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Navigating the Development of Battery Electric Vehicle Business Ecosystem in Indonesia: Business Strategy and Scenario Planning for PLN ICON PLUS

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ABSTRACT: The Government of Indonesia (GoI) strong interest in developing a robust Battery Electric Vehicle (BEV) business ecosystem in Indonesia has created significant business opportunities for PLN (Perusahaan Listrik Negara), the state-owned electricity company of Indonesia. To push the GoI agenda and seizing the opportunities, PLN ICON PLUS, a beyond kWh subsidiary of PLN, need to define their business strategy in BEV related business comprehensively and thoughtfully. Researchers utilizes a mixed qualitative and quantitative approach, in collaboration with PLN ICON PLUS and Executive Office of the President of Indonesia (KSP RI), to develop a robust business strategy and scenario planning for PLN ICON PLUS. The resource-based view analysis is employed to define the business strategy, while a quantitative approach is used to assess the driving forces of the BEV business ecosystem in Indonesia, enabling the development of scenario planning for the year of 2024. This research reveals that a broad low-cost strategy for open platform BEV dealership business aligns well with the internal capabilities of PLN ICON PLUS and the external conditions of the BEV business ecosystem. Additionally, a scenario planning approach using European nations' exploration of the New World during the age of exploration analogy is developed to enhance PLN ICON PLUS's preparedness in navigating the uncertainties of favorable regulations and consumer purchasing power in 2024.

KEYWORDS: battery electric vehicle; business strategy; electric vehicle; resource-based view; scenario planning, PLN; PLN ICON PLUS

INTRODUCTION

Introduction of Presidential Regulation Number 55 of Year 2019 serves as a crucial framework for the GoI's strategy to enhance energy efficiency, energy security, energy conservation, air quality, and mitigate environmental impacts of transportation sector[1]. The regulation and its derivates has sparked local and multinationals companies to enter BEV business ecosystem[2]. Despite that, after more than 3 years, the Indonesian Ministry of Transportation has recorded only around 20,000 registered BEVs in Indonesia in August of 2022[3], which is not significant compared to the more than 150 million vehicles powered by internal combustion engines (ICE)[4].

Transition from ICE vehicles to BEVs signifies a shift from petroleum-based fuels to electricity as the primary energy source. Thus presents a new opportunity for PT PLN (Persero), a state-owned enterprise (SOE) that holds a monopoly on the electricity distribution in Indonesia. In September 2022, the Ministry of SOEs and PLN established PLN ICON PLUS as part of the company's strategy to diversify its business beyond electricity sales (Beyond kWh), which include venturing into the BEV business ecosystem[5].

BUSINESS ISSUE

PLN ICON PLUS a transformation from PT Indonesia Comnets Plus, previously specializes in providing information and communication technology solutions. As a newcomer in the BEV business ecosystem, it is expected to face uncertainties and challenges. In late 2022, PLN ICON PLUS create new Directorate under the name of Directorate of Electricity Related Business (ERB). The Directorate is tasked with leading the development of new products and business ventures, including those related to BEVs, scheduled to commence in 2023.

During this study problem identification interview, the Director of ERB at PLN ICON PLUS highlighted the need for a well-defined business strategy that aligns with PLN ICON PLUS's goals and strengths. This study acknowledges that despite being a priority for the GoI since 2019, the number of BEVs in Indonesia remains significantly lower compared to ICE. Our discussion also reveals that the high level of uncertainty in the BEV ecosystem, driven by its dynamic nature and relative newness in Indonesia, poses a challenge for businesses to aggressively invest and expedite market maturation.

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This study aim to maximize the opportunities within the BEV business ecosystem for PLN ICON PLUS and provide a comprehensive understanding of the dynamics it may encounter. The findings can serve as a valuable tool for PLN ICON PLUS and other decision-makers at PLN Group to assess their options and make informed decisions.

LITERATURE REVIEW

Thompson et al. (2022) emphasize that a company's strategy serves as a roadmap for achieving its long-term goals and objectives[6]. It provides a framework for making decisions, allocating resources, and aligning various functional areas within the organization. A well-crafted strategy takes into account the company's internal capabilities and resources, as well as the external market dynamics and competitive landscape[7]. Popular tool for external analysis is the PEST framework, which examines the Political, Economic, Sociocultural, and Technological factors that shape a company's operating environment[8]. On the other hand, the VRIO framework, is frequently utilized for internal analysis, enabling companies to evaluate the value, rarity, imitability, and organization of their resources and capabilities[9]. Using resource-based view perspective, companies which able to develop unique capabilities will achieve their competitive advantage[10]. The strategic actions implemented by a company aim to leverage these competitive advantages and create a sustainable position in the marketplace[6].

