

# Promoting Electric Vehicle Adoption Intention: Insights from Ride-Hailing Drivers in Ho Chi Minh City

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**ABSTRACT:** This study examines how ride-hailing drivers in Ho Chi Minh City construct their intention to adopt electric vehicles (EVs) using a qualitative research design. Data were collected through in-depth interviews with ride-hailing drivers and were analysed thematically to capture their lived experiences and meaning-making processes. The findings indicate that adoption intention does not stem from a single determinant but develops through an ongoing negotiation between perceived opportunities and uncertainties. Rather than expressing simple acceptance or rejection, drivers describe a gradual evaluative process shaped by everyday economic considerations, social interactions, and risk assessments. Five interrelated themes emerge from the analysis. Attitudes toward EVs are formed pragmatically through comparisons with gasoline vehicles, particularly in terms of cost efficiency and service quality. Economic rationality dominates decision-making, as drivers prioritise income stability and financial risk management. Environmental concern provides moral support but rarely outweighs economic priorities. Social influence from peers, passengers, and platforms enhances perceived feasibility, while resistance to change reflects concerns about technological uncertainty and potential income disruption. Overall, adoption becomes viable only when perceived benefits outweigh livelihood-related risks.

**KEYWORDS:** Electric vehicle adoption intention, Sustainable mobility transition, Environmental concern, Ride-hailing drivers, Urban transportation, Ho Chi Minh City, Vietnam.

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## Introduction

In recent years, global warming and air pollution have become critical global challenges, largely driven by greenhouse gas emissions from human activities. In Vietnam, air quality has deteriorated significantly, particularly in major urban centres such as Ho Chi Minh City and Hanoi. The transportation sector is considered a primary contributor to urban air pollution, accounting for a substantial share of total emissions. With millions of automobiles and motorcycles currently in operation and hundreds of thousands of new vehicles registered annually, the pressure on urban infrastructure and the environment continues to intensify.

To address climate change and mitigate rising greenhouse gas emissions, the Vietnamese government has set ambitious environmental targets and introduced policies to promote green transportation, including electric vehicles (EVs). In its updated Nationally Determined Contribution (NDC) under the Paris Agreement, Vietnam committed to reducing greenhouse gas emissions by 15.8 per cent unconditionally and up to 43.5 per cent with international support by 2030, compared to a business-as-usual scenario, and achieving net zero emissions by 2050 (Ministry of Natural Resources and Environment [MONRE], 2022). The transport sector has been identified as a critical area for decarbonization, and the transition to electric mobility is expected to contribute significantly to national emissions-reduction targets (World Bank, 2024).

Although Vietnam remains an emerging EV market, recent years have seen rapid growth in electric vehicle production and adoption, driven by favourable government policies and rising environmental awareness. With a population approaching 100 million people and accelerating urbanisation, Vietnam is becoming one of the most dynamic EV markets in Southeast Asia (World Bank, 2024). In parallel, the government is establishing a domestic carbon market and developing emissions trading mechanisms to operationalise climate commitments and create market-based incentives for low-carbon technologies (Government of Vietnam, 2026). These regulatory and market developments provide a supportive institutional foundation for the expansion of EV adoption in the coming years.

A notable development in early 2024 was the rapid expansion of electric ride-hailing services. The launch and growth of Xanh SM, operated by GSM under Vingroup, marked a significant shift in the ride-hailing industry by integrating electric vehicles into transportation services. After only a few months of operation, Xanh SM gained considerable market share, demonstrating strong market acceptance of electric mobility solutions. This trend highlights the growing relevance of EV adoption among ride-hailing drivers, who represent a high-usage segment with significant potential to contribute to emission reductions in urban areas.

Drawing on behavioural and technology acceptance theories, prior research has examined various factors influencing technology adoption and purchase intentions, including those related to electric vehicles (EVs). Existing studies commonly identify several key categories of determinants, such as technological attributes (e.g., driving range, charging time, and cost), contextual factors (e.g., government incentives and charging infrastructure), and psychological and social factors (e.g., environmental concern and social influence). However, much of this literature relies predominantly on quantitative approaches and focuses on general consumer populations in developed countries. As a result, there remains a limited in-depth understanding of how specific groups in emerging markets, such as Vietnam, perceive and construct their intentions toward EV adoption.

