ANALYSIS OF MOTORCYCLE TOURISM USERS' RENTAL BEHAVIOR INTENTIONS: A STRUCTURAL EQUATION MODELING APPROACH, EVIDENCE FROM CHIANG RAI

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THIS THESIS IS A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION IN INTERNATIONAL LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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ABSTRACT

This study utilizes the Extended Theory of Planned Behavior (ETPB) to examine the psychological, emotional, and behavioral factors influencing rental intentions among 420 tourists. Using structural equation modeling (SEM), the research finds that attitude, subjective norms, and perceived behavioral control significantly affect rental decisions. Additionally, psychological characteristics, emotional responses, and prior driving experiences play vital roles. These findings emphasize the importance of integrating behavioral insights into sustainable transport policies, enhancing safety and efficiency in smart tourism mobility. By addressing gaps in tourism transport research, the study offers practical implications for policymakers, tourism operators, and urban planners. Future research should explore cross-destination comparisons and regulatory frameworks to optimize motorcycle rental services within smart tourism ecosystems.

Keywords: SEM, ETPB, Motorcycle Rental Behavior

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CHAPTER 1

INTRODUCTION

1.1 Background

Since the Industrial Revolution in the eighteenth century, humanity has been at the forefront of global evolution, driving remarkable technological advancements. In the realm of personal mobility and economic development, powered two-wheelers—such as motorcycles, mopeds, and scooters—have emerged as pivotal players. With the advent of smart mobility solutions, which integrate digital technologies into transportation networks, motorcycles have gained even greater prominence as flexible, cost-effective, and efficient modes of travel. However, despite their growing significance, motorcycling has received limited academic attention. According to Walker (2011) while motorcycling is a popular leisure activity, it has received limited academic attention, with research primarily focused on safety, environment, and biker subcultures. So academic tourism research has largely overlooked the growing importance of motorcycling as a distinct tourism sector.

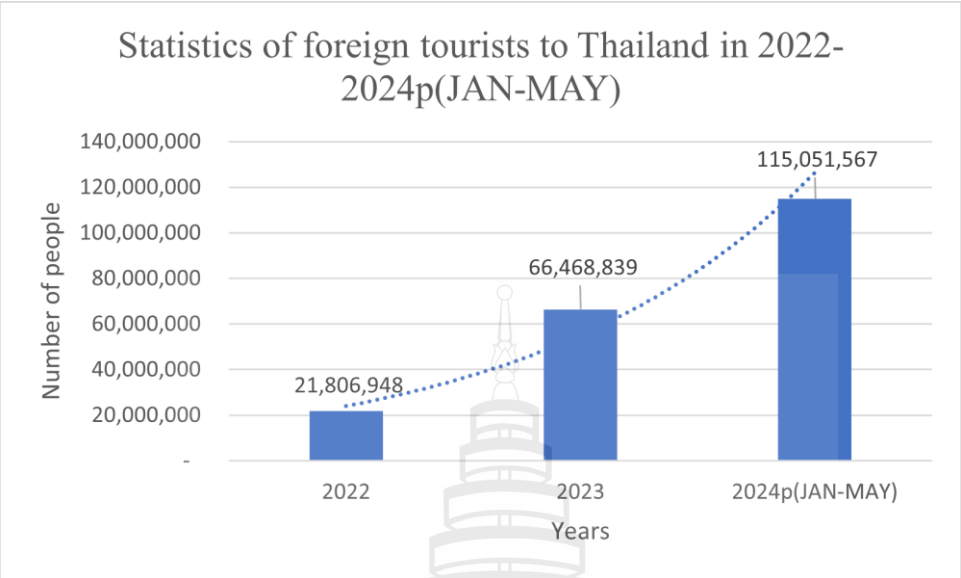
In recent years, urban transportation has been undergoing continuous evolution with the adoption of smart mobility solutions. These technologies, including GPS, real-time data analytics, and interconnected platforms, aim to enhance the efficiency and sustainability of transport networks. And the number of motorcyclists and motorcycles worldwide has been steadily increasing, particularly in developing countries (Chakraborty et al., 2022). According to the DLT (Department of Land Transport), in 2022, over 22 million motorcycles were registered in Thailand, accounting for around 51% of all registered vehicles. As one of the world's major motorcycle manufacturing hubs, Thailand is home to seven motorcycle manufacturers with a total annual production capacity of 3 million units. In the first 11 months of 2023, motorcycle sales in Thailand reached 1.72 million units, representing a 4.67% year-over-year increase. For instance, in London, UK, DLT statistics from 2009 reveal that motorcycles are increasingly being used for leisure and touring purposes rather than solely for

commuting. This trend highlights the evolving role of motorcycles in both urban and recreational contexts.