When faced with unpredictable and complex future circumstances, scenario planning is a practical method used to develop different scenarios. It involves the use of creative and imaginative thinking to help organizations and companies prepare for what lies ahead[11].By engaging in scenario planning, companies can effectively manage the future by envisioning potential risks and opportunities, rather than solely reacting when they arise.

In order to develop a comprehensive and effective business strategy for PLN ICON PLUS, this study will integrate the resource-based view and scenario planning. The objective is to create a robust strategy that enables PLN ICON PLUS to adapt and respond to changing circumstances, thus building a dynamic capability for long-term success.

METHODOLOGY

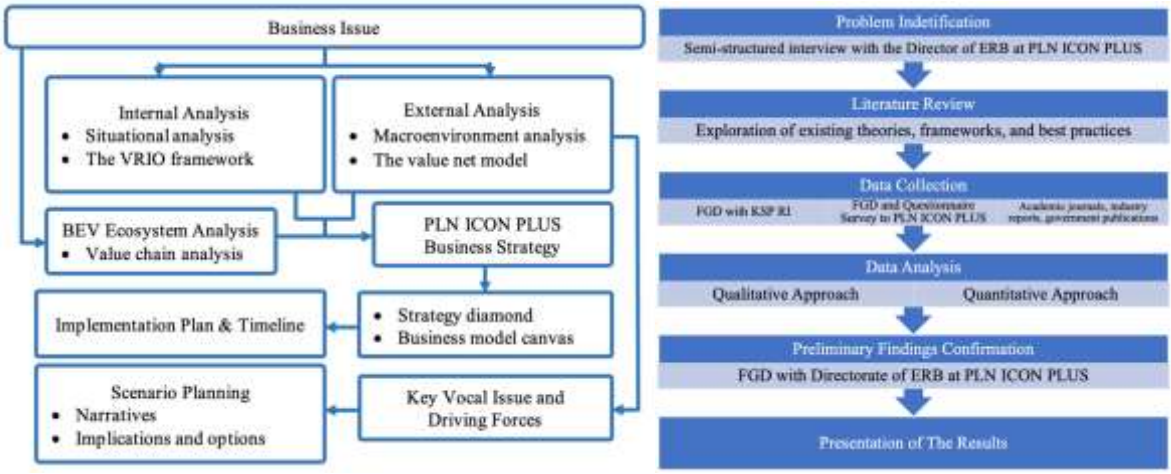

Figure 1. Conceptual framework and research design for this study.

As mentioned earlier, this study began with a semi-structured interview conducted with the Director of ERB at PLN ICON PLUS. The insights obtained from the interview were valuable in understanding PLN ICON PLUS's perspective, goals, and aspirations in the BEV market, as well as the existing challenges and opportunities within the BEV ecosystem. This initial step helped to clearly define the business issue at hand. Subsequently, an extensive literature review was conducted to explore existing theories, frameworks, and best practices related to business strategy development, resource-based view, and scenario planning.

Data collection for this research involved a combination of primary and secondary sources. The primary data was obtained through two separate methods. Firstly, a FGD was conducted with Expert Staffs of KSP RI, providing valuable insights from a policymaker's perspective. Secondly, another FGD and questionnaire survey were conducted with the Directorate of ERB at PLN ICON PLUS, offering insights from key stakeholders in the BEV ecosystem and a business perspective. In addition, secondary data sources

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including academic journals, industry reports, and government publications were reviewed to enhance the overall understanding of for the study.

This study employed a mixed qualitative and quantitative approach to gather data and insights. The qualitative data obtained from KSP RI was utilized to conduct a macroenvironment analysis using the PEST model, as well as to develop the BEV Ecosystem Model using Value Chain Analysis. Additionally, the qualitative data collected from PLN ICON PLUS was utilized to develop the Value Net Model and perform an internal analysis of the organization using the resource-based view and VRIO framework.

The insights derived from these internal and external analyses were then used to formulate the business strategy, incorporating elements such as the strategic diamond and the business model canvas. Furthermore, a questionnaire survey conducted among PLN ICON PLUS stakeholders provided valuable data on critical uncertainties, measuring the level of impact and uncertainties. This data was instrumental in the scenario planning process, helping to identify and address potential future scenarios effectively.

