THE IMPACT OF SMART MOBILITY ECOSYSTEM ON THAI CONSUMERS' PURCHASE INTENTION FOR NEW ENERGY VEHICLES: THE MEDIATING ROLE OF PERCEIVED SMART TECHNOLOGY BENEFITS AND THE MODERATING EFFECT OF LIFESTYLE COMPATIBILITY

Teng Huang [1*]
Shun-Chieh Chang [2]
Praphaphan Wunsuk [3]
Fanli Ying [4]
Sarawut Ramjan [5]

[1] Master Candidate in Business Administration, North Chiang Mai University
[2] Lecturer, North Chiang Mai University
[3] Lecturer, North Chiang Mai University
[4] Lecturer, North Chiang Mai University
[5] Lecturer, North Chiang Mai University
[*] **Corresponding Author, E-mail:** 1037946198@qq.com

Abstract: This study investigates the influence of the Smart Mobility Ecosystem (SME) on Thai consumers' purchase intention toward New Energy Vehicles (NEVs), introducing Perceived Smart Technology Benefits (PSTB) as a mediating factor and Lifestyle Compatibility (LC) as a moderator. A structured questionnaire collected data from 488 respondents across Thailand, and structural equation modeling (SEM) was applied to examine the proposed model. Results show that SME significantly enhances purchase intention, both directly and indirectly via PSTB. Furthermore, LC significantly moderates the PSTB–purchase intention relationship, with higher compatibility leading to stronger intention. The findings underscore the importance of ecosystem integration, perceived value, and user lifestyle alignment in shaping NEV adoption. This research enriches consumer behavior theory by integrating ecosystem cognition and personal lifestyle dimensions, offering practical recommendations for policymakers and businesses to accelerate NEV market penetration through intelligent infrastructure development and lifestyle-aligned technology communication.

Keywords: Smart Mobility Ecosystem, Purchase Intent Perceived Intelligent, Technology Benefits Lifestyle Compatibility

Introduction

In recent years, the accelerating global push toward sustainability has catalyzed the emergence of New Energy Vehicles (NEVs) as a viable solution for reducing carbon emissions and transitioning to cleaner forms of mobility. Supported by advances in smart technologies and pro-environmental policies, NEVs have garnered substantial attention from governments, enterprises, and consumers alike (Zhao et al., 2024). However, despite their technological and ecological promise, NEVs face one crucial bottleneck: consumer acceptance. The diffusion of NEVs largely hinges on how individuals perceive, interact with, and ultimately adopt these vehicles in daily life (Durmus Senyapar et al., 2023; Arora & Singh, 2024).

The existing body of literature on consumer technology adoption has often leaned on classical behavioral models such as the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Planned Behavior (TPB) (Ajzen, 1991), and their various extensions including the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) (Venkatesh et al., 2012) and the Diffusion of Innovation Theory (DOI) (Rogers, 2003). These models have been foundational in explaining user attitudes, subjective norms, and behavioral intentions toward emerging technologies, including electric vehicles (Kim et al., 2021; Chava et al., 2023). Nonetheless, as NEVs evolve beyond mere technological artifacts into intelligent mobility platforms, a more ecosystemic and user-centric framework becomes necessary.

This study introduces the Smart Mobility Ecosystem (SME) as a conceptual entry point to understand consumer purchase intention toward New Energy Vehicles (NEVs). The SME framework goes beyond the product-centric view of vehicles and incorporates a system-level perspective, which is increasingly necessary in the age of intelligent transportation. SME encompasses not only technological components—such as AI-assisted driving, Internet of Things (IoT) integration, and vehicle-to-everything (V2X) communication—but also institutional and social dimensions, including policy systems, public-private service platforms, and user experience layers (Rodríguez-Rad & Revilla-Camacho, 2023). It represents an integrative structure where physical infrastructure, digital innovation, and behavioral factors interact to shape how consumers perceive, interact with, and ultimately decide to adopt NEVs.

Importantly, SME captures the ecosystemic logic of smart mobility, in which vehicles are no longer standalone objects but are embedded in connected, intelligent, and user-responsive networks. As Nikitas et al. (2020) argue, this convergence transforms vehicles from mere transportation tools into intelligent lifestyle enablers, capable of delivering seamless travel experiences, real-time environmental feedback, and integration with smart city systems. Thus, SME serves as a foundational construct in explaining the evolving dynamics of mobility behavior in the digital era.Yet, studies focusing on SME remain fragmented. Much of the research has explored individual smart technologies (e.g., navigation systems, smart parking) in isolation rather than examining the holistic perception of a smart mobility

ecosystem (D'Acunto, 2024). This narrow scope overlooks the synergistic value that consumers may derive from a seamlessly integrated ecosystem. Moreover, the evolving expectations of users—particularly the demand for convenience, personalization, and alignment with lifestyle values—necessitate a broader analytical lens (Lee & Chen, 2020).

To fill this gap, this study proposes a comprehensive theoretical model that integrates three interrelated constructs: (1) Perceived Smart Technology Benefits (PSTB), (2) Lifestyle Compatibility (LC), and (3) Purchase Intention (PI). This model aims to explain how consumers form behavioral intentions toward adopting New Energy Vehicles (NEVs) within the broader context of smart mobility.

PSTB refers to consumers' subjective evaluation of the usefulness, convenience, and innovation value provided by smart features embedded in NEVs—such as autonomous driving, intelligent dashboards, AI-powered route optimization, and energy consumption feedback systems. These perceived benefits act as cognitive and emotional drivers of user trust, satisfaction, and ultimately, acceptance of emerging technologies (Wu et al., 2021; Gündoğan et al., 2024). Research by Rahman and Thill (2024) further underscores the importance of these perceptions, showing that eco-efficiency, real-time data transparency, and automated system intelligence can significantly enhance user motivation to adopt NEVs, especially in urban smart cities.

By situating PSTB within a lifestyle-aligned decision-making context, the model allows for a nuanced exploration of how technological value is filtered through personal compatibility and identity-based criteria, providing a more complete picture of NEV adoption behavior in digitally evolving societies.LC, on the other hand, serves as a moderating variable that reflects the degree to which smart mobility aligns with users' habits, values, and daily routines (Mani & Chouk, 2019; Belanche et al., 2020). Previous studies have demonstrated that compatibility with lifestyle not only reduces cognitive dissonance but also enhances the motivational pathway between perceived technology value and actual behavioral intention (Othman et al., 2024). For example, when NEVs are seen as congruent with eco-conscious lifestyles or digitally integrated routines, consumers are more inclined to adopt them (Song & Zhang, 2020).

