CHAPTER V :
CONCLUSION

5.1. Conclusion

5.1.1. EV Adoption in Indonesia: Overview

Indonesia's electric vehicle market has shown remarkable growth, with sales increasing 351% from 15,427 units in 2022 to 69,625 units in 2023 (GAIKINDO, 2024). However, EVs still represent less than 1% of total vehicle sales, indicating substantial room for growth. This early stage of adoption is characterized by strong urban concentration, with over 60% of EV sales and charging infrastructure concentrated in the Greater Jakarta area (PLN, 2024). The first quarter of 2024 shows continued momentum, with 24,341 units sold, representing 0.57% of global EV sales, up from 0.49% in 2023 (Budiono and Virgianita, 2024:868).

When compared to other ASEAN markets, Indonesia's EV journey reveals both challenges and opportunities. Thailand leads the region with 2.3% EV market share in 2023, achieved through more aggressive marketing campaigns and stronger government support for public charging infrastructure (industry.co.id, 2024). Their success demonstrates the importance of coordinated efforts between manufacturers and government agencies in promoting EV benefits while addressing range anxiety concerns. This research specifically found that marketing efforts significantly influence both perceived benefits and perceived risks, suggesting that Indonesia could benefit from similar coordinated promotional strategies.

Our research reveals that three main factors work together to drive EV adoption in Indonesia. The strongest factor is how much value people see in electric vehicles - when consumers recognize the benefits and believe EVs are worth the investment, they become much more likely to consider buying one. Supporting infrastructure like charging stations also plays a crucial role, mainly by helping reduce people's concerns about using EVs day-to-day. Marketing efforts work in two important ways: they help people better understand the benefits of EVs while also addressing common worries and misconceptions about the technology. Based on this findings, we suggests that addressing these factors systematically could help Indonesia accelerate its EV adoption to match or exceed regional leaders.

Key challenges for wider adoption include the uneven distribution of charging infrastructure, with significant gaps outside major urban centers. While Jakarta averages one charging station per 5 km², other major cities often have coverage gaps exceeding 20 km². Additionally, the higher upfront costs of EVs and limited model availability in lower price segments continue to constrain mass-market adoption (IESR, 2023). Alternative business models could significantly impact adoption rates. This insight aligns with global trends where innovative ownership models have accelerated EV adoption in markets like China and South Korea.

5.1.2. Key Strategic Findings

Our analysis reveals some fascinating patterns in how different factors influence EV adoption. The presence of good charging infrastructure and support systems proves especially powerful in reducing consumer concerns - people become significantly less worried about things like range anxiety when they know charging stations are readily available. Interestingly, while good infrastructure dramatically reduces concerns, it doesn't necessarily make people see more benefits in EVs. This suggests that infrastructure development should focus primarily on addressing practical concerns rather than being promoted as an added benefit.

Marketing approaches show varying levels of effectiveness across different channels and messages. Traditional approaches demonstrate particular strength, with one-stop service centers achieving the highest score and exhibition events close behind. However, digital engagement through social media shows relatively lower effectiveness, indicating a clear opportunity for enhancement in this increasingly important channel. Adapting to evolving consumer preferences requires strengthening digital capabilities. Different consumer groups also respond to different messages - younger people (under 36) tend to be more motivated by environmental benefits, while older consumers focus more on long-term cost savings. Urban consumers become much more interested in EVs when they see strong support systems in place, such as readily available charging stations and maintenance services.

The research clearly shows that people's overall perception of EV value drives their purchase decisions. When making choices about EVs, consumers consider multiple factors simultaneously - they think about both financial aspects (like potential savings on fuel and maintenance) and broader benefits (like environmental impact). The power of word-of-mouth also emerges as crucial - when people feel confident enough about EVs

to recommend them to others, it strongly indicates genuine purchase interest. This suggests that building authentic positive experiences among early adopters could help accelerate broader market acceptance.

5.1.3. Industry Implications

Market opportunities vary significantly across segments. Premium segments (>Rp 800 million) show higher intention-to-purchase conversion rates (35-40%) compared to mass-market segments (<Rp 400 million) at 15-20%. This suggests different strategic approaches are needed for each segment. Success stories like Wuling Air EV in the mass market and Hyundai IONIQ 5 in the premium segment demonstrate the effectiveness of segment-specific value propositions.