Before presenting the final findings, a final FGD was conducted with the Directorate of ERB at PLN ICON PLUS. This iterative process allowed for valuable feedback on the preliminary findings and further refinement of the research outcomes. The insights gathered from this FGD were integrated into the final analysis, ensuring the robustness and accuracy of the research. Ultimately, the research results were presented, encompassing the anticipated responses to the research questions and providing a comprehensive understanding of the business strategy and scenarios.

FINDING AND ARGUMENTS

Through the exploration with the expert staffs of KSP, this study identified the key factors in the microenvironment of the BEV business ecosystem (Table I). The political stability and favorable regulations were identified as crucial political factors that influence the development of the BEV industry. In terms of economic factors, consumer purchasing power and the price range of BEVs were found to be significant considerations. Sociocultural factors such as environmental awareness and social influence were recognized as important drivers in shaping the demand for BEVs. Finally, technological factors encompassed the innovations within the BEV ecosystem and the promotion of local content.

Table I. Macroenvironment factors of the BEV business ecosystem descriptions.

Political	**Political Stability**	The consistent and predictable environment within a country's political system. Indonesia will face presidential election in February 2024.
	Favorable Regulation	Government policies and laws that are supportive, conducive, and beneficial to businesses and industries.
Economic	**Consumer Purchasing Power**	The financial capacity and ability of consumers to buy goods and services. Heavily influenced by the nation economic growth and inflation rate.
	BEV Price Range	The spectrum of prices at which Battery Electric Vehicles are available for purchase. Generally, it is observed that BEVs tend to have a higher upfront cost compared to equivalent ICE vehicles due to the higher cost of electric vehicle battery technology.
Sociocultural	**Environmental Awareness**	Level of consciousness and concern individuals and society have towards the environment and its preservation. BEVs are considered more environmentally friendly compared to ICE vehicles because they produce zero tailpipe emissions during operation.
	Social Influence	The impact that individuals, groups, or society as a whole have on the attitudes, beliefs, and behaviors of others. BEVs are often perceived as a modern and forward-thinking transportation option.
Technological	**BEV Ecosystem Innovations**	The advancements and developments that occur within the ecosystem surrounding BEVs. These rapid advancements spark uncertainties that requiring business to navigate the evolving landscape.
	Local Content	BEV manufacturers or industry players utilize locally sourced materials, components, or services in the production and assembly of electric vehicles. This can foster a sense of national pride and support for locally produced vehicles.

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During the FGD, the Director of ERB highlighted PLN ICON PLUS's objective to act as an aggregator and enabler to accelerate the sales of BEVs in Indonesia using their digital and ICT capabilities. This strategic stance is aligned with the Indonesian Government's aspirations, as PLN's shareholders, to foster the BEV business ecosystem while ensuring the continued involvement of the private sector. This study develops the Value Net Model for that strategic stance to illustrates the interconnected relationships and influences among stakeholders (Table II).

Table II. The Value Net Model of PLN ICON PLUS's strategic stance.

Customers	**Competitors**
BEV Manufacturers • Local brand, local manufacturing facility • Multinational brand, local manufacturing facility • Multinational brand, offshore manufacturing facility BEV Potential Owners • Retail and business customers • Fleet owners – ride-sharing or taxi companies • Procurement process in government/SOEs	Several companies have taken the initiative to act as aggregators and enablers in Indonesia. For example: • Collaboration between Gojek, a ride-sharing company, Gogoro, a swappable battery provider and Pertamina, a national oil company. • Collaborations in PLN holding, which they have partnered with Grab, another ride-sharing company, and seven BEV manufacturers.
Suppliers	**Complementors**
The entire BEV ecosystem encompasses various stakeholders, including BEV manufacturers, charging equipment providers, battery providers, energy management solution providers, and electricity providers. Top of Form	Tesla stands out as a prime example of a BEV manufacturer that has successfully developed its own comprehensive ecosystem. In cases where other BEV manufacturers decide to build their own closed ecosystems, they can be viewed as complementors to PLN ICON PLUS.

The situational analysis providing of valuable insights into PLN ICON PLUS' current position, strengths, weaknesses, opportunities, and threats to enter BEV business ecosystem. As presented in Table III, the organization's role as PLN beyond kWh subsidiary and existing operations in ICT sector heavily influenced the situational analysis.

Table III. Situational analysis of PLN ICON PLUS to enter BEV business ecosystem.