Motorcycle tourism can be classified as a sub-sector of the broader driving tourism market, offering a unique and immersive way for travelers to explore destinations. As one of the most popular tourist countries in Southeast Asia, Thailand has experienced a rapid economic recovery following the COVID-19 pandemic, with its appeal as a tourist destination continuing to grow. According to statistics from the Thai Ministry of Tourism and Sports, the number of tourists visiting Thailand in the first five months of 2024 saw a significant increase compared to previous years in figure 1.1. This resurgence in tourism has been accompanied by a notable rise in the use of motorcycles, both by locals and visitors.

In recent years, motorcycles have become increasingly popular in Thailand, particularly among foreign tourists. Compared to cars, motorcycles are often preferred for short trips due to their flexibility, convenience, and affordability. Their compact size allows riders to navigate narrow streets and alleys with ease, enabling faster travel in crowded urban environments. Additionally, motorcycles are cost-effective, require less parking space, and are highly fuel-efficient, making them an attractive transportation option in both urban and rural areas. Since motorcycles typically consume less gasoline than conventional cars, they also hold potential as a more sustainable mode of tourism transportation. This stands in contrast to car-based tourism, which faces challenges in promotion due to concerns about fossil fuel consumption and environmental impact.

The growing demand for motorcycles has led to an increase in motorcycle rental services, catering to both domestic and international travelers. For tourists, renting a motorcycle offers the freedom to explore at their own pace, access remote areas, and experience local culture in a more intimate way. This trend reflects a shift in travel preferences, with more tourists seeking unique, eco-friendly, and cost-effective ways to explore destinations. As a result, motorcycle tourism is emerging as a significant and dynamic segment within Thailand’s tourism industry, contributing to the country’s economic recovery and sustainable tourism development.



Source Thai Ministry of Tourism and Sports (2024)

Figure 1.1 Statistics of Foreign Tourists to Thailand in 2022-2024p (JAN-MAY)

However, in previous studies on motorcycle travel, a large amount of literature has analyzed the risk behavior factors of motorcycle riders and the causes of motorcycle accidents. For example, Panumasvivat et al. (2024) mentioned risky driving behaviors and riders' attitudes towards riding behaviors are the main related factors of motorcycle accidents, such as riding after drinking, not wearing helmets, and not obeying traffic signals. However, there is no mention of the analysis of the relevant behavioral factors of tourists renting motorcycles. Although there are a number of studies that have explored the factors that influence motorcyclists' behaviors and intentions by the Theory of Planned Behavior (TPB), such as Payani and Law (2020) have shown that by using the TPB to predict motorcycle rider behavior and gain insight into compliance with daytime running light regulations. And for subsequent analysis by Armitage et al. (2022) an Australian study that applied an extended theory of planned behavior (ETPB) to understand motorcyclists' safe driving intentions and behaviors, and the ETPB model incorporates additional constructs such as moral norms, descriptive norms, expected regret, and the Five Factor Model of Personality to understand safe driving motivations, these studies have typically focused on general motorcycle riders, and there is a lack of research that specifically examines motorcycle touring users' rental behavioral intentions.

Therefore, the focus of this study is to examine the relationship between the key constructs of the ETPB, including attitudes, subjective norms, perceived behavioral control, and behavioral intentions of foreign tourists traveling on motorcycles in figure 1.2 Chiang Rai province.