In this context, ride-hailing drivers represent a distinctive and strategically significant segment in the transition toward electric mobility. Due to their high daily mileage, strong cost sensitivity, and direct exposure to urban environmental conditions, they may interpret the benefits and challenges of EV adoption differently from private consumers. Yet, little is known about how ride-hailing drivers in Vietnam make sense of electric vehicles, what meanings they attach to the idea of switching, and how their lived experiences shape their adoption intentions.

The case of Ho Chi Minh City provides a particularly relevant empirical setting for this investigation. As Vietnam's largest metropolitan area and economic hub, Ho Chi Minh City is characterised by high population density, rapid urbanisation, and severe traffic congestion. Motorcycles and ride-hailing services play a dominant role in daily mobility, making transport emissions a significant contributor to urban air pollution. At the same time, the city has witnessed the rapid expansion of digital ride-hailing platforms and growing policy attention toward green mobility and emission reduction. However, charging infrastructure remains unevenly distributed, and the financial feasibility of switching to EVs remains a pressing concern for many drivers. These contextual dynamics create both opportunities and uncertainties that may shape drivers' perceptions and decision-making processes regarding EV adoption.

## Research Aim and Research Questions

This study adopts a qualitative approach to explore how ride-hailing drivers in Ho Chi Minh City perceive, interpret, and negotiate the factors influencing their intention to adopt electric vehicles. By capturing their subjective experiences, motivations, and perceived barriers within this specific urban context, the study aims to generate contextually grounded insights that deepen understanding of EV adoption among occupational drivers and inform policies promoting sustainable urban mobility in rapidly developing cities. Specifically, the research seeks to answer the following questions:

(RQ1) How do ride-hailing drivers in Ho Chi Minh City perceive electric vehicles and their intention to adopt them?

(RQ2) What motivations and barriers shape their intention to adopt electric vehicles?

(RQ3) How do ride-hailing drivers describe the conditions or supports that would enhance their willingness to adopt electric vehicles?

(RQ4) What managerial and policy measures do drivers perceive as necessary to foster sustainable EV adoption in the ride-hailing sector?

By addressing these questions, the study contributes to the literature on EV adoption in emerging markets. It provides practical recommendations for businesses, platform operators, and policymakers to foster sustainable transportation development in Vietnam.

## Literature review

### *Underpinning theories*

This study is conceptually informed by established intention-based and technology adoption theories that explain how individual cognition, social influence, and contextual conditions shape behavioural intention. Rather than serving as a basis for hypothesis testing, these theories function as sensitising frameworks that guide the interpretation of qualitative findings and situate the study within the broader literature on technology adoption.

The Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen (1975) posits that behavioural intention is the most immediate predictor of actual behaviour. According to this theory, intention is shaped by two key components: attitude toward the behaviour and subjective norm. Attitude reflects an individual's overall evaluation of performing a behaviour, while subjective norm captures perceived social pressure from significant others. Although TRA was originally developed for predictive modelling, its core constructs remain useful for interpreting how personal evaluations and perceived social expectations emerge in participants' narratives.

Building upon TRA, the Theory of Planned Behaviour (TPB) introduced the concept of Perceived Behavioural Control (PBC) as an additional determinant of intention (Ajzen, 1991). PBC refers to individuals' perceptions of their ability to perform a behaviour, taking into account facilitating or constraining conditions. In the context of electric vehicle adoption, perceived financial capability, access to charging infrastructure, and risk considerations may shape individuals' perceptions of their level of control. In this qualitative study, PBC provides a conceptual lens for understanding how drivers narrate their perceptions of feasibility, constraints, and economic vulnerability.

In the field of information systems, the Technology Acceptance Model (TAM) emphasises perceived usefulness and perceived ease of use as central determinants of technology acceptance (Davis, 1989). Perceived usefulness refers to the extent to which a technology enhances performance, while perceived ease of use reflects the degree of effort required to utilise it. Although TAM is commonly applied in quantitative research, its constructs offer interpretive value for examining how ride-hailing drivers describe operational efficiency, income optimisation, and practical convenience when discussing electric vehicles.

