicle fuel (DF6)	Hydrogen-powered vehicles complement battery-electric vehicles (BEVs).
Environmental	Reduce GHG emission (DF7)	Key role in lowering greenhouse gas (GHG) emissions.
Legal	Regulation and policy	The legal factor is intersecting with the political factor (government policy)

Patra Niaga; the total number of respondents is 13, with code EI1–EI5 being the external Pertamina Patra Niaga group and II1–II8 being the internal respondents of Pertamina Patra Niaga. The interviewers were asked two questions. The first question asks for their opinion on the driving force (DF1–DF7) with the most impact, while the second asks for their opinion on the driving force with the most uncertainty. The categorized approach to define the score for driving force is 0 = No priority, 1 = Third priority, 2 = Second priority, and 3 = First priority. The result of the interview and data tabulation based on impact and uncertainty of the driving force shown in Tables II and III.

The driving forces are determined by a quantitative approach, where the score >30 is high, 20–30 is medium, and <20 is low. The degree of impact and uncertainty is indicated in Table IV. Based on the interviewee's choice of driving variables, it is possible to conclude that government policy and the advancement of battery technology significantly impact the major focal issue.

The scenario structure uses a 2 × 2 matrix, a strategic tool for navigating the project's details. This matrix is based on two major uncertainties that have the potential to influence the future direction of electric vehicle (EV) adoption: government policy on EV adoption and advancement of battery technology. The matrix, as shown in Fig. 2 is the scenario name, outline the coercive and binding government policy, the advancement of battery technology and the opposing situations.

TABLE II: Driving Forces Based on Uncertainty

	DF1	DF2	DF3	DF4	DF5	DF6	DF7
EI1	3	2	1	1	3	1	1
EI2	3	2	2	2	3	1	1
EI3	3	1	1	1	3	1	0
EI4	3	0	1	1	2	2	0
EI5	3	0	0	0	2	1	0
II1	3	0	1	1	3	3	1
II2	3	1	1	1	3	2	1
II3	3	1	0	1	2	3	1
II4	3	1	1	1	2	3	1
II5	3	1	1	1	3	3	1
II6	3	0	1	1	3	1	0
II7	3	0	1	1	2	1	0
II8	3	0	1	1	2	1	1
Total	39	9	12	13	33	23	8

TABLE III: Driving Forces Based on Impact

	DF1	DF2	DF3	DF4	DF5	DF6	DF7
EI1	3	2	1	1	2	0	1
EI2	3	1	2	2	3	1	1
EI3	3	1	1	1	2	1	0
EI4	3	0	1	1	3	1	0
EI5	3	0	1	1	2	1	0
II1	3	0	1	1	3	3	1
II2	3	1	1	1	3	1	1
II3	3	1	0	1	3	3	1
II4	3	1	1	1	2	3	1
II5	3	1	1	1	3	3	0
II6	3	0	1	1	3	1	0
II7	3	0	1	1	3	1	0
II8	3	0	1	1	3	2	1
Total	39	8	13	14	35	21	7

TABLE IV: Key Factors Based on Impact and Uncertainty

Driving force	Uncertainty		Impact	
	Score	Level	Score	Level
DF1	39	High	39	High
DF2	9	Low	8	Low
DF3	12	Low	13	Low
DF4	13	Low	14	Low
DF5	33	High	35	High
DF6	23	Medium	21	Medium
DF7	8	Low	7	Low

5.2.1. *Scenario A: Green Tech Frontier (GFT)*

Government policies in the GTF are matched with environmental aims, giving incentives for battery technology research and development. Subsidies for EV upfront cost, grants for battery innovation, and rules encouraging the use of clean energy are all examples of this. Because of advances in battery technology, energy storage technologies are now highly efficient, cost-effective, and widely available, allowing for a speedy transition to renewable energy sources.

5.2.2. *Scenario B: Policy-Driven Change (PDC)*

In this scenario, the government adopts a proactive approach to accelerating the transition to electric vehicle and transportation systems. The emphasis is on developing a regulatory environment that accommodates present battery technology limitations.

5.2.3. *Scenario C: Market-Led Innovation (MLI)*

Private enterprises and entrepreneurs are the key drivers of progress in battery technology in the market-led innovation scenario. Regardless of government backing, market demand for more efficient and cost-effective energy storage technologies drives innovation.

5.2.4. *Scenario D: Stagnant Development (SD)*

Government programs encouraging electric vehicles, sustainable energy, and transportation are either nonexistent or ineffectual in the Stagnant Development scenario. Incentives or regulatory frameworks to stimulate the use of green technologies may be lacking. At the same time, battery technology has remained stagnant, with no significant gains in energy storage, efficiency, or cost.

The implications and options for each scenario based on data gathering and narrative of scenario planning are shown in Table V.

Early warning signals are intended to identify early signs that alter the scenario's future orientations based on the interview and early warning signal for each scenario determined in Table VI.

To develop a strategy for PT Pertamina Patra Niaga in facing EV adoption, an external analysis will be conducted using the framework of Porter Five Forces analysis and an internal analysis using VRIO analysis and strength-weakness analysis.