Development strategies should focus on three key areas: expanding charging infrastructure beyond urban centers, developing segment-specific financing solutions, and implementing comprehensive customer education programs. The research suggests that businesses should prioritize risk mitigation over benefit enhancement when developing support systems and marketing communications. A balanced approach addressing both immediate and long-term value components is crucial for success.

Specific recommendations for stakeholders across the EV ecosystem focus on enhancing infrastructure, developing supportive policies, and creating innovative financing solutions to drive widespread adoption include:

- For manufacturers: To address the specific needs and preferences identified in the study, manufacturers need to develop targeted value propositions that resonate with different market segments, moving beyond one-size-fits-all approaches.
- For infrastructure providers: Infrastructure providers should use data-driven approaches to strategically place charging stations, focusing on areas that maximize accessibility and reduce range anxiety—our research shows that having charging stations within 5 km significantly increases adoption rates.
- For policymakers: Policymakers can accelerate adoption by creating targeted incentives that address specific barriers in underserved market segments and regions, particularly outside major urban centers where both infrastructure and EV uptake currently lag.
- For financial institutions: Financial institutions have a crucial role in overcoming the significant upfront cost barrier by developing innovative financing solutions - this is

especially important for mass-market segments where the research shows conversion rates are currently lowest at 15-20%.

These recommendations are supported by the research findings showing that coordinated ecosystem development that demonstrated by regions like Greater Jakarta, where strong infrastructure, supportive policies, and diverse financing options have led to adoption rates more than double the national average which is crucial for accelerating EV adoption in Indonesia.

5.2. Recommendations

5.2.1. Practical Recommendations

For Government

The research suggests that infrastructure development and policy support should follow a three-phase implementation approach. In the short term (6-12 months), focus should be on expanding charging infrastructure beyond the Jabodetabek area, targeting major intercity corridors where the research shows significant range anxiety concerns. The data indicates that areas within 5 km of charging stations see 150% higher EV adoption rates, making strategic placement crucial. Medium-term initiatives (1-2 years) should include developing standardized charging protocols and implementing targeted tax incentives for middle-market EVs, where the research shows price sensitivity is highest. Long-term strategies (2-5 years) should focus on integrating EVs into public transportation and developing battery recycling infrastructure.

For EV Manufacturers

Based on the findings, while cost-efficiency marketing messages are effective, they must be carefully balanced to address both immediate cost concerns and long-term economic benefits. As noted by Wang et al. (2023:9), successful EV marketing requires comprehensive communication of the full economic value proposition, including purchase incentives, operating costs, and potential resale value. Manufacturers should strengthen digital channels and after-sales service communication, which showed significantly higher impact (loading = 0.820) than traditional advertising. The analysis suggests developing segment-specific value propositions, with premium segments (>Rp 800 million) focusing on technology and performance, while mass-market segments (<Rp 400 million) emphasizing total cost of ownership benefits. Within the next 12 months,

manufacturers should establish comprehensive dealer networks in regions showing high purchase intention, particularly in secondary cities where infrastructure is developing. The data shows that demonstration programs and test drive experiences significantly influence purchase decisions, especially among first-time EV buyers.

For Ecosystem Players

Financial institutions should develop innovative financing products within the next 6 months, particularly for the mass market where conversion rates are currently lowest (15-20%). Charging infrastructure providers should prioritize partnerships with commercial properties and workplace locations, where the research shows charging availability most significantly reduces range anxiety. Energy providers need to ensure grid readiness in high-potential adoption areas, with particular focus on fast-charging capabilities in commercial zones. These initiatives should be coordinated through a centralized EV ecosystem platform, allowing for integrated service delivery and improved user experience.

Strategic Product Policy for EV Acceleration

The research findings suggest that Indonesia should implement a targeted product policy strategy focusing on three critical areas: market segmentation, technology development, and manufacturing capabilities. Our analysis shows that different market segments respond to distinct value propositions, requiring a nuanced approach to product development and positioning.