Similarly, the Unified Theory of Acceptance and Use of Technology (UTAUT) integrates multiple theoretical streams. It highlights the roles of performance expectancy, effort expectancy, social influence, and facilitating conditions in shaping intention and usage behaviour (Venkatesh et al., 2003). Rather than operationalising these constructs as measurable variables, this study draws on them as conceptual categories that help contextualise the themes emerging from drivers' lived experiences.

Collectively, these theoretical perspectives underscore that an interplay between personal evaluation, social influence, perceived capability, and contextual support shapes behavioural intention. In the present study, these constructs are not treated

as predefined determinants to be statistically tested but as interpretive anchors that enrich the analysis of how ride-hailing drivers in Ho Chi Minh City construct their intention to adopt electric vehicles. By engaging with established intention-based frameworks while maintaining an inductive analytical orientation, the study bridges theory and context, offering a nuanced understanding of technology adoption within a livelihood-dependent urban mobility setting.

**Methodology**

**Research Design**

This study adopts a qualitative research design to gain an in-depth understanding of how ride-hailing drivers in Ho Chi Minh City construct their intention to adopt electric vehicles. A qualitative approach is appropriate when the aim is to explore meanings, lived experiences, and socially constructed realities rather than to test predefined hypotheses or quantify relationships (Creswell, 2013). Qualitative inquiry enables researchers to capture participants’ perspectives within their natural contexts and to interpret how individuals make sense of complex phenomena.

The research follows an exploratory orientation, allowing themes and interpretations to emerge inductively from participants’ narratives. Inductive qualitative research is particularly suitable for examining underexplored contexts, where theoretical assumptions may not fully capture local dynamics (Patton, 2002). In the context of ride-hailing drivers, whose decisions are shaped in livelihood considerations and platform-based work structures, such an approach facilitates a nuanced understanding of the behavioural and contextual processes shaping EV adoption intentions.

**Sampling and Participants**

Purposive sampling was employed to select participants who possess direct experience and relevant knowledge of the ride-hailing industry. Purposive sampling is widely used in qualitative research to identify information-rich cases that can provide deep insight into the phenomenon under investigation (Patton, 2002). Eligible participants were active ride-hailing drivers operating in Ho Chi Minh City, including both drivers currently using conventional gasoline vehicles and those who have experience with electric vehicles.

Data collection continued until theoretical saturation was reached, meaning that no substantially new themes emerged from subsequent interviews. Saturation is commonly used as a criterion for adequacy in qualitative sampling, indicating sufficient depth and comprehensiveness of the collected data (Guest et al., 2006).

Table 1

Characteristics of Ride-Hailing Motorbike Drivers

ID	Gender	Age Range	Years of Driving Experience	Current Vehicle Type	EV Experience	Average Daily Working Hours	Average Daily Distance (km)
P1	Male	25-30	2 years	Gasoline motorbike	No	8-10	120
P2	Male	31-35	4 years	Gasoline motorbike	No	10-12	150
P3	Male	36-40	6 years	Gasoline motorbike	No	9-11	160
P4	Female	31-35	3 years	Gasoline motorbike	No	8-9	110
P5	Male	36-40	5 years	Electric motorbike	Yes	9-10	140

ID	Gender	Age Range	Years of Driving Experience	Current Vehicle Type	EV Experience	Average Daily Working Hours	Average Daily Distance (km)
P6	Male	25-30	2 years	Electric motorbike	Yes	8-10	130
P7	Male	41-45	8 years	Gasoline motorbike	No	10-12	170
P8	Male	25-30	1.5 years	Gasoline motorbike	No	7-9	100
P9	Female	31-35	4 years	Electric motorbike	Yes	8-10	125
P10	Male	36-40	6 years	Gasoline motorbike	No	9-11	155
P11	Male	41-45	9 years	Gasoline motorbike	No	10-12	180
P12	Male	31-35	3 years	Gasoline motorbike	No	8-10	135
P13	Male	36-40	7 years	Electric motorbike	Yes	9-11	145
P14	Female	25-30	2 years	Gasoline motorbike	No	7-9	115
P15	Male	36-40	5 years	Gasoline motorbike	No	9-11	165

**Data Collection**

Data were collected through semi-structured in-depth interviews. Semi-structured interviews are particularly appropriate for exploratory qualitative research because they allow flexibility while ensuring coverage of key thematic areas (Creswell, 2013). An interview guide was developed based on existing literature on technology adoption and sustainable mobility, focusing on drivers’ perceptions of electric vehicles, perceived benefits and risks, environmental concerns, social influences, financial considerations, and expectations regarding government or platform support.