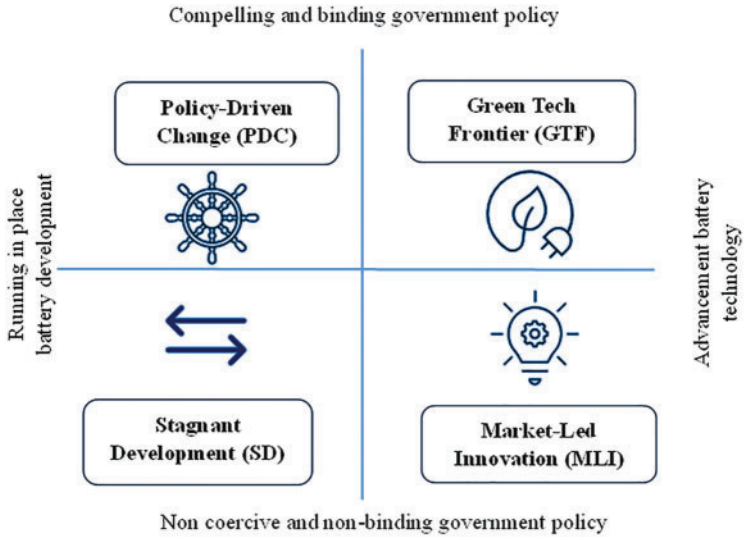

Fig. 2. 2 × 2 matric scenario planning.

TABLE V: Implication and Option of Each Scenario

Scenario	Implication	Option
GTF	Reduced fuel demand Investment diversification Regulatory difficulty	Investment diversification Innovation Compliance
PDC	Policy compliance cost Market restructuring Reputational risk	Advocating Strategic agreement Brand transformation
MLI	Competitive pressure Strategic collaboration Market volatility	R&D investment Business model innovation Market analysis
SD	Stable demand Limited growth Long term risk	Operational efficiency Risk management Long-term planning

5.3. Porter's Five Forces Analysis

This research will look at how each of the five forces influences the firm's competitive position and performance, as well as how the company may use its strengths and overcome its shortcomings to create a competitive advantage in each scenario. The result of Porter's Five Force analysis is shown in Table VII.

5.4. VRIO Analysis

5.4.1. GTF Scenario

Pertamina Patra Niaga has significant potential to achieve a competitive edge by leveraging its resources and competencies to offer electric vehicle (EV) solutions. The corporation can benefit from government policies that stimulate the use of electric vehicles and the development of EV infrastructure. The corporation can benefit from better battery technology, allowing more efficient and affordable EVs.

5.4.2. PDC Scenario

In this scenario, Pertamina Patra Niaga has a moderate chance of gaining a competitive advantage by changing its resources and capabilities to comply with government policies that encourage green technologies. The company can profit from the government's incentives and subsidies for EV producers, EV Infrastructure providers, and consumers. However, the corporation may face difficulties due to the limited improvement of battery technology, which may impact the performance and cost of EVs.

5.4.3. MLI Scenario

In this scenario, Pertamina Patra Niaga has minimal potential to gain a competitive advantage by innovating its EV solutions using its resources and competencies. The new battery technology that enables more efficient and affordable EVs can help the corporation. However, the corporation may face challenges due to a lack of supportive government legislation, which may affect EV adoption and the development of EV infrastructure.

5.4.4. SD Scenario

In this scenario, Pertamina Patra Niaga has very little chance of gaining a competitive advantage by keeping its resources and ability to stay relevant in the EV market. The corporation may face dangers from limited government policies and battery technology, which could result in delayed progress and missed possibilities for green technology development. Other businesses offering better or cheaper EV solutions could be a threat to the corporation.

5.5. Strength-Weakness Analysis

The research employs strength and weakness analysis to identify the internal elements that contribute to a company's competitive advantage based on each scenario. The Strength weakness analysis is shown in the Table VIII.

5.6. BCG Matrix

The BCG Matrix is a prominent approach for portfolio analysis. It divides a company's products and services into a two-by-two matrix. Each quadrant is labeled as low or high performance, depending on the relative market share and growth rate (CFI, n.d.). Each scenario planning is analyzed using market share and market growth rate, and it is obtained that the Green Tech Frontier scenario is a star quadrant, the Policy Driven Change scenario is an

TABLE VI: Early Warning Signal

Indicator		Scenario			
		GTF	PDC	MLI	SD
Government policy	Incentive	Full	Full	Less	Less
	Investment	Full	Full	Less	Less
	GHG emission reduction	High		Less	Less
	Share of EV on road transport	High	High	Less	Less
Advancement of battery tech	Technology advancement	High Perform	Low Perform	High Perform	Low Perform
	Material	Ecofriendly Abundant	Hazardous Scare	Ecofriendlyt Abundan	Hazardous Scare
	New development	Innovative	Lack of innovation	Innovative	Lack of innovation

TABLE VII: Porter's Five Forces Analysis

Factor	GTF	PDC	MLI	SD
Threat of new entrants	High	High	High	Low
Bargaining power of suppliers	Low	High	High	Low
Bargaining power of buyers	High	High	High	High
Threat of substitute products	High	High	High	Medium
Rivalry among existing competitors	High	High	High	High

unknown quadrant, and the Market-led Innovation scenario is a cash cow quadrant. The Stagnant Development scenario is a dog quadrant.