This study is particularly relevant to the Thai context, where the government has launched a series of aggressive initiatives to accelerate the adoption of New Energy Vehicles (NEVs). These measures include tax reductions, import duty exemptions, and financial subsidies for the development of nationwide charging infrastructure (Paudel et al., 2023; Preedakorn et al., 2023). While these macro-level policy incentives demonstrate strong institutional support, actual consumer adoption rates remain inconsistent and uneven across different regions and demographics. This disparity suggests that structural incentives alone are insufficient to drive large-scale behavioral change. To be truly effective, policy efforts must be accompanied by a deeper understanding of micro-level psychological variables, such as consumer trust, perceived value, and lifestyle alignment. By incorporating these behavioral insights, policymakers and industry stakeholders can design more targeted strategies that resonate with

user expectations and decision-making processes, ultimately fostering a more sustainable and consumer-centric path to NEV adoption in Thailand.

To examine these dynamics, the research adopts a quantitative survey method using Structural Equation Modeling (SEM) to test a moderated mediation model. Specifically, the model hypothesizes that:

SME positively influences purchase intention (H1),PSTB mediates this relationship (H2),LC moderates the strength of PSTB's impact on purchase intention (H3, H4),and that the indirect path from SME to PI via PSTB is also moderated by LC (H5).

This theoretical model represents a shift from isolated technological analysis to a systems-based approach, emphasizing perception–value–lifestyle alignment as the central mechanism of NEV adoption. The introduction of ecosystem-level variables and lifestyle moderation responds to the increasing complexity of consumer behavior in smart environments and provides actionable insights for both policy and industry stakeholders.

In summary, this study aims to make a meaningful contribution to the interdisciplinary discourse on New Energy Vehicle (NEV) adoption by developing a robust and integrative theoretical framework that links multiple dimensions of consumer behavior. Specifically, it connects ecosystem perception—how consumers view the broader smart mobility infrastructure—with perceived smart technology value, lifestyle congruence, and purchase intention. This multi-layered approach allows for a deeper understanding of not only what drives NEV adoption but also how and under what personal or contextual conditions adoption occurs. By doing so, the study enriches the behavioral science literature on technology acceptance and provides a nuanced perspective that bridges psychological constructs and systemic factors. Furthermore, it presents a grounded empirical strategy that can inform practical decision-making in fields such as strategic marketing, intelligent infrastructure planning, and consumer segmentation, offering actionable insights for governments, manufacturers, and service providers working toward smarter, more sustainable urban mobility solutions.

Research Objective (s)

This study aims to systematically examine how the Smart Mobility Ecosystem (SME) influences Thai consumers' purchase intention (PI) toward New Energy Vehicles (NEVs), with a specific focus on the mediating role of Perceived Smart Technology Benefits (PSTB) and the moderating effect of Lifestyle Compatibility (LC). Drawing upon an integrated framework based on the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), and Diffusion of Innovations Theory (DOI), this research seeks to construct a theoretical model that reflects the technological adoption behavior of consumers in emerging markets.

The specific objectives of this study are outlined as follows:

To examine the direct impact of the Smart Mobility Ecosystem (SME) on Thai consumers'

purchase intention (PI) of NEVs

This objective explores whether the technological features encompassed in SME—such as AI-assisted driving, IoT connectivity, V2G energy management, and shared mobility solutions—can significantly increase consumer interest and acceptance of NEVs, thereby strengthening their intention to purchase.

To analyze the mediating role of Perceived Smart Technology Benefits (PSTB) in the relationship between SME and PI

This objective investigates whether consumers' perception of smart functionalities—such as enhanced convenience, cost savings, and improved driving experience—serves as a key factor in translating technological awareness into behavioral intention, thus positioning PSTB as a bridge between technology perception and consumer action.

To assess the moderating effect of Lifestyle Compatibility (LC) on the relationship between PSTB and PI

This part of the study examines whether lifestyle factors—such as urban versus rural residency, digital literacy, and frequency of mobility—affect the strength of the relationship between PSTB and PI. The aim is to identify behavioral differences among distinct consumer groups in their willingness to adopt NEVs.

To identify key demographic and behavioral characteristics influencing NEV adoption among Thai consumers

Through empirical data analysis, this objective seeks to understand the roles of age, gender, income level, occupation, and technological proficiency in shaping purchase intention, thereby enabling the development of accurate consumer segmentation profiles.

To propose policy recommendations and market strategies for accelerating NEV adoption in Thailand

Based on the empirical findings, this objective offers data-driven insights to assist government agencies in designing targeted incentive policies, infrastructure planning, and public education programs. It also provides strategic guidance to NEV manufacturers and smart mobility service providers for market segmentation and product innovation.

By addressing these objectives, the study aspires not only to offer theoretical and practical contributions to the promotion of NEVs in Southeast Asia, but also to provide strong empirical evidence for understanding how smart mobility technologies influence consumer behavior. This research fills a significant gap in the existing literature regarding localized studies of the Thai NEV market.

Literature Review

1. Consumer Behavior Toward New Energy Vehicles (NEVs)

The global transition toward green mobility has accelerated the development of New Energy Vehicles (NEVs), with a focus not only on technological innovation but also on consumer acceptance. Scholars increasingly recognize that consumer purchase behavior toward NEVs is shaped by cognitive, emotional, and contextual factors (Zhao et al., 2024). Traditional models such as the Technology Acceptance Model (TAM) (Davis, 1989), the Theory of Planned Behavior (TPB) (Ajzen, 1991), and their derivatives (e.g., UTAUT2, DOI) have provided a foundational framework for explaining technology adoption. However, these models often fall short of capturing the ecosystemic complexity of NEVs, which now include smart features and infrastructure integration (Kim et al., 2021; Chava et al., 2023).

Recent studies on NEV adoption have increasingly integrated additional psychological variables—including perceived usefulness, perceived risk, and technology-related trust—to build a more comprehensive understanding of consumer decision-making processes (Ahmad et al., 2024). These variables go beyond traditional rational-choice models and recognize that adoption behavior is shaped by emotional responses, value alignment, and perceived compatibility with one's beliefs and lifestyle. As Rahman and Thill (2024) argue, the decision to adopt NEVs is not solely based on performance metrics or cost-benefit analysis; rather, it often reflects deeper personal expectations surrounding innovation, environmental responsibility, and digital integration. In this context, users evaluate smart technologies embedded in NEVs—such as autonomous features or eco-efficiency systems—not just in terms of functionality, but in terms of their symbolic meaning and identity relevance. As a result, the literature is evolving toward a more nuanced, user-centered framework that appreciates the complex interplay between cognitive evaluation and personal values in shaping technology adoption.