Each interview lasted approximately 30 to 60 minutes and was conducted in Vietnamese to ensure participants could comfortably and authentically articulate their experiences. With participants’ informed consent, interviews were audio-recorded and subsequently transcribed verbatim to preserve the richness and accuracy of the data.

**Data Analysis**

The data were analysed using thematic analysis following the systematic approach outlined by Braun and Clarke (2006). The analytical process involved several stages: familiarisation with the data through repeated reading of transcripts; generating initial codes to identify meaningful segments; organising codes into broader candidate themes; and reviewing and refining themes to ensure coherence and conceptual clarity.

An inductive coding strategy was primarily applied, allowing themes to emerge from participants’ narratives rather than being imposed a priori. However, consistent with interpretive qualitative practice, the analysis was informed by existing theoretical insights on behavioural intention and technology adoption to enhance analytical depth while preserving openness

to emergent meanings (Braun & Clarke, 2006). This balance between inductive sensitivity and theoretical awareness strengthens interpretive rigour.

## Findings and Discussion

### ***Attitudinal Construction of EV Adoption***

Drivers did not articulate their attitudes toward EVs as stable or pre-existing preferences; rather, attitudes emerged as fluid constructions shaped through everyday practice, peer observation, and ongoing reflection. Instead of holding ideologically driven positions, participants described a process of sensemaking in which EVs were interpreted through accumulated work experiences and informal conversations within driver networks. In this interpretive process, EVs often symbolised modernity, technological progress, and alignment with emerging urban trends. The quiet engine, smooth acceleration, and perceived professionalism were not merely technical features but socially meaningful attributes that enhanced drivers' occupational identity and service image.

As one driver noted, "Driving an electric vehicle feels smoother and quieter. Customers also appreciate it. It gives a more professional image." (Participant 7) Here, the EV becomes more than a vehicle; it serves as a reputational asset that can elevate service quality and customer perception. However, this symbolic value was consistently filtered through pragmatic evaluation. Positive impressions were conditional upon economic feasibility. Drivers did not romanticise innovation; instead, they assessed whether technological advantages translated into tangible benefits for their livelihoods.

As another participant stated, "Gasoline prices keep increasing. If I can save on fuel costs, I would seriously consider switching to an EV." (Participant 12)

This statement illustrates how attitudes are anchored in comparative cost reasoning. EVs were evaluated against the fluctuating realities of gasoline expenses, daily earnings, and operational continuity. Attitude formation, therefore, functioned as an ongoing cost-benefit negotiation rather than an abstract pro-innovation stance. Favorability emerged when drivers perceived alignment between technological attributes and income stability.

Overall, drivers' attitudes toward EVs can be understood as pragmatically constructed and economically embedded. Rather than reflecting fixed beliefs, they were continuously recalibrated through lived experience, market conditions, and peer discourse. Attitude, in this sense, was not a static psychological variable but a dynamic evaluative process shaped by the interplay between symbolic meaning and survival-oriented reasoning.

#### *Economic Rationality and Financial Concerns*

Across interviews, financial stability emerged as the central lens through which ride-hailing motorbike drivers evaluated the possibility of adopting electric motorbikes. Participants consistently framed themselves not simply as platform workers but as primary income earners whose daily trips directly support household subsistence. For these drivers, income is calculated on a day-to-day basis; earnings from each completed ride are immediately applied to fuel costs, food expenses, rent, and family obligations. Within this economic structure, switching vehicles is perceived less as a technological upgrade and more as a livelihood decision with tangible financial consequences.

As one driver explained:

"For us, income per day is what matters. If the electric motorbike helps me save more or earn more, I will switch. If not, I cannot risk it." (Participant 3)

This statement reflects a survival-oriented rationality grounded in short-term income cycles. Unlike salaried workers, ride-hailing motorbike drivers operate within a highly fluid earnings system, where income fluctuates with trip frequency, peak hours, and platform incentives. As a result, predictability and continuity of daily revenue become paramount. Drivers carefully compared fuel expenses for gasoline motorbikes with electricity costs, maintenance requirements, and battery-related uncertainties before forming any intention to switch.