Strength	**Role as PLN Beyond kWh Subsidiary**	It gives PLN ICON PLUS access to resources and support from a well-established state-owned company which monopolize electricity market in Indonesia.
	Technological Expertise	With previous focus on telecommunications and information technology (IT) solutions, PLN ICON PLUS possesses specialized knowledge, experience, and infrastructure to build high performance IT based platform.
	Existing Customer Base	PLN ICON PLUS can leverage both their and PLN extensive range of customers and partners to introduce BEV-related services and solutions, creating potential cross-selling opportunities.
Weakness	**Limited Experience in Automotive Industry**	Lack specific experience and knowledge in the automotive industry, including understanding customer preferences, regulations, and supply chain dynamics associated with BEV-related businesses
	Need for Partnerships	Require collaborations and partnerships with automotive manufacturers, charging infrastructure providers, and other industry players to effectively enter the BEV market, which can be challenging to establish and maintain.
	Resource Constraints	As with any new business venture, entering the BEV market requires significant investments in terms of financial resources, human capital, and infrastructure.

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Opportunities	**Growing BEV Market**	The BEV market is experiencing significant growth globally, including in Indonesia which just started its BEV ecosystem in the last 3-4 years.
	Government Support	The Indonesian government has shown a strong commitment to promoting BEVs.
Threats	**Technological Advancements**	Rapid advancements in BEV technologies and charging infrastructure can pose challenges to keep up with the evolving market demands and maintain a competitive edge. Technological Advancements in non-BEV automotive industry also potentially shrink BEV market share.
	Intense Competition	The BEV market is projected to becoming highly competitive, with various including foreign companies entering the industry.

Then the researchers using VRIO framework to assess the internal capabilities and resources of PLN ICON PLUS. The framework was constructed through a comprehensive approach that combined insights gathered from FGD session with Directorate of ERB and analysis of the company's 2021 annual reports. As presented in Table IV, the physical infrastructures and brand reputation of PLN ICON PLUS are identified as sustainable competitive advantages. The extensive physical infrastructure network establishes a significant barrier to entry for competitors, while the strong brand reputation builds trust and credibility to develop partnership to enter the market.

Table IV. The assessment of tangible and intangible resources of PLN ICON PLUS and its VRIO analysis.

Tangible resources of Physical Infrastructure			
PLN ICON PLUS existing network of telecommunications infrastructure, including towers, cables, and data centres are available all over Indonesia. PLN ICON PLUS operate 10 Strategic Business Units offices and 26 Representative offices. They also can leverage PLN Group assets that have extensive physical presence throughout the country including more than 50.000 employee and offices in every regencies in Indonesia.			
Valuable	Rare	Costly to Imitate	Organized to Capture Value
Yes	Yes	Yes	Yes
Competitive indication: Sustainable Competitive Advantage			

Tangible resources of Financial Capital			
In the end of the 2021 fiscal year, PLN ICON PLUS had IDR 1.285.915 Million of cash and Cash Equivalents. PLN ICON PLUS. As PLN ICON PLUS was established as PLN'S Beyond kWh Sub Holding, it has embraced a proactive approach in seeking local and international partnerships to foster strategic collaborations and explore financing options independently.			
Valuable	Rare	Costly to Imitate	Organized to Capture Value
Yes	No		
Competitive indication: Competitive Parity			

Intangible resources of Technological Expertise			
The technical knowledge, expertise, and experience of PLN ICON PLUS employees in the fields of telecommunications, data analytics, and smart electricity infrastructure can be valuable intangible resources that contribute to the company's ability to deliver advanced BEV-related solutions.			
Valuable	Rare	Costly to Imitate	Organized to Capture Value
Yes	Yes	No	
Competitive indication: Temporary Competitive Advantage			

Intangible resources of Brand Reputation
PLN ICON PLUS as a subsidiary of PLN inherits the strong brand reputation and recognition that PLN has built over the years. They can leverage it especially on Business-to-Business market to build strategic partnership.

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Valuable	Rare	Costly to Imitate	Organized to Capture Value
Yes	Yes	Yes	Yes
Competitive indication: Sustainable Competitive Advantage			

Using supply chain analysis, researchers determine strategic options and areas where PLN ICON PLUS can create value and gain a competitive edge (Table V). Based on valuable insights obtained through FGD both with the Directorate of ERB at PLN ICON PLUS and Expert Staffs of KSP RI, researchers decide on several key components comprising the BEV ecosystem, namely Battery Production, Energy Grid, Charging Infrastructure, BEV Manufacturer and BEV Distributor.

Table V. BEV Ecosystem in Indonesia and PLN Group Presence.