2. The Smart Mobility Ecosystem (SME)

The concept of a Smart Mobility Ecosystem (SME) has recently gained traction in both theoretical and practical domains. An SME consists of interconnected platforms, infrastructure, and services designed to enhance mobility through intelligent systems (Nikitas et al., 2020). This includes digital vehicle platforms, smart charging networks, real-time navigation, and government-led data interoperability. As such, SMEs redefine the consumer experience from a product-centric to a service-oriented model (Rodríguez-Rad & Revilla-Camacho, 2023).

Scholars widely contend that consumer perceptions of the Smart Mobility Ecosystem (SME) play a pivotal role in shaping both trust in emerging technologies and the intention to adopt New Energy Vehicles (NEVs) (Lee & Chen, 2020). These perceptions are formed not only by the visibility of smart technologies but also by the perceived maturity and reliability of infrastructure, such as the availability of fast-charging stations, integrated traffic management systems, and seamless mobility platforms. When consumers perceive these systems as robust and dependable, their confidence in adopting NEVs increases significantly (Paudel et al., 2023; Preedakorn et al., 2023). Furthermore,

SME represents a multidimensional ecosystem that fuses environmental sustainability, digital convenience, and urban development strategies, creating a highly contextual environment that frames consumer mobility choices. As Abduljabbar et al. (2021) and Luke et al. (2023) emphasize, this ecosystemic approach is critical for understanding how urban smart infrastructure can accelerate behavioral shifts toward green and intelligent transportation solutions.

3. Perceived Smart Technology Benefits (PSTB)

One of the most important mediators between SME and consumer behavior is Perceived Smart Technology Benefits (PSTB). This construct reflects users' subjective evaluation of the utility, convenience, and innovation of smart features in NEVs, such as AI-assisted driving, smart dashboards, and energy feedback systems (Wu et al., 2021; Gündoğan et al., 2024). Research shows that when consumers perceive these technologies as trustworthy and valuable, they are more likely to exhibit positive attitudes toward adoption (Nasr et al., 2024).

Perceived Smart Technology Benefits (PSTB) also act as a critical psychological conduit, bridging the gap between ecosystem-level technological features—such as advanced charging infrastructure, real-time data integration, and mobility-as-a-service platforms—and individual consumer motivation to adopt NEVs. Rather than assuming a direct behavioral shift in response to infrastructure upgrades, PSTB highlights how user perceptions of utility, innovation, and relevance mediate this transformation. As Rahman and Thill (2024) emphasize, overcoming adoption inertia in smart city contexts depends largely on how users cognitively and emotionally interpret the value of smart technologies. When consumers perceive these innovations as enhancing efficiency, ensuring safety, and promoting environmental sustainability, their willingness to transition to NEVs increases substantially (Kim et al., 2021; Bhosale et al., 2024). Thus, PSTB encapsulates the value-in-use logic in technology acceptance, offering a more nuanced view of how perceived benefits influence not only trust and attitude but also concrete purchase intentions in the smart mobility era.

4. Lifestyle Compatibility (LC)

Lifestyle Compatibility (LC) refers to how well a technology aligns with an individual’s daily routines, values, and self-identity (Mani & Chouk, 2019; Song & Zhang, 2020). LC has been shown to moderate the influence of technological benefits on consumer decisions. In the context of NEVs, when the smart features and ecological values of a vehicle match the user's lifestyle—for example, digital fluency, environmentalism, or commuting patterns—the likelihood of adoption increases substantially (Belanche et al., 2020; Hao, 2023).

Scholars have increasingly emphasized that Lifestyle Compatibility (LC) influences not only behavioral intention but also the emotional connection and long-term brand loyalty that consumers form toward a product or service. LC captures the extent to which a new technology aligns with an individual's daily routines, personal values, and social identity. When consumers perceive a high degree of fit, they are more likely to view the product as a natural extension of their lifestyle rather

than a disruptive novelty. As Andreou et al. (2022) suggest, lifestyle alignment serves as a cognitive and emotional "filter", shaping how consumers evaluate, internalize, and respond to technological innovations. Therefore, even the most advanced Smart Mobility Ecosystem (SME) may fall short if it fails to resonate with users' lived experiences and habits. To truly drive adoption, the SME must be not only technologically competent but also contextually meaningful and personally relevant (Widarmanti et al., 2024).

5. Moderated Mediation Frameworks in Technology Adoption

Recent research trends emphasize moderated mediation models as effective tools for capturing the nuanced pathways of consumer technology adoption (Ramos de Luna et al., 2024). This approach allows researchers to account for both mediating mechanisms (e.g., PSTB) and moderating variables (e.g., LC) within a single analytical framework. For example, the indirect effect of SME on purchase intention through PSTB may be significantly stronger among users whose lifestyles are highly compatible with smart mobility features (Rodríguez-Rad & Revilla-Camacho, 2023; Lee, 2023).

The moderated mediation perspective offers a sophisticated analytical framework that reflects the multi-layered complexity of human decision-making in modern digital ecosystems. It has emerged as a gold standard in recent behavioral technology research due to its ability to unravel not only the existence of relationships between variables but also the mechanisms and conditions under which those relationships occur (Lettieri & Pluchino, 2024; Lopes et al., 2024). Unlike traditional linear models that merely assess direct effects, this approach captures the "how" (mediation)—through what processes or psychological constructs behaviors are formed—and the "for whom" (moderation)—under which user characteristics or contextual factors these effects are strengthened or weakened. In the context of NEV adoption, it allows researchers to pinpoint not only that perceived smart benefits influence purchase intention, but also why this happens and which groups of users (e.g., lifestyle-driven individuals) are most responsive. This enables more targeted, theory-driven strategies for smart mobility planning and marketing.

6. The Thai Context in NEV Adoption

Thailand presents a particularly relevant case for this research. The Thai government has introduced policies and subsidies to promote NEV adoption, including reduced excise taxes and investments in smart charging infrastructure (Ahmad et al., 2024; Suvittawat, 2024). Despite these efforts, consumer uptake remains moderate, indicating that beyond structural improvements, consumer-side psychological and lifestyle variables must be addressed (Piriyapada & Wasawong, 2024).

Several studies highlight that Thai consumers are increasingly environmentally conscious and tech-savvy, particularly in urban areas like Bangkok and Chiang Mai. However, perceptions of infrastructure immaturity and lack of lifestyle alignment still hinder broader adoption (Paiva et al., 2021). This context reinforces the need to integrate SME, PSTB, and LC into a single moderated

mediation framework tailored to the Thai market.