The structure of motorbike-based ride-hailing work further intensifies sensitivity to time efficiency. Because drivers rely on continuous mobility to secure trips, any interruption—especially for charging - was interpreted as a direct loss of income:

"If I have to stop to charge during busy hours, I lose trips. Losing trips means losing money." (Participant 15)

Here, charging time is not viewed as routine maintenance but as an opportunity cost. For motorbike drivers who often work long hours in dense urban traffic, the ability to refuel quickly at ubiquitous gas stations stands in stark contrast to the perceived inconvenience or limited availability of charging infrastructure. The fear of battery depletion mid-shift also amplifies perceived financial vulnerability.

Interestingly, drivers who had already adopted electric motorbikes often reassessed their earlier concerns after gaining practical experience:

“At first, I worried about the purchase price. But after using it for a while, I realised electricity is much cheaper than gasoline.” (Participant 5)

Such retrospective reflections suggest that experiential learning gradually reduces perceived financial risk. Once operational savings become observable in daily earnings, confidence increases, and initial hesitation weakens.

Overall, among ride-hailing motorbike drivers, EV adoption intention is embedded within a livelihood-centred economic logic characterised by daily income calculations, sensitivity to time-related opportunity costs, and cautious risk management. Adoption becomes conceivable only when electric motorbikes are perceived as protecting or enhancing income stability rather than threatening it.

### ***Environmental Awareness and Moral Responsibility***

Environmental concern emerged in participants' narratives primarily as a moral acknowledgement rather than a decisive motivator of behavioural change. Ride-hailing motorbike drivers demonstrated awareness of worsening air pollution in Ho Chi Minh City, frequently referring to traffic congestion, exhaust fumes, and prolonged daily exposure to polluted air. Given that they spend extended hours navigating dense urban streets, environmental degradation was not an abstract issue but a lived reality affecting their health and physical comfort.

As one participant reflected:

“Of course, electric vehicles are better for the environment. The city is already too polluted.” (Participant 9)

In such accounts, electric motorbikes were associated with reduced emissions, cleaner streets, and quieter operation. Drivers recognised the broader social benefits of transitioning away from gasoline-powered vehicles and often agreed that EVs represent a more sustainable urban future. However, this recognition did not automatically translate into an intention to adopt.

Environmental responsibility was consistently reframed within the boundaries of economic survival:

“Protecting the environment is important, but I still need to think about my family first.” (Participant 14)

This statement reveals a hierarchy of priorities in which moral concern is acknowledged but subordinated to livelihood security. For drivers whose income is unstable and calculated daily, environmental values alone were insufficient to justify financial risk. Instead, environmental concern functioned as a secondary layer of meaning, strengthening the moral legitimacy of EV adoption when economic conditions were favourable, but rarely overriding cost-related uncertainties.

In this sense, environmental awareness operated as a supportive narrative rather than a primary driver. It enabled drivers to frame EV adoption as socially responsible and ethically appropriate, yet the ultimate decision remained grounded in pragmatic financial calculations. The findings therefore suggest that among ride-hailing motorbike drivers, environmental concern enhances symbolic alignment with sustainability goals but does not independently trigger behavioural commitment in the absence of economic assurance.

### ***Social Influence and Platform Dynamics***

Adoption intention was not formed in isolation but was socially mediated through peer networks, passenger feedback, and platform-level dynamics. Ride-hailing motorbike drivers operate within dense social environments where information circulates informally through conversations at rest stops, online driver groups, and daily interactions on the street. Observing peers who had already switched to electric motorbikes provided tangible and relatable evidence that the transition was possible. Rather than relying on official advertisements or technical specifications, drivers placed greater trust in the lived experiences of fellow drivers who faced similar working conditions.

As one participant noted:

“When I see other drivers using EVs and saying it’s good, I feel more confident about switching.” (Participant 10)

This statement illustrates how peer adoption functions as social proof. Seeing colleagues successfully operate electric motorbikes reduces perceived uncertainty and transforms abstract possibilities into observable realities. The experiences of early adopters become reference points that shape collective perceptions of feasibility, reliability, and cost-effectiveness.