When the GTF scenario occurs, government policy and advanced technology support the industry and customers in switching from internal combustion engines or conventional vehicles to electric vehicles. Government policy to support EVs in the industry is reflected in the policy incentive for the industry so they can produce the EVs at affordable prices. On the customer side, government policy forces people to use electric vehicles to support government commitment to reducing GHG and targeted EVs on road transport. Further, the advancement of battery technology also supports the industry in reducing their cost and creating more valuable products in terms of range performance and time to charges to meet customer expectations. In that situation, the market growth of EVs significantly increases, and the opportunity to increase the market share of EVs is high. Based on the BCG matrix, this is the star quadrant.

TABLE VIII: Strength-weakness Analysis

Scenario	Strength	Weakness
GTF	Strong brand	Less competitive
	Large distribution network	
	Strong R&D capability	High cost in R&D on new business
PDC	Access to government	Low innovation
	Contribute to national sustainability	
	Competitive pricing structure and efficiency	Difficult to integrate the Government policy with Strategic planning
MLI	Strong R&D capability	Volatile market
	Leading in battery technology	Resistance from government
	Innovative culture	
SD	Strong customer relationship	Low level of innovation
	Cost leadership	Communication obstacle
	Strong core competencies fuel market	Limited growth

In the PDC scenario, the government forces people to switch to EVs over conventional vehicles and provides various incentives for people to buy EVs. Incentives are also provided to the industrial sector that produces EV and EV infrastructure. However, the technology has not been developed, so the quality of EVs still does not meet customers' expectations. For people who are more obedient to government regulations, they will likely switch to EVs. However, for people who do not get what they expect from EVs (regarding driving range, battery quality, and battery charging time), it is unlikely that they will switch to EVs. This condition results in the high growth of electric vehicles. However, the market for EVs is still limited to people who need EV vehicles because of the encouragement of government policies. Based on the BCG matrix, this is the unknown or question mark quadrant.

The Market-led Innovation scenario explains that battery technology has advanced in driving range and the time required for charging. Battery technology is environmentally friendly, and the availability of raw materials will impact the cost structure of EVs. With a significant cost reduction in raw materials and components and the capabilities of EVs that have met performance expectations, customers will switch from conventional vehicles to EVs, so the market share of battery EVs will be large. However, government policies are relatively small to support the development of EV adoption. For example, there is a lack of infrastructure for the industry to support the production of EVs and regulations of standardized charging components that have not been made, creating obstacles for EV companies to develop the marketing of EVs, so the growth rate of EVs is still low. Based on the BCG Matrix, this condition can be called a cash cow.

In the SD scenario, government policies related to EV adoption are minimal, and battery technology has not been developed. This causes EVs to be scarce in the market, and people are reluctant to switch from conventional vehicles to EVs due to their limitations in driving range and battery charging time. With these conditions, only a few people become EV users, which means the market share of EVs is very small. For the industrial sector, the absence of policy encouragement from the government causes high production costs. Hence, the price becomes unaffordable for customers, and the growth rate of EVs is also very low. Following the BCG matrix, this condition is classified as a dog quadrant.

6. Conclusion and Solutions

Electric vehicle (EV) adoption in Indonesia has increased in recent years, partially because of government policies, technology advancement, and environmental awareness. This trend presents substantial challenges and opportunities for PT Pertamina Patra Niaga, which sells fossil fuels. This research analyzed the current situation and prospects of EV adoption in Indonesia and the consequences for Pertamina Patra Niaga's corporate strategy and operations.

The critical issue for this research is "What kind of strategy can PT Pertamina Patra Niaga take to face EV Adoption in Indonesia in 2035?". Eight driving forces are examined further regarding the impact and the high uncertainty on the key focal issue. The most significant impact driving force is government policy, and the most uncertain factor is the advancement of battery technology. By combining the significant factors of government policy and advancement of battery technology, four scenarios are formed from critical uncertainties: Green Tech Frontier, Policy Driven Change, Market-led Innovation, and Stagnant Development.

Each scenario illustrates market growth and market share for the EV and infrastructure to support EV. Based on the narrative in each scenario, the GTF scenario is the star quadrant, PDC is the unknown or question mark quadrant, the MLI scenario is the cash cow quadrant, and stagnant development is the dog quadrant.

Based on the BCG Matrix analysis, the strategy for stars is to invest more in EV ecosystem and infrastructure business to sustain and improve their profitability. The strategy for question marks is to spend or invest more in the EV ecosystem and infrastructure business to enhance their market share and become stars or to divest the EV ecosystem and infrastructure business to prevent losses and free up resources. The strategy for cash cows is to keep the EV ecosystem and infrastructure business running and create consistent cash flow while investing in other growth areas. The strategy for dogs is to be sold or liquidated because EV ecosystem and infrastructure businesses are unlikely to create earnings or growth.

Conflict of Interest

The authors declare that they do not have any conflict of interest.

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