In summary, the existing literature makes it increasingly clear that successful adoption of New Energy Vehicles (NEVs) hinges on more than just technological innovation or policy-driven incentives. While these are important catalysts, they are not sufficient in isolation. What is truly required is a comprehensive and integrated understanding of how consumers perceive the Smart Mobility Ecosystem (SME), how they evaluate the benefits of embedded smart technologies (PSTB), and how these perceptions align with their personal lifestyles and daily routines (LC). A moderated mediation model that unites these three constructs provides a robust and nuanced framework for capturing the complex behavioral dynamics at play in smart mobility environments. This model allows scholars and practitioners to move beyond simplistic cause-effect assumptions and explore deeper psychological mechanisms. It not only enriches theoretical discourse in behavioral and mobility sciences but also delivers practical guidance for businesses and policymakers aiming to drive NEV diffusion in Thailand and comparable emerging markets.

Methodology

To examine the intricate relationships among the Smart Mobility Ecosystem (SME), Perceived Smart Technology Benefits (PSTB), Lifestyle Compatibility (LC), and Purchase Intention (PI) in the context of New Energy Vehicles (NEVs), this study employed a quantitative empirical research design grounded in structural equation modeling (SEM). This approach enables simultaneous testing of complex relationships, offering robust insights into mediating and moderating effects (Lopes et al., 2024).

SEM was chosen due to its suitability for validating multi-dimensional theoretical frameworks, especially in behavioral studies involving latent constructs (Ramos de Luna et al., 2024). The methodology integrates both theory-driven scale development and data-driven statistical testing to ensure internal consistency, reliability, and construct validity.

The study follows a cross-sectional design using a structured questionnaire as the primary data collection tool. The theoretical model proposes SME as the exogenous variable, PSTB as a mediator, LC as a moderator, and PI as the outcome variable.

Each construct was operationalized using established measurement scales, adapted to the NEV context in Thailand through pretesting and semantic localization. All items used a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree), which is widely accepted in consumer behavior studies (Wu et al., 2021; Kim et al., 2021).

The SME scale draws on Wu et al. (2021), focusing on user perception of the intelligence and integration of transportation systems. Additional items were sourced from Ikram and Yeğin (2022) and Rodríguez-Rad and Revilla-Camacho (2023), emphasizing infrastructure readiness, system trust, and policy support. The adaptation process included pre-survey semantic checks to ensure cultural

appropriateness for Thai respondents.

The PSTB scale was developed based on the conceptual framework by Wu et al. (2021), and later expanded by Gündoğan et al. (2024) and Rahman and Thill (2024), to include perceptions of autonomy, control, safety, and environmental value.

These items reflect multidimensional aspects of technology benefits—functional, environmental, and experiential—which are known to influence consumer behavior in intelligent product domains (Nasr et al., 2024).

LC was measured using a scale adapted from Mani and Chouk (2019) and validated in mobility contexts by Song and Zhang (2020). It reflects how well NEVs and their associated technologies align with personal habits, values, and technology usage patterns.

LC also acts as a moderator, hypothesized to amplify the influence of PSTB on PI. This moderation logic aligns with literature asserting that technology adoption is stronger when aligned with users' life rhythms (Andreou et al., 2022).

The PI scale was adapted from Adnan (2024) and Wu et al. (2021), measuring users' behavioral tendencies and motivational interest in acquiring NEVs. The scale captures both intent to buy and willingness to recommend NEVs to others.

This study employed cluster sampling, a probability-based method that segments the population into groups (cities in Thailand), from which representative clusters were selected. Clusters included urban centers such as Bangkok, Chiang Mai, and Pattaya to ensure demographic diversity.

According to Hair et al. (2010), a sample-to-item ratio of 10:1 to 20:1 is recommended for SEM. With 20 measurement items across four constructs, a minimum of 200–400 responses was required. This study collected data from 488 valid respondents, ensuring high statistical power and generalizability (Lettieri & Pluchino, 2024).

Stratification was applied based on:Gender,Age group,Education level,Monthly income,

Vehicle usage frequency

Such demographic representation enhances external validity and contextualizes findings within specific consumer profiles (Ahmad et al., 2024; Suvittawat, 2024).

Data were collected via a mixed-mode approach:

Online surveys using Google Forms promoted on NEV social platforms (e.g., Facebook, LINE).

Offline surveys at car exhibitions, shopping malls, and university campuses.

Pretesting was conducted with 30 participants to ensure clarity and cultural relevance. Adjustments were made to phrasing based on semantic feedback to improve response accuracy and reduce measurement error (Paiva et al., 2021).

Cronbach's alpha was calculated for all scales. Each construct exceeded the threshold of 0.70, indicating strong internal consistency (Wu et al., 2021). Composite reliability was also assessed using

confirmatory factor analysis (CFA) during SEM.

Content validity was ensured through expert consultation and literature review.

Construct validity was assessed through CFA.

Discriminant validity was evaluated using the Fornell-Larcker criterion, confirming that constructs are distinct from one another (Gündoğan et al., 2024).

The study employed SPSS for descriptive statistics, reliability testing, and t-tests, and AMOS for SEM analysis.

Key steps included:

Descriptive statistics to profile the respondents.

T-tests & ANOVA to examine demographic differences.

Correlation analysis to test bivariate relationships.

Regression analysis to examine the direct effect of SME on PI.

Mediation analysis using bootstrapping to test the indirect role of PSTB.

Moderated mediation to evaluate how LC shapes the PSTB–PI relationship.

This multi-tiered analysis framework provides both exploratory and confirmatory insights, suitable for testing complex behavioral models (Rodríguez-Rad & Revilla-Camacho, 2023; Ramos de Luna et al., 2024).

This study adopts a methodologically rigorous and contextually grounded research design to examine the behavioral dynamics behind New Energy Vehicle (NEV) adoption. By integrating well-established behavioral constructs—namely Perceived Smart Technology Benefits (PSTB), Lifestyle Compatibility (LC), and Purchase Intention (PI)—with advanced statistical modeling techniques such as Structural Equation Modeling (SEM) and moderated mediation analysis, the study provides a nuanced and multifactorial understanding of consumer decision-making. Importantly, the research is situated within Thailand's rapidly evolving smart mobility ecosystem, offering localized insights while also ensuring global relevance. This dual emphasis on analytical precision and contextual depth enables the development of a comprehensive, scalable, and empirically validated framework for both academic inquiry and real-world application. The findings hold direct implications for stakeholders in NEV marketing, public policy, and infrastructure planning, making it a valuable contribution to the interdisciplinary efforts aimed at fostering sustainable mobility transitions in emerging markets.