BEV Ecosystem	PLN Group Presence
Battery Production	PLN hold 25% share of Indonesia Battery Corporation (IBC) an SOE that committed to build an integrates BEV Battery Industry from upstream to downstream.
Energy Grid	PLN is an Energy Grid Monopoly in Indonesia.
Charging Infrastructure	PLN operates its own Charging Infrastructure and has established several business schemes for partnerships. It has provided charging infrastructure for various companies, including popular restaurant chains, banks, hotels, and government institutions. There were a plan to give this business to PLN ICON PLUS.
BEV Manufacturer	PLN is not present
BEV Distributor	PLN is not present

We observed that PLN Group has a presence in key areas such as battery production, energy grid, and charging infrastructure. There were plans to allocate the charging infrastructure to PLN ICON PLUS. However, it became evident that solely focusing on charging infrastructure may not be a sustainable strategy for PLN ICON PLUS. This is primarily due to the significant investment required and the challenge of maintaining affordable charging prices while supporting PLN and government objectives of promoting BEV adoption in Indonesia. Furthermore, the rapid advancement of charging technology introduces risks, as frequent upgrades may be necessary before reaching the break-even point. Unlike PLN, which can offset potential economic losses through its extensive electricity sales nationwide, PLN ICON PLUS does not possess the same advantage. This study also recognizes that becoming a BEV manufacturer is a long-term endeavor due to the lack of manufacturing capabilities. However, there is an opportunity for PLN ICON PLUS to enter the BEV distribution market, which has relatively low barriers to entry.

Anderson et al. (2022) categorizes BEV industry as a "platform" industry as. In this context, BEV are not standalone products but rather part of a broader ecosystem that includes charging infrastructure, battery technology, software applications, and other related services[12]. The authors also identify four critical elements of platform strategy, namely: (1) finding a platform coordinator, (2) launching a platform to solve the chicken-and-egg problem (3) deciding on open vs. closed, (4) considering growth options and (5) organizing for platform strategies. For PLN ICON PLUS to enter BEV Distribution market, the platform critical elements as presented in Table VI.

Table VI. Critical elements of platform strategy for PLN ICON PLUS to enter BEV distribution market.

Critical Elements	PLN ICON PLUS Strategic Options
Finding a platform coordinator	PLN ICON PLUS should act as platform coordinator to become aggregator and enabler of BEV Ecosystem.
Launching a Platform	PLN ICON PLUS can effectively address the chicken-and-egg problem in the BEV industry by offering BEVs for internal use within PLN Group or for use by PLN Group's vendors. Using PLN Mobile and PLN Group extensive physical infrastructure, they can establish both digital and physical marketplace with direct access to more than 85 million PLN registered customers.
Deciding on open vs. closed	Given that PLN ICON PLUS lacks BEV manufacturing capabilities, adopting an open platform strategy becomes imperative. By leveraging the strong brand reputation of PLN, they can establish strategic

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	partnerships with BEV manufacturers. Manufacturers would be enticed by the prospect of having widespread marketing and sales coverage across Indonesia with minimal effort.
Considering growth options	In the initial stages, PLN ICON PLUS can function as a open platform dealer for local Indonesian-based BEV manufacturers. However, in the long run, if they can demonstrate its marketing capabilities, there is a possibility to enter negotiations as the sole authorized brand holder for multinational BEV brands seeking entry into the Indonesian market. Implementing a step-by-step approach is crucial for PLN ICON PLUS to develop its internal capabilities, particularly in marketing and after-sales services. By gradually building these capabilities, they can effectively navigate the complex dynamics of the BEV automotive industry before entering strategic, no-turning-back partnership.
Organizing for platform strategies	By leveraging its sustainable competitive advantage of physical infrastructure and brand reputation, PLN ICON PLUS can adopt a broad low-cost strategy for its open platform BEV dealership.

This strategic approach involves engaging in a wide range of business-to-business (B2B) partnerships with BEV manufacturers or fleet owner and business-to-consumer (B2C) interactions for retail market. Using open platform approach, PLN ICON PLUS can access a larger product portfolio without the need for heavy investments in manufacturing capabilities. Moreover, by utilizing PLN's infrastructure and workforce, the costs associated with establishing and maintaining the dealership network can be significantly reduced, enabling a low-cost strategy.

By adopting an open platform approach for BEV dealership, PLN ICON PLUS strategically maximize its strengths, minimize its weaknesses, capitalize on opportunities, and mitigate threats (Table VII). Thus, position them for long-term success in the industry.

Table VII. SWOT review of broad low-cost strategy for open platform BEV dealership.