Passenger reactions also played a symbolic role in reinforcing drivers’ attitudes:

“Passengers sometimes compliment electric cars. That makes me feel it’s a good choice.” (Participant 6)

Although income remains central, positive passenger feedback enhances drivers’ sense of professionalism and service quality. Customer compliments provide emotional validation and reinforce the perception that EV use aligns with modern and responsible service provision.

More significantly, ride-hailing platforms were perceived as powerful institutional actors capable of directly influencing adoption patterns:

“If the company gives priority trips or bonuses for EV drivers, many people will switch immediately.” (Participant 2)

Here, adoption is framed as structurally responsive to incentive design. Because drivers depend heavily on platform algorithms for trip allocation and bonuses, institutional signals can rapidly shift cost-benefit calculations. Platform incentives reduce perceived financial risk and legitimise EV adoption as an economically rational choice.

Taken together, these narratives demonstrate that EV adoption intention is embedded within a broader ecosystem of social influence and institutional structures. Peer validation, passenger approval, and platform incentives collectively reduce uncertainty and transform EV adoption from an individual economic gamble into a socially supported and strategically viable practice.

### ***Resistance to Change and Perceived Risk***

Despite acknowledging the potential benefits of electric motorbikes, many ride-hailing drivers expressed hesitation rooted in habit, familiarity, and perceived uncertainty. Years of operating gasoline-powered motorbikes had cultivated a strong sense of technical confidence and a sense of routine predictability. Drivers were accustomed to the mechanics of refuelling, maintenance practices, and troubleshooting minor mechanical issues. This accumulated experiential knowledge generated a sense of control over their work tools, which in turn supported their income stability.

One driver admitted:

“I have driven gasoline motorbikes for years. I know how everything works. Changing to EV feels unfamiliar.” (Participant 11)

This statement reflects more than simple preference. It highlights the psychological comfort derived from mastery and routine. Switching to an electric motorbike was perceived as entering an unknown technological territory where existing skills might not fully apply. The unfamiliarity itself posed a risk.

Battery durability and charging infrastructure were repeatedly mentioned as concrete concerns:

“What if the battery degrades quickly? Replacing it would be very expensive.” (Participant 8)

Here, technological uncertainty is translated into financial vulnerability. Unlike gasoline engines, which drivers perceive as repairable and predictable, battery systems were seen as opaque and potentially costly. The fear of high replacement costs amplified perceptions of long-term financial exposure.

Range anxiety further intensified this sense of vulnerability:

“I’m afraid of running out of battery in the middle of a trip.” (Participant 1)

For motorbike drivers whose income depends on continuous mobility, the possibility of battery depletion during peak hours threatens both immediate earnings and customer ratings. In a highly competitive urban market, even short disruptions can have cumulative economic consequences.

These narratives suggest that resistance to change is not merely conservatism but rather a rational risk-management

strategy. Familiar gasoline motorbikes represent stability, while electric motorbikes introduce perceived technical and financial uncertainties. In a livelihood-dependent occupation, uncertainty is directly equated with potential disruption to income. As a result, hesitation toward EV adoption reflects drivers' efforts to protect economic security rather than a rejection of innovation itself.

### ***Integrative Discussion***

Taken together, the findings suggest that EV adoption intention among ride-hailing motorbike drivers is constructed through a dynamic negotiation between opportunity and risk. Economic rationality forms the core evaluative framework, while environmental concern provides moral reinforcement. Social influence and institutional support shape perceived feasibility, and resistance to change reflects anxieties related to income disruption and technological uncertainty.

From a theoretical perspective, these findings partially align with the Theory of Planned Behaviour. Attitudes, subjective norms, and perceived behavioural control are all visible in the data. However, unlike conventional TPB applications that treat these constructs as relatively stable predictors, this study shows that they are fluid and contextually embedded. Attitudes are continuously recalibrated through daily income calculations. Subjective norms emerge through peer observation and platform incentives rather than abstract social pressure. Perceived behavioural control is closely tied to charging infrastructure and financial predictability.

Compared with the Technology Acceptance Model, perceived usefulness appears more influential than perceived ease of use. Drivers focus primarily on cost savings and income stability rather than operational simplicity. This suggests that in livelihood-dependent occupations, economic survival may outweigh usability considerations.