Results

This section presents the empirical findings derived from a structured questionnaire survey conducted with 488 valid respondents across various regions of Thailand. The study explored the interrelationships among four key constructs: Smart Mobility Ecosystem (SME) perception, Perceived Smart Technology Benefits (PSTB), Lifestyle Compatibility (LC), and Purchase Intention (PI) toward New Energy Vehicles (NEVs). These variables were selected to capture both the systemic and

individual-level drivers of adoption behavior in the context of emerging smart mobility systems. To ensure a robust and comprehensive analysis, multiple statistical techniques were employed. These included descriptive statistics to summarize demographic characteristics, independent samples t-tests and ANOVA for group comparisons, and Pearson correlation analysis to assess bivariate relationships. Furthermore, regression modeling was used to determine predictive power, while mediation and moderation analyses—conducted using SPSS PROCESS and AMOS—were applied to test complex, multi-variable causal pathways. This multifaceted approach strengthens the study's analytical depth and explanatory power.

A total of 488 valid responses were collected. In terms of gender, the sample was nearly balanced: 53.7% male and 46.3% female, indicating a representative gender distribution.

Respondents were predominantly young: 44.5% were 18–24 years old, followed by 22.7% aged 25–34. This aligns with prior findings that NEV interest is concentrated among younger populations (Suvittawat, 2024).

Regarding education, 41.2% had a high school education or lower, while 11.7% held master's degrees or above. Most participants fell into a middle-income bracket, with 64.2% earning between 15,000 and 49,999 THB monthly. Frequent vehicle use was also high, with 61.9% using private vehicles at least 3 times a week, reflecting a travel-active demographic.

Independent samples t-tests were used to evaluate gender-based differences across the four key constructs (SME, PSTB, LC, PI). Males scored slightly higher than females in all constructs except LC, where females reported marginally higher compatibility.

Among all variables, only Smart Mobility Ecosystem perception showed a statistically significant gender difference ($p = 0.026$), suggesting that men tend to perceive the SME more favorably. This partially supports prior work by Kim et al. (2021), who found male consumers more sensitive to smart infrastructure cues.

No significant differences were found for PSTB, PI, or LC ($p > .05$), indicating gender-neutral attitudes in these areas.

To explore how demographic variables affect key constructs, one-way ANOVA tests were performed:

Age significantly affected all four variables ($p < .001$). Particularly, purchase intention showed the strongest variance ($F = 1.545$), indicating that NEV enthusiasm declines with age, supporting previous work by Rodríguez-Rad and Revilla-Camacho (2023).

Education level was also a significant differentiator ($p < .001$). A positive correlation was observed between education and mean scores in all constructs. This reflects the assertion by Luke et al. (2023) that highly educated individuals demonstrate greater acceptance of sustainable mobility technologies.

Monthly income revealed significant differences ($p < .001$). Higher income groups scored

significantly higher in purchase intention and lifestyle compatibility, consistent with Paiva et al. (2021), who noted income as a driver of smart mobility readiness.

Vehicle usage frequency correlated positively with SME perception and lifestyle fit. Daily users exhibited higher alignment with NEV offerings, validating that habitual users seek integration with intelligent systems (Belanche et al., 2020).

Pearson's correlation coefficients showed strong positive correlations between the major constructs:

SME and PI: $r = .777$, $p < .001$

SME and PSTB: $r = .843$, $p < .001$

SME and LC: $r = .863$, $p < .001$

PSTB and PI: $r = .880$, $p < .001$

PSTB and LC: $r = .755$, $p < .001$

LC and PI: $r = .754$, $p < .001$

These high coefficients indicate interconnected constructs with considerable explanatory synergy. The result is consistent with Kim et al. (2021) and Gündoğan et al. (2024), who emphasize that smart infrastructure, when well-perceived, enhances both lifestyle fit and purchase behavior.

A simple linear regression tested the direct effect of SME on PI:

$R^2 = .459$, indicating that SME explains 45.9% of the variance in purchase intention.

Standardized $\beta = .677$, $p < .001$.

This high explanatory power underscores the role of ecosystem perception in predicting behavioral intentions, a finding echoed by Ahmad et al. (2024) in their work on EV infrastructure influence in Thailand.

Mediation was tested using bootstrapping ($n = 5{,}000$ samples). Results revealed that PSTB significantly mediated the relationship between SME and PI:

Indirect effect: 0.9007, 95% CI [0.801, 1.01], $p < .001$.

The direct effect of SME on PI was reduced and non-significant after controlling for PSTB, indicating full mediation. This supports Ghiuță and Nistor (2025), who emphasize the centrality of perceived technology benefits in converting ecosystem perception into concrete behavioral outcomes.

Moderation by LC was tested using PROCESS Model 14. Findings include:

LC significantly moderated the PSTB–PI relationship ($p < .05$). When LC was high, the relationship between perceived benefits and purchase intention was stronger.

Conditional indirect effect analysis showed:

High LC: $\beta = .933$, $p < .001$

Low LC: $\beta = .601$, $p = .03$

The strength of mediation via PSTB is therefore contingent upon lifestyle alignment. This confirms Belanche et al. (2020) and Widarmanti et al. (2024), who argue that technology adoption is

most effective when the offering fits the user's behavioral identity.

The results of this study strongly confirm that consumer perception of the Smart Mobility Ecosystem (SME) plays a pivotal role in shaping the intention to adopt New Energy Vehicles (NEVs). However, this influence is found to be largely indirect, operating primarily through the mediating construct of Perceived Smart Technology Benefits (PSTB). In other words, it is not merely the presence of a smart ecosystem that drives consumer behavior, but how its technological features are perceived in terms of usefulness, convenience, and value. Additionally, the study highlights Lifestyle Compatibility (LC) as a critical contextual amplifier, significantly moderating both the direct and indirect effects of SME on purchase intention. These findings align closely with contemporary behavioral research, which emphasizes the need for technology adoption models to integrate both cognitive perceptions and sociocultural alignment (Rahman & Thill, 2024; Ramos de Luna et al., 2024). Together, these insights point to a more holistic, consumer-centric understanding of NEV adoption behavior in smart mobility contexts.

Discussion

This study makes a significant contribution to advancing the understanding of consumer behavior in the context of New Energy Vehicle (NEV) adoption by introducing a system-psychology-behavior perspective. Rather than focusing solely on individual-level cognitive evaluations, as seen in traditional frameworks such as the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2012), this research expands the analytical lens to include ecosystem-level perception. It argues that consumer intention is not shaped merely by the attributes of a product—such as ease of use or perceived usefulness—but by the consumer's broader interpretation of the smart mobility environment, including infrastructure reliability, policy support, and service integration. By embedding behavioral analysis within the context of smart mobility ecosystems, this study offers a more holistic and realistic framework for understanding how external systemic factors and internal psychological drivers converge to influence NEV adoption decisions.