S	**Role as PLN Beyond kWh Subsidiary**	Monetize of over 85 million PLN customers and the generate of a new revenue stream to PLN.
	Technological Expertise	A high-performance digital marketplace platform for BEVs and ICT solutions will be enhancing their dealership capabilities.
	Existing Customer Base	Leveraging internal PLN Group and vendors also existing partners as initial demand to solve chicken-and-egg dilemma.
W	**Limited Experience in Automotive Industry**	Partnership with multiple stakeholders will enables PLN ICON PLUS to gradually gain experience and knowledge in the automotive industry.
	Need for Partnerships	Leveraging PLN Group extensive physical network will be tempting for most potential partners.
	Resource Constraints	Relatively minimal investment due to existing infrastructure.
O	**Growing BEV Market**	Act as platform coordinator will make PLN ICON PLUS prominent player in BEV business ecosystem.
	Government Support	By fostering the growth of the BEV ecosystem and actively enabling the participation of the private sector, PLN ICON PLUS can capitalize on the opportunity to gain increased government support.
T	**Technological Advancements**	Through collaboration with multiple parties in the ecosystem, PLN ICON PLUS can effectively keep up with the technological advancements of BEV manufacturers and meet the evolving market demands.
	Intense Competition	By positioning as open dealership platform for BEV that leverage PLN assets, they also will limit the competition since no one will be able to do the same.

This paper presents a comprehensive framework for developing an effective business strategy for PLN ICON PLUS by utilizing two key tools, the Strategy Diamond (Table VIII) and the Business Model Canvas (Table IX). These tools aim to create a solid foundation for PLN ICON PLUS business operations in the dynamic BEV ecosystem.

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Table VIII. Strategic Diamond of PLN ICON PLUS's broad low-cost strategy for open platform BEV dealership.

Arenas	**Vehicles**
• Nationwide • Underserved regions	• Consignment partnerships • In long run, co-branding and after-sales services licensing
Economic Logic	
• Broad market coverage • Minimal capital expenditures • On-the-ground sales representatives	
Staging	Differentiators
• Build Understanding with PLN Group Companies • Sign Consignment Partnerships with BEV Manufacturers • Organizational and System Preparation • Launching and Incentivizing Performance • Evaluation and Feedback Gathering	• Competitive Pricing • Convenience • Extensive Product Portfolio • Unbiased Recommendations

Table IX. Business Model Canvas of PLN ICON PLUS's broad low-cost strategy for open platform BEV dealership.

Key Partners	**Key Activities**	
• BEV Manufacturers: Establish consignment partnerships with multiple BEV manufacturers to offer a wide range of products. • PLN Group Companies: Collaborate with other PLN Group companies to leverage their physical infrastructure network and human resources.	• Obtain necessary permits and licenses from the government. • Establish and manage consignment partnerships with BEV manufacturers. • Develop and maintain a digital marketplace platform for BEV sales. • Activate and train an employee sales force to serve as marketing hands. • Provide after-sales services and support for BEV owners.	
	Key Resources	
	• Government permits and licenses. • Extensive physical infrastructure network of PLN Group. • Digital marketplace platform for BEV sales. • Trained employee sales force. • Relationships with BEV manufacturers.	
Value Propositions	**Customer Segments**	
• Wide range of BEV options from multiple manufacturers. • Extensive physical infrastructure network for convenient charging and servicing. • Competitive pricing due to economies of scale. • Expertise and support from PLN Group companies.	• Potential BEV owners looking for a variety of BEV options and convenient after-sales services. • Government Institutions, fleet owners and companies interested in electrifying their transportation with access to a diverse range of BEVs.	
	Customer Relationships	
	• Online marketplace for browsing and purchasing BEVs. • On-the-ground customer support and assistance.	
Channels	**Revenue Streams**	**Cost Structure**
• Online marketplace platform. • Physical dealership locations. • Marketing and promotional activities through various channels, including PLN Group activities	• Commission or fee-based revenue from BEV manufacturers • Sales revenue from BEV units. • Service and maintenance revenue.	• Operational costs for managing the digital platform and physical locations. • Marketing and advertising expenses. • Employee salaries and training. • IT infrastructure and maintenance costs

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In order to develop a comprehensive business strategy for PLN ICON PLUS's broad low-cost open platform BEV dealership, researchers recognized the key vocal issue and driving forces that shape the industry landscape. The key vocal issue was identified during the problem identification interview with the Director of ERB at PLN ICON PLUS as the condition and shape of the BEV ecosystem in Indonesia for the year of 2024. This specific timeframe holds significance due to the upcoming political transition year and provides PLN ICON PLUS with the first-time opportunity to evaluate and reassess their business strategy in a full business year. Meanwhile the driving forces were determined through macroenvironment analysis conducted with the Expert Staffs of KSP RI (Table I).