Furthermore, the findings resonate with perspectives on livelihoods and risk management. Adoption decisions are embedded in survival-oriented logic, where minimising uncertainty is paramount. EV adoption becomes viable only when economic assurance, social validation, and infrastructural reliability collectively reduce perceived vulnerability to livelihoods.

These insights imply that promoting EV adoption in the ride-hailing sector requires more than technological readiness. Effective strategies must address income security, reduce financial risk, and build institutional trust to normalise EV use within driver communities.

## **Conclusions and implications**

### ***Conclusions***

This study sought to understand how ride-hailing motorbike drivers in Ho Chi Minh City form their intention to adopt electric vehicles within the realities of platform-based urban work. Drawing on in-depth qualitative interviews, the findings demonstrate that adoption intention is not a fixed psychological state nor the outcome of a single determinant. Rather, it develops through an ongoing negotiation between perceived opportunities and structural and economic constraints.

At the core of this process lies livelihood-oriented economic rationality. Drivers evaluate EV adoption primarily through its implications for daily income continuity, operational efficiency, upfront investment burden, and long-term cost predictability. Electric motorbikes are assessed as economic assets whose value depends on their ability to secure or enhance earnings. While environmental awareness strengthens the moral appeal of EV adoption, it does not independently drive behavioural commitment. Sustainability becomes persuasive only when aligned with financial stability.

At the same time, several significant barriers constrain adoption intention. High initial purchase costs, uncertainty regarding battery durability, limited charging infrastructure, and concerns about time lost during charging contribute to perceived livelihood vulnerability. Technological unfamiliarity and the absence of guaranteed institutional support further amplify risk sensitivity. These barriers transform EV adoption from a simple technological upgrade into a high-stakes economic decision.

Social ecosystems play a dual role. Peer validation, passenger feedback, and platform incentives can legitimise and normalise EV usage, thereby reducing uncertainty. However, without structural support mechanisms, individual willingness remains fragile.

Overall, EV adoption intention among ride-hailing drivers is framed within a pragmatic survival framework, in which both enabling factors and perceived barriers coexist. Recognising this interplay between opportunity and constraint is essential for

designing policies and business strategies that lower economic risks, strengthen institutional trust, and create stable conditions for sustainable mobility transitions within platform-based urban transport systems.

### **Managerial Implications**

Based on the findings, several managerial and policy implications can be proposed to effectively foster EV adoption in the ride-hailing sector.

#### (1) Emphasise Economic Certainty Rather than Environmental Messaging

Since drivers prioritise income stability, EV promotion strategies should foreground clear and transparent cost-benefit information. EV companies and ride-hailing platforms should provide comparative calculations of fuel savings, maintenance costs, and long-term operational benefits. Financial simulations and real-case testimonials from current EV drivers may reduce uncertainty and strengthen positive attitudes.

Environmental campaigns alone are unlikely to generate substantial behavioural change unless economic advantages are clearly demonstrated.

#### (2) Design Targeted Financial Incentives and Risk-Sharing Mechanisms

High upfront costs and income interruption during charging are perceived as significant risks. Policymakers and EV firms should consider:

- Subsidised purchase or leasing programs,
- Battery warranty extensions,
- Flexible financing schemes tailored to ride-hailing drivers,
- Compensation mechanisms for charging downtime.

Risk-sharing arrangements can reduce psychological resistance and signal institutional commitment to supporting drivers' livelihood security.

#### (3) Strengthen Charging Infrastructure and Operational Convenience

Range anxiety and charging accessibility directly affect drivers' perceived feasibility of EV usage. Expanding fast-charging networks in high-demand urban areas and integrating charging stations near driver hotspots can significantly enhance perceived reliability.

Providing real-time charging station information within ride-hailing applications may also improve operational confidence.

#### (4) Leverage platform power to normalise EV adoption

Ride-hailing platforms occupy a pivotal institutional position within the ecosystem. Incentive structures such as priority ride allocation, bonus schemes, reduced commission fees, or visible "green driver" badges can accelerate normalisation.

Peer influence should also be strategically utilised. Platforms can create ambassador programs in which experienced EV drivers share authentic experiences, thereby building trust within driver communities.