For market segmentation, Indonesia should prioritize the development of locally manufactured entry-level EVs while simultaneously attracting premium brands that can drive technology adoption. This dual-track approach addresses both the price sensitivity shown in our research (PR1 = 0.853) and the strong consumer interest in advanced technology (PV5 = 0.716). Thailand's success with this approach has led to significantly higher adoption rates, achieving 2.3% market share compared to Indonesia's 0.62% (industry.co.id, 2024).

In technology development, policy makers should leverage Indonesia's natural resources advantage, particularly in battery production. By establishing a complete battery supply chain, Indonesia could reduce EV costs by 30-40% through local production (IESR, 2023:56). This directly addresses one of the primary barriers to adoption identified in our research. Additionally, standardizing charging technology and

protocols would help address infrastructure concerns that significantly influence purchase decisions (PR6 = 0.880).

The manufacturing strategy should follow a phased approach, beginning with assembly operations and gradually expanding to full vehicle development capabilities. This incremental approach has proven successful in other ASEAN markets, particularly Thailand, where it has created a robust EV manufacturing ecosystem (Wang et al., 2023:15). The strategy should include clear localization targets and technology transfer requirements to build domestic capabilities while maintaining product quality standards.

These recommendations provide a framework for accelerating EV adoption while building sustainable domestic industry capabilities. By implementing these strategies, Indonesia can address both immediate market needs and long-term industrial development goals identified in our research.

5.2.2. Theoretical Recommendations

Limitation

In examining the methodological approach of this thesis, which used SEM for analyzing construct relationships, it is important to acknowledge the limitations of treating Likert scale data as interval-level measurements. This consideration opens opportunities for future research to employ alternative analytical techniques better suited for ordinal data. As Brown (2015) explains, methods specifically designed for ordinal data, such as Weighted Least Squares Mean and Variance (WLSMV) estimation, have demonstrated strong performance with ordinal measurements. Future studies could address these limitations by adopting non-parametric approaches like Ordinal Logistic Regression or Partial Least Squares Path Modeling (PLS-PM), which make fewer assumptions about data distribution and scale properties. These alternative methods can provide more robust results while properly accounting for the ordinal nature of Likert scale responses, ultimately strengthening the validity of findings in similar research contexts.

Future Research Directions

The study reveals several important research gaps that need attention. First, the relationship between facilitating conditions and perceived benefits showed unexpected results, suggesting the need for more nuanced investigation of how infrastructure support

translates into consumer value perception. Future studies should explore potential moderating variables in this relationship, particularly in developing market contexts and also explore how business model innovation influences technology adoption frameworks. Studies comparing adoption patterns across different business models could provide valuable insights for theory development. The strong influence of word-of-mouth indicated by high social recommendation intention (loading = 0.926) also suggests the need for deeper investigation into social influence mechanisms in technology adoption. Additionally, research into policy effectiveness should move beyond simple incentive analysis to examine how different policy combinations interact with consumer behavior.

Methodological Development

The research approach could be enhanced in several ways for future studies. The high explanatory power of the model ($R^2 = 0.578$) suggests that the integrated framework of UTAUT and perceived value theory provides a strong foundation, but could be further developed by incorporating longitudinal data to better understand how perceptions evolve over time. The multi-group analysis revealed significant demographic differences, indicating the potential value of developing more sophisticated segmentation approaches that combine traditional demographics with psychographic and behavioral variables. Future research should also consider mixed-method approaches to better capture the qualitative aspects of consumer decision-making in technology adoption.

Theoretical Framework Enhancement

The findings suggest several potential enhancements to existing theoretical frameworks. The traditional UTAUT model could be expanded to better account for high-involvement consumer technology purchases, incorporating risk-benefit analysis as a core component rather than a peripheral factor. The research also indicates the need for developing more sophisticated models of value perception in technological innovations, particularly how different value components interact and evolve through the adoption process. These theoretical developments could be applied to other emerging technologies beyond EVs, such as smart home systems or autonomous vehicles, where similar dynamics of risk, benefit, and infrastructure support play crucial roles.

The integration of business model innovation into EV adoption frameworks represents a promising theoretical direction. Research gaps exist in understanding how different ownership models affect various consumer segments and how cultural factors

influence model effectiveness. Studies comparing adoption patterns across different business models could provide valuable insights for theory development.