The research then provides a questionnaire to the Directorate of ERB at PLN ICON PLUS, where they were asked to select two driving forces from a set of eight for each level of impact (Table X) and level of uncertainties (Table XI). The collected data was then used to conduct an assessment of critical uncertainties. This approach proved valuable in identifying and evaluating the potential risks and uncertainties that could have a significant impact on the BEV ecosystem. In assessing the driving forces of uncertainty and impact, a scoring system of 0-1 is used to indicate low level, scores of 2-3 indicate a medium level, and scores exceeding 4 indicate a high level. This scoring approach helps in providing a clearer understanding of their significance in shaping the BEV ecosystem industry.

Table X. Level of impact for each driving forces.

Level of Impact											
Driving Forces		**FGD Participants**									Score
		CP	**PAS**	**LNI**	**RI**	**AR**	**SH**	**LW**	**MK**	**ET**	**RPI**	
P	Political Stability								1		1	2
	Favorable Regulation		1	1	1	1				1		5
E	Consumer Purchasing Power	1	1		1			1				4
	BEV Price Range			1		1						2
S	Environmental Awareness						1	1				2
	Social Influence	1								1	1	3
T	BEV Ecosystem Innovations						1		1			2
	Local Content											0

Table XI. Level of uncertainties for each driving forces.

Level of Uncertainties											
Driving Forces		**FGD Participants**									Score
		CP	**PAS**	**LNI**	**RI**	**AR**	**SH**	**LW**	**MK**	**ET**	**RPI**	
P	Political Stability				1				1		1	3
	Favorable Regulation		1	1	1		1					4
E	Consumer Purchasing Power					1	1		1	1		4
	BEV Price Range					1						1
S	Environmental Awareness											0
	Social Influence	1						1		1		3
T	BEV Ecosystem Innovations	1		1				1			1	4
	Local Content		1									1

Table XII. Critical uncertainties summary.

Category	**Driving Forces**	**Impact**	**Uncertainties**
Political	Political Stability	Medium	Medium
	Favorable Regulation	High	High
Economic	Consumer Purchasing Power	High	High
	BEV Price Range	Medium	Low

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Sociocultural	Environmental Awareness	Medium	Low
	Social Influence	Medium	Medium
Technological	BEV Ecosystem Innovations	Medium	High
	Local Content	Low	Low

Table XII highlights that favorable regulations and consumer purchasing power are identified as the most critical uncertainties. During the FGD, the Directorate of ERB at PLN ICON PLUS explained that these factors are highly understandable given the timeframe of one year. However, other factors such as the change in BEV price range, environmental awareness, and availability of local content in BEVs are not expected to undergo significant changes within the same timeframe. The FGD also revealed that the government's incentive plan for BEV companies sparked internal debates due to concerns about its generosity. Additionally, with Indonesia still in the recovery phase from the COVID-19 pandemic and facing global inflation in 2023, consumer purchasing power becomes a major concern as it may be impacted by these short-term economic factors.

CONCLUSIONS

Based on the analysis conducted, it can be concluded that a broad low-cost open platform BEV dealership strategy is suitable for PLN ICON PLUS to ensure competitiveness and growth in the BEV business ecosystem. This strategy inline with shareholder aspiration and allow them to capitalize on its sustainable competitive advantage. It also strategically maximizes its strengths, minimize its weaknesses, capitalize on opportunities, and mitigate the threats. To effectively implement its business strategy, PLN ICON PLUS should focus on several essentials' stages:

1. Build Understanding with Other PLN Group Companies;
2. Obtain Required Permits from Government;
3. Negotiate Consignment Partnership with BEV Manufacturers;
4. Organizational and System Preparation;
5. Activate Employee Sales Force as Marketing Hands;
6. Launch in Greater Jakarta Area;
7. Launch in Jawa-Bali Region;
8. Evaluate and Gather Feedback;
9. Expand Operations to Sumatra and Nationwide.

The critical uncertainties that will significantly impact the BEV ecosystem in Indonesia in 2024 are the favorable regulations and consumer purchasing power. These uncertainties should be closely monitored and managed throughout 2023. It remains uncertain whether the Government will prioritize the introduction of new favorable policies, such as tax incentives, subsidies, and infrastructure development for the BEV sector, or allocate resources to other pressing priorities, such as elections, security issues, and social programs. Additionally, the performance of the economy and the extent to which inflation is controlled will play a crucial role in determining consumer purchasing power.