#### (5) Address psychological resistance through gradual transition models

Resistance to change reflects habit, familiarity, and the management of uncertainty rather than outright rejection. Transitional models - such as short-term EV rental trials or hybrid fleet options - can allow drivers to experiment without full commitment.

Providing hands-on training, technical support, and transparent information about battery lifespan and resale value may further reduce perceived technological risk.

### **Policy implications for sustainable urban mobility**

The findings of this study indicate that promoting electric vehicle adoption among ride-hailing drivers requires policy

interventions that are economically grounded, context-sensitive, and institutionally coordinated. Because drivers construct their adoption intention primarily through livelihood-based calculations, public policies must reduce financial uncertainty while ensuring operational feasibility. Generic environmental campaigns or broad consumer-level incentives are unlikely to generate substantial behavioural change within the ride-hailing sector unless they directly address drivers' income stability and risk exposure.

First, policymakers should design targeted financial support mechanisms tailored specifically to commercial ride-hailing drivers rather than applying uniform subsidies for private consumers. Preferential loan programs, flexible leasing arrangements, partial credit guarantees, and tax reductions for commercial electric vehicle use can significantly lower entry barriers. Since drivers perceive electric vehicle adoption as a high-stakes investment decision, risk-sharing schemes between government agencies, financial institutions, and electric vehicle manufacturers can enhance confidence and reduce hesitation.

Second, infrastructure development must be strategically aligned with drivers' operational realities. The expansion of fast-charging networks in high-demand urban districts, transportation hubs, and driver-congregation points is critical to minimising downtime. For drivers whose income depends on continuous mobility, charging accessibility directly influences perceived feasibility. Infrastructure planning should therefore incorporate ride-hailing traffic data to ensure efficient placement of charging stations. Public and private partnerships can accelerate infrastructure deployment while maintaining long-term sustainability.

Third, institutional collaboration between urban transport authorities and ride-hailing platforms should be strengthened. Platforms play a central role in shaping driver behaviour and can accelerate the diffusion of electric vehicles. Coordinated initiatives such as incentive alignment, preferential dispatch systems for electric-vehicle drivers, and integrated information systems that show charging availability can transform electric-vehicle adoption from an individual risk into a structurally supported transition. Such collaboration also allows policymakers to leverage digital platforms as instruments of sustainable mobility governance.

Fourth, a gradual transition roadmap is preferable to abrupt regulatory mandates. Phased targets for fleet electrification, pilot programs, and voluntary participation schemes can mitigate resistance to change and allow drivers to adapt incrementally. Sudden enforcement measures may intensify perceived economic vulnerability and undermine trust. A structured yet flexible transition pathway can balance environmental ambition with socioeconomic stability.

Fifth, policymakers should enhance regulatory transparency and information reliability to address perceived technological risks. Standardised guidelines on battery warranties, safety certifications, and performance benchmarks can reduce ambiguity in drivers' decision-making. Public dissemination of verified data on electric vehicle durability and operating costs may further build institutional trust and counter misinformation.

Finally, electric vehicle promotion should be embedded within a broader sustainable urban mobility framework. In rapidly urbanising contexts such as Ho Chi Minh City and Vietnam, the electrification of ride-hailing fleets should be integrated with emission-reduction strategies, smart-city planning, and multimodal transportation development. Aligning electric vehicle adoption with long-term urban sustainability objectives ensures policy coherence and maximises environmental impact.

Overall, the transition to electric mobility in the ride-hailing sector requires a systemic, coordinated policy approach that simultaneously reduces financial risk, enhances infrastructure reliability, and builds institutional trust. Policies that acknowledge drivers' economic realities while advancing environmental goals are more likely to achieve durable and scalable outcomes in sustainable urban transportation.

### **Limitations of this study**

This study has several limitations. First, the qualitative design and purposive sample of ride-hailing motorbike drivers in Ho Chi Minh City limit the generalizability of the findings beyond this specific context. While the approach provides in-depth insights, future quantitative studies with larger samples could enhance external validity. Second, the study focuses exclusively on motorbike drivers, which restricts comparisons with other platform-based transport segments such as car drivers or delivery workers. Third, the findings are based on self-reported intentions rather than actual adoption behaviour, and intentions may change over time in response to economic or policy shifts. Longitudinal and comparative research would therefore be valuable to further examine the evolving dynamics of EV adoption in urban mobility contexts.

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