The inclusion of Smart Mobility Ecosystem (SME) as an independent variable reflects a macroscopic understanding of smart mobility, incorporating infrastructure, policy, data interoperability, and platform integration. As shown in recent works (Nikitas et al., 2020; Ahmad et al., 2024), consumers' judgments are often not limited to product specifications but are deeply embedded in broader systemic contexts. This aligns with research by Rodríguez-Rad and Revilla-Camacho (2023), who emphasized that smart infrastructure and ecological coordination significantly condition the behavioral response to green mobility solutions.

Furthermore, this study expands the "perception–intention" logic of technology adoption by introducing Perceived Smart Technology Benefits (PSTB) as a mediator. While past studies such as

Wu et al. (2021) and Rahman and Thill (2024) have emphasized perceived usefulness and ease of use, our findings indicate that users do not automatically equate smart infrastructure with personal benefit. Instead, subjective perception of smart features—including convenience, control, and sustainability—bridges the gap between system cognition and behavioral decision-making.

Finally, this study reinforces the critical moderating role of Lifestyle Compatibility (LC)—a variable that has traditionally been underrepresented or even overlooked in dominant technology acceptance models. By showing that LC significantly influences the strength and direction of the relationship between Perceived Smart Technology Benefits (PSTB) and Purchase Intention (PI), the research highlights how personal lifestyle alignment acts as a contextual filter through which technological value is either amplified or diminished. This finding resonates with prior studies by Song and Zhang (2020) and Belanche et al. (2020), which emphasize that the success of technology adoption hinges not only on functionality or innovation but also on whether it fits into users' routines, values, and identity frameworks. Particularly in emotionally and socially embedded product categories like NEVs, where adoption decisions are intertwined with self-image, environmental values, and social norms, LC emerges as a decisive factor that can either accelerate or inhibit behavioral intention.

From a practical standpoint, the findings offer several strategic insights for governments, enterprises, and urban planners aiming to promote NEV adoption in smart mobility contexts.

The strong influence of SME perception suggests that investments in digital infrastructure, smart roads, V2X technology, and public telematics systems will yield not only technological dividends but also increased consumer confidence. Prior work by Paiva et al. (2021) and Suvittawat (2024) shows that public perceptions of technological maturity can significantly affect market uptake. Therefore, governments should focus not only on financial subsidies but also on creating intelligent, interconnected, and intuitive ecosystems that enhance public perception of readiness.

Moreover, inter-agency data integration and unified platforms that facilitate real-time navigation, charging availability, and vehicle monitoring can enhance ecosystem efficiency and perceived value, as suggested by Gündoğan et al. (2024).

For enterprises, the mediation effect of Perceived Smart Technology Benefits (PSTB) underscores the vital role of value-driven communication strategies in influencing consumer behavior. Rather than relying solely on technical specifications or engineering jargon, companies should focus on demonstrating how smart features tangibly improve users' lives—from enhanced safety through advanced driver-assistance systems to increased efficiency via energy optimization, and meaningful contributions to environmental sustainability. These practical benefits are more likely to resonate with consumers when communicated through emotionally engaging formats, such as interactive demonstration centers, immersive virtual simulations, or storytelling campaigns featuring real users. As Nasr et al. (2024) point out, such experiential and narrative-based communication fosters deeper psychological engagement, builds trust, and strengthens perceived value. By shifting the narrative

from technology-as-function to technology-as-experience, enterprises can more effectively convert awareness into adoption, particularly in a market as complex and emotionally nuanced as that of New Energy Vehicles (NEVs).

In line with Adnan (2024), marketers should also shift focus from showcasing technological sophistication to demonstrating lifestyle enhancement, such as seamless integration with smart home systems, energy savings, or environmental contributions.

The significant moderating role of LC suggests that user lifestyle profiling is essential. AI-driven analytics and user segmentation models can identify consumers who prioritize digital convenience, eco-consciousness, or performance orientation. For example, younger urban consumers might be more attracted to digital dashboards and autonomous parking, while middle-aged users may prefer enhanced safety and reliability.

Andreou et al. (2022) argue that integrating lifestyle clusters into marketing strategy can yield higher adoption and retention rates. Thus, adaptive marketing—where communication and product offerings are tailored to lifestyle archetypes—can serve as a competitive differentiator.

Although this study was conducted in Thailand, the findings have global applicability. Thailand, like many emerging economies, is undergoing rapid digitalization in mobility but faces challenges in public perception, ecosystem fragmentation, and behavioral inertia (Ahmad et al., 2024; Piriyapada & Wasawong, 2024).

Compared to developed nations with robust EV ecosystems, Thai consumers exhibit cautious optimism—interested but hesitant due to concerns over infrastructure maturity and alignment with daily routines. These behavioral asymmetries suggest that the same technology may yield different adoption rates depending on lifestyle-context fit.

Our moderated mediation model addresses this gap by accommodating both cognitive (system and tech benefits) and contextual (lifestyle) factors, supporting more precise comparative studies in future research.

This study contributes to several academic discourses:

Smart Mobility Adoption: By integrating SME and PSTB, it enhances understanding of how intelligent infrastructure shapes behavioral intentions, expanding on foundational models like TAM and UTAUT (Lopes et al., 2024).

Mediated and Moderated Models: The moderated mediation framework used here offers a holistic view of technology adoption, capturing not just “what affects behavior,” but also “how” and “for whom” these effects occur (Ramos de Luna et al., 2024).

Lifestyle-Technology Fit Theory: Reinforcing the role of lifestyle alignment as a behavioral enabler, the study supports theories by Belanche et al. (2020) and Widarmanti et al. (2024) that emphasize emotional and identity-based fit in adoption psychology.

Despite its contributions, this study has several limitations:

Geographic Scope: The sample was limited to Thailand. Future studies could compare cross-national samples (e.g., ASEAN vs. EU) to examine cultural and economic influences.

Behavioral Intention vs. Behavior: This study focused on intention, not actual purchase. Future longitudinal research could explore the intention-action gap.

Other Moderators: Variables such as trust in government, technological anxiety, or environmental consciousness could further moderate the adoption path and should be included in expanded models.

Mixed Methods: While quantitative rigor was maintained, qualitative insights from interviews or case studies would enrich the interpretation of lifestyle and perceptual variables.