To help PLN ICON PLUS in navigating the dynamic landscape of the BEV business ecosystem in Indonesia, this research provides scenario narratives (Table XIII) which emphasize the significance of the relationship between favorable regulations and consumer purchasing power. Drawing a parallel to the European nations' exploration during the age of exploration adds a layer of comprehension to the situation, shedding light on its potential risks and rewards. Just as the Europeans embarked on a new world exploration, the BEV business represents a new frontier for PLN ICON PLUS.

Table XIII. Scenario narratives, implications and options for PLN ICON PLUS's broad low-cost strategy for open platform BEV dealership in the year of 2024.

The English in North America Scenario
In this scenario the government has continued to implement robust policies, incentives, and supportive measures to promote the use of BEVs, such as tax incentives, subsidies, and infrastructure development. Additionally, consumers have the financial capability due to stable economic growth and controlled inflation nationwide in 2023. This scenario presents an opportunity for PLN ICON PLUS to thrive in its open dealership platform, with a high likelihood of success and significant market potential.

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Implications	Options
• Conducive and favorable environment for the growth of the BEV ecosystem • Increased consumer demand • Attract more players and intensify competition in the BEV market	• Accelerating expansion of dealership network • Accelerating investment in charging infrastructure. • Diversing product offerings by collaborate with other BEV manufacturer

The French in Caribbean Scenario

In this scenario the government implements robust regulations and policies to promote the adoption of BEVs. They offer incentives such as tax benefits, subsidies, and infrastructure development to create an enabling environment for the growth of the BEV market. However, despite these favorable regulatory measures, consumer purchasing power is relatively weak due to economic challenges or other factors. This scenario poses a challenge for PLN ICON PLUS's open dealership platform for BEVs as the demand for BEVs may be limited by consumers' financial constraints.

Implications	Options
• Government regulation still give favorable terms. • Limited market demand • Projected longer return on investment. • Underdeveloped but still high potential BEV market	• Implementing streamlined and efficient operations with a slower expansion approach • Focusing on collaboration with financial institutions to create more market demand. • Focusing on targeted marketing and product offerings that cater to the higher-end market segment. • Accelerating consumer education program to create awareness and potential growth in the future.

The Portuguese in South America Scenario

In this scenario the government has limited regulations and policies in place to promote the adoption of BEVs. Due to election related concern, the government's attention and resources are primarily directed towards pressing priorities such as security issues and social programs. However, despite the weak regulatory framework, consumers exhibit strong purchasing power, driven by favorable economic conditions and a growing awareness of the benefits of BEVs. PLN ICON PLUS can navigate the challenges by push private sector initiatives to create market driven government policy in the future.

Implications	Options
• Lack of adequate support and incentives for the BEV owner and industry. • Limited availability and affordability of BEVs in the market.	• Implementing streamlined and efficient operations with a slower expansion approach • Focusing to build collaboration with local and international companies, organizations, and institutions to exercise growing Indonesian market • Emphasize the environmental sustainability, cost savings, and long-term value of BEV both for government and consumer. • Demonstrating local or pilot project success stories to advocating for policy changes

The Scottish in Panama Scenario

In this scenario the government may have limited focus or resources allocated towards the development of the BEV ecosystem, resulting in minimal regulations, incentives, or support for BEV adoption. At the same time, consumers may have limited financial capabilities or face economic constraints that hinder their purchasing power. In such a scenario, PLN ICON PLUS would need

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to carefully assess market dynamics, consumer preferences, and economic conditions to develop innovative strategies that can overcome the barriers posed by weak regulation and weak consumer purchasing power.	
Implications	**Options**
• Strong competition from more affordable ICE vehicles. • Limited growth and profitability of the BEV business.	• Limiting the operations, focus to develop specific segment by area or price point. • Maintaining a long-term perspective by continue investing in research and development, innovation, and infrastructure to capitalize on future improvements in government policies and economic conditions.

Researchers understand that it is crucial to support the broad low-cost open platform BEV dealership strategy with a clear business model, deep financial modeling and well plan product development. This research focuses on the strategic view and macro-level dynamics of the BEV business ecosystem and not a feasibility study. While developing a robust strategy is crucial, the successful implementation and operation of the open platform BEV dealership also heavily rely on day-to-day decision-making and effective management. One key aspect of this is personnel placement, which should be done thoughtfully and strategically. This will contribute to the overall success and competitiveness of the business.

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