This discussion has clearly elucidated the theoretical significance and practical value of understanding New Energy Vehicle (NEV) adoption through a comprehensive and integrated framework comprising the Smart Mobility Ecosystem (SME), Perceived Smart Technology Benefits (PSTB), and Lifestyle Compatibility (LC). The findings strongly validate that technological perception alone is not enough; instead, it must be accompanied by a contextual fit with consumers' values, behaviors, and everyday environments to effectively transition users from curiosity to actual adoption. By bridging system-level cognition (i.e., how users view the infrastructure and smart ecosystem) with individual-level alignment (i.e., how well the technology fits into their lives), this study offers a multi-dimensional roadmap for practitioners and policymakers. It provides actionable insights for intelligent mobility marketing, human-centered infrastructure development, and consumer policy formulation, ultimately contributing to more effective, inclusive, and scalable strategies for promoting NEVs in an increasingly digital and sustainable transportation era.

Conclusions

This study presents a comprehensive analysis of the behavioral mechanisms underlying the adoption of New Energy Vehicles (NEVs), focusing on the interplay between consumers' perceptions of the Smart Mobility Ecosystem (SME), Perceived Smart Technology Benefits (PSTB), and Lifestyle Compatibility (LC). Through the use of a quantitative empirical approach and Structural Equation Modeling (SEM) applied to 488 valid samples, the study tested five theoretical hypotheses, all of which were confirmed.

The results reinforce that the perception of a well-developed SME significantly influences consumers' purchase intentions. Specifically, the direct influence of SME on purchase intention is strong, explaining approximately 45.9% of the variance, consistent with previous findings on the role of infrastructure perception in technology adoption (Ahmad et al., 2024; Gündoğan et al., 2024). Smart features embedded in infrastructure—such as telematics systems, real-time vehicle monitoring, and smart charging stations—are not merely background support elements but core psychological cues that shape intention formation (Nikitas et al., 2020).

However, this relationship is not entirely linear. The study confirms that PSTB acts as a full mediator, meaning that while SME perception may not always directly result in purchase intention, it significantly influences consumers' perceived value of technology, which in turn drives behavioral intent. This "perception-value-intention" pathway aligns with recent research emphasizing the primacy of perceived usefulness and benefits over structural availability in consumer decisions (Wu et al., 2021; Nasr et al., 2024).

Moreover, Lifestyle Compatibility (LC) was shown to significantly moderate both the direct and indirect relationships. In contexts where smart mobility technologies align with individuals' values, routines, and digital habits, the influence of PSTB on purchase intention is amplified. This supports the growing recognition that behavioral technology adoption is not only a matter of product capability but also of lifestyle resonance (Belanche et al., 2020; Song & Zhang, 2020).

This study contributes significantly to the advancement of consumer behavior and technology adoption theories in several ways:

Ecosystemic Thinking: Traditional behavioral models such as the Technology Acceptance Model (TAM) (Davis, 1989) and UTAUT (Venkatesh et al., 2012) focus predominantly on individual-product interaction. By introducing the SME as a systemic, infrastructural influence, this research shifts the paradigm toward environmental-cognitive models, thereby expanding the behavioral scope (Rahman & Thill, 2024).

Moderated Mediation Framework: The combination of mediation (PSTB) and moderation (LC) offers a robust analytical structure capable of capturing not just the magnitude but the conditions under which behavioral intention is activated. This framework is increasingly popular in digital consumer behavior research for its nuanced explanatory power (Ramos de Luna et al., 2024; Lopes et al., 2024).

Contextual Relevance: Conducted within Thailand—a developing economy with emerging smart mobility infrastructure—this study fills a significant geographic and economic research gap. Most NEV adoption literature stems from developed markets; by focusing on Southeast Asia, the research enhances global diversity and applicability.

The study provides valuable guidance to policy makers, automotive enterprises, and urban planners seeking to improve NEV uptake.

Government authorities should prioritize intelligent infrastructure investment, including interoperable smart charging systems, public transport data platforms, and digital traffic control. Paiva et al. (2021) suggest that such visible markers of "smartness" enhance public trust and willingness to try emerging technologies. Moreover, transparent communication strategies that clarify how smart systems improve daily life can reduce uncertainty and resistance (Piriyapada & Wasawong, 2024).

NEV manufacturers and marketers should focus on translating technological features into user-centered benefits, as perception of smart value is the true driver of purchase intention. Techniques

such as test-drive experiences, VR simulations, and user storytelling can enhance perceived control, safety, and environmental impact—key elements of PSTB (Adnan, 2024; Nasr et al., 2024).

The impact of LC on consumer intention emphasizes the need for lifestyle-oriented segmentation. Enterprises should invest in AI-powered consumer profiling tools to map digital behaviors and value orientations. For instance, younger digital natives may prioritize autonomous features and app integration, whereas older consumers might value safety and simplicity (Andreou et al., 2022).

Although methodologically sound, the study has some limitations:

Cross-sectional nature: Longitudinal data would provide deeper insights into behavior evolution and post-purchase dynamics.

Cultural specificity: Thai consumers may exhibit unique values and behaviors, so findings should be cautiously generalized.

Limited constructs: Other potentially influential variables, such as environmental consciousness, technological anxiety, or price sensitivity, were not included.

Building on the present findings, future research may pursue the following directions:

Cross-national comparative studies to assess how SME, PSTB, and LC operate in different economic and cultural settings.

Mixed-method approaches, including interviews and ethnographic observation, to capture the emotional and symbolic meanings of NEVs.

Behavioral tracking studies to link intention with actual purchase or usage behavior, addressing the widely acknowledged “intention-action gap” (Ghiuță & Nistor, 2025).

This study confirms that the success of New Energy Vehicles (NEVs) within smart mobility ecosystems depends not merely on advancements in technology or attractive pricing strategies, but more critically on the perception of smart systems, the internalization of their benefits, and their alignment with users’ lifestyles and values. Technological sophistication alone is insufficient if consumers do not cognitively and emotionally connect with the innovations being offered. Instead, it is the user-centric interpretation of value—how individuals perceive improvements in convenience, safety, sustainability, and lifestyle enhancement—that truly drives behavioral intention. By adopting a systemic and psychologically grounded lens, this research contributes meaningful insight into both academic theory and applied practice in the field of intelligent transportation behavior. It marks an essential step toward designing human-centered, context-aware mobility solutions, ultimately helping to accelerate the transition to sustainable, inclusive, and smarter transportation futures in Thailand and comparable global contexts.

References

Abduljabbar, R. L., Liyanage, S., & Dia, H. (2021). The role of micro-mobility in shaping sustainable cities: A systematic literature review. *Transport Policy, 103*, 125–137. https://doi.org/10.1016/j.trd.2021.03.008

Adnan, N. (2024). Exploring autonomous vehicle adoption and its urban impact. *Transportation Research Interdisciplinary Perspectives*.

Adnan, N. (2024). Exploring the future of autonomous vehicle adoption. *Transportation Research Interdisciplinary Perspectives*.

Ahmad, S., Chaveesuk, S., & Chaiyasoonthorn, W. (2024). Electric vehicle adoption in Thailand: Role of charging infrastructure. *Taylor & Francis*.

Ahmad, S., Chaveesuk, S., & Chaiyasoonthorn, W. (2024). The adoption of electric vehicles in Thailand with the moderating role of charging infrastructure. *Taylor & Francis*.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Andreou, A., Fragkos, P., Fotiou, T., & Filippidou, F. (2022). Assessing lifestyle transformations in energy-system models. *Energies, 15*(14), 4948. https://www.mdpi.com/1996-1073/15/14/4948

Arora, S. C., & Singh, V. K. (2024). Transition to green mobility: A twin investigation behind the purchase reasons of electric vehicles in the Indian market. *The Bottom Line*. https://doi.org/10.1108/BL-08-2023-0249

Belanche, D., Flavián, M., & Pérez-Rueda, A. (2020). Lifestyle compatibility in mobile service adoption. *Sustainability, 12*(10), 4275. https://www.mdpi.com/2071-1050/12/10/4275

Bhosale, Y., Goel, S., Aggarwal, A., & Shankar, R. (2024). Personalization strategies for AI-driven electric vehicles. *International Journal of Consumer Studies*. https://onlinelibrary.wiley.com

Chava, V. C., Kumar, A., & Rathi, S. K. (2023). Factors affecting the purchase intention of electric vehicles. *Cleaner Logistics and Supply Chain, 5*, 100092.

D'Acunto, D. (2024). *The future of e-mobility*. Springer. https://doi.org/10.1007/978-3-031-65053-6

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Durmuş Şenyapar, H. N., Akil, M., & Dokur, E. (2023). Adoption of electric vehicles: Purchase intentions and consumer behaviors research in Turkey. *SAGE Open, 13*(3). https://doi.org/10.1177/21582440231180586

Ghiuță, O. A., & Nistor, A. (2025). Behavioral factors in online and offline purchase experience. *Telecom, 6*(1), 17.

Gündoğan, H., Dikmen, İ., & Atasoy, G. (2024). Built environment professionals' perceptions of intelligent office buildings. *Journal of Building Engineering, 86*, 107656.

Hao, D. (2023). Study on consumer behavior of new energy vehicles based on lifestyle adaptation. *Consumer Economics, 39*(2), 88–96.

Ikram, M., & Yeğin, T. (2022). Analysis of electric vehicle purchase intentions using the theory of planned behavior. *Sustainability, 14*(19), 12091.

Kim, Y., Park, Y., & Choi, J. (2021). Consumer perceptions of electric vehicles in Korea. *Sustainability, 13*(4), 1999.

Lee, S., & Chen, C. (2020). Lifestyle segmentation and technology adoption. *Technological Forecasting and Social Change, 158*, 120136.

Lettieri, N., & Pluchino, A. (2024). Opportunities of artificial intelligence in social-legal systems. *Frontiers in Artificial Intelligence, 7*, 1333219.

Lopes, J. M., Silva, L. F., & Massano-Cardoso, I. (2024). AI meets the shopper: Consumer behavior in intelligent retail environments. *Behavioral Sciences, 14*(7), 616.

Luke, R., Twinomurinzi, H., & Mageto, J. (2023). Smart mobility in urban areas: Opportunities and challenges. *Sustainability, 15*(8), 6754.

Mani, Z., & Chouk, I. (2019). Factors for and against resistance to smart services: The role of consumer lifestyle and ecosystem-related variables. *Journal of Services Marketing, 33*(4), 449–462. https://doi.org/10.1108/JSM-01-2018-0046

Nasr, I. B., Abaidi, I., & Thomas, L. (2024). Enhancing consumer valuation of smart homes. *Information Systems Frontiers*.

Nikitas, A., Michalakopoulou, K., & Njoya, E. T. (2020). Artificial intelligence and smart cities: Issues, challenges, and opportunities. *Sustainability, 12*(7), 2789.

Othman, W. N., Piaralal, S. K., & Singh, H. K. D. (2024). Unlocking digital wallet adoption through the UTAUT model. In *Lecture Notes in Computer Science*. Springer. https://doi.org/10.1007/978-3-031-61463-7_4

Paiva, S., Ahad, M. A., Tripathi, G., Feroz, N., & Casalino, G. (2021). Urban smart mobility technologies: A systematic review. *Sensors, 21*(6), 2143.

Paudel, B., et al. (2023). Incentives and infrastructure for electric vehicle adoption in Thailand. *World Electric Vehicle Journal*. https://www.mdpi.com

Piriyapada, S., & Wasawong, A. (2024). Barriers to electric vehicle adoption in Thailand. *Journal of Transportation Research*.

Preedakorn, C., et al. (2023). Environmental impact of electric vehicle policies. *Journal of Cleaner Production*.

Rahman, M. M., & Thill, J. C. (2024). A comprehensive survey of the key determinants of electric vehicle adoption. *World Electric Vehicle Journal*. https://www.mdpi.com

Ramos de Luna, I., Montoro-Ríos, F. J., & Martínez-López, F. J. (2024). Moderation effects in mobile payment adoption. *International Journal of Human–Computer Interaction, 40*(3), 221–238.

Rodríguez-Rad, C. J., & Revilla-Camacho, M. Á. (2023). Adoption of sustainable mobility among youth. *International Journal of Environmental Research and Public Health*.

Song, Y., & Zhang, Z. (2020). Lifestyle compatibility and consumer technology adoption behavior. *Technological Economics, 39*(12), 122–130.

Suvittawat, A. (2024). Structural equation modeling analysis of electric vehicle adoption intentions in Thailand. *World Electric Vehicle Journal*.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157–178.

Widarmanti, T., Ramantoko, G., & Pillai, S. (2024). Innovation adoption and consumer behavior: A behavioral perspective. *Management and Production Engineering Review, 15*(2), 76–91.

Wu, D., Yu, L., Zhang, Q., Jiao, Y., & Wu, Y. (2021). Ecological consciousness and new energy vehicle purchasing behavior. *Sustainability, 13*(5), 2493.