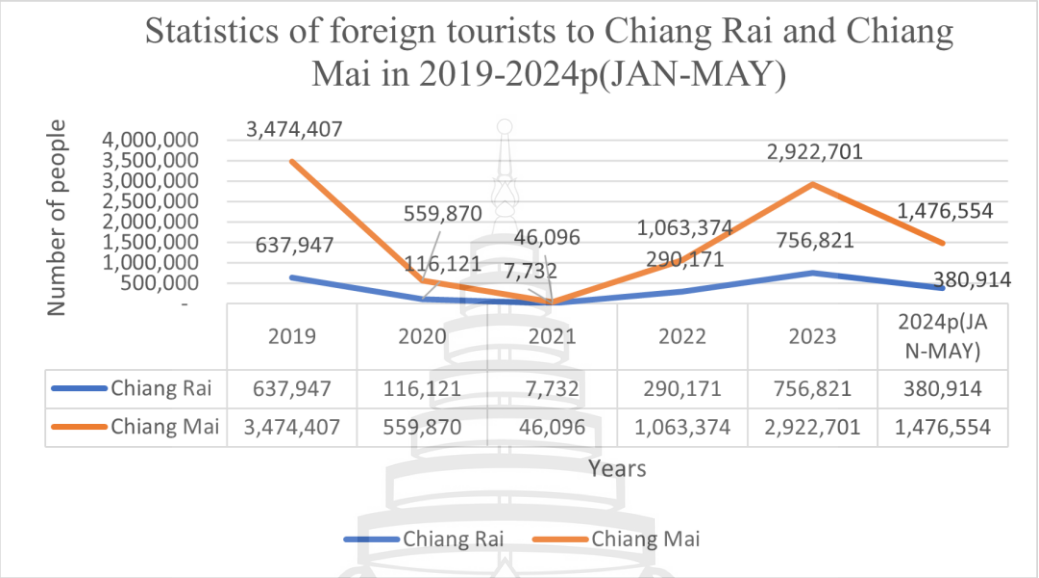
This study uses Chiang Rai as a case to examine the factors influencing foreign tourists to rent motorcycles for travel. Chiang Rai is located in the northernmost part of Thailand, with an area of 11,678 square kilometers. It is a major city with important tourism and cultural value. Through a comprehensive survey of the region, this study aims to reveal the motivations and influencing factors of renting motorcycles for travel.

Source 3D maps drawing

Figure 1.2 Chiang Rai Map

According to statistics from the Thai Ministry of Tourism and Sports in figure 1.3, the number of foreign tourists visiting Chiang Mai has been significantly higher than Chiang Rai from 2019 to 2024 (Jan-May), indicating that Chiang Mai is a more popular tourist destination. However, during the COVID-19 epidemic, both Chiang Rai and Chiang Mai saw a sharp drop in the number of tourists in 2020. While Chiang Mai's tourist numbers fluctuated more significantly, with a deeper drop and slower recovery compared to Chiang Rai. Chiang Rai has seen a steady increase in the number of foreign tourists after the epidemic, suggesting that its popularity as a tourism destination is

rising and its appeal is expanding. This trend may indicate that Chiang Rai offers different tourism experiences, which may provide opportunities for diversification of tourism products and catering to niche markets.



Source Thai Ministry of Tourism and Sports (2019-2024)

Figure 1.3 Statistics of Foreign Tourists to Chiang Rai and Chiang Mai in 2019-2014p(JAN-MAY)

This study aims to explore the characteristics of factors influencing tourists to rent motorcycles. Although the government and industry associations provide some high-level data on motorcycle riders' economic status, travel patterns, and destinations, there has been no research to date specifically examining the rental factors for motorcycle tourists. To collect valuable preliminary data on the behavior and attitudes of foreign tourists on motorcycle tours, this study utilized a self-assessment report questionnaire administered to individual motorcycle riders.

By elucidating the intricate links between attitudes, subjective norms, perceived behavioral control, and rental behavioral intentions, the aim is to identify influencing factors and provide actionable insights for policymakers and industry stakeholders. Specifically, as shown in figure 1.4 this study highlights how urban transportation systems can benefit from the integration of motorcycle rental services, offering flexible and cost-effective solutions to mobility challenges in both urban and rural tourism settings. The inclusion of smart mobility technologies, such as real-time booking

platforms, GPS navigation, and digital payment systems, can further enhance the efficiency and accessibility of motorcycle rentals, catering to the growing demand for seamless travel experiences.

Additionally, the logistics of maintaining and distributing motorcycles across high-demand areas play a critical role in ensuring service availability and reliability. Effective supply chain strategies, such as predictive demand analysis and dynamic inventory allocation, can optimize the availability of motorcycles in key tourist destinations. By addressing these aspects, this study seeks to provide practical recommendations for tailoring services to meet the specific needs and preferences of motorcycle touring users.

Ultimately, the findings aim to enhance tourists' overall experience and satisfaction by aligning transportation services with their expectations. Furthermore, the study emphasizes the potential for urban transportation systems and smart mobility solutions to integrate motorcycle rentals as a viable component of sustainable and adaptable mobility networks. This alignment can not only attract more visitors by motorcycle but also support the broader goals of sustainable urban mobility and efficient transportation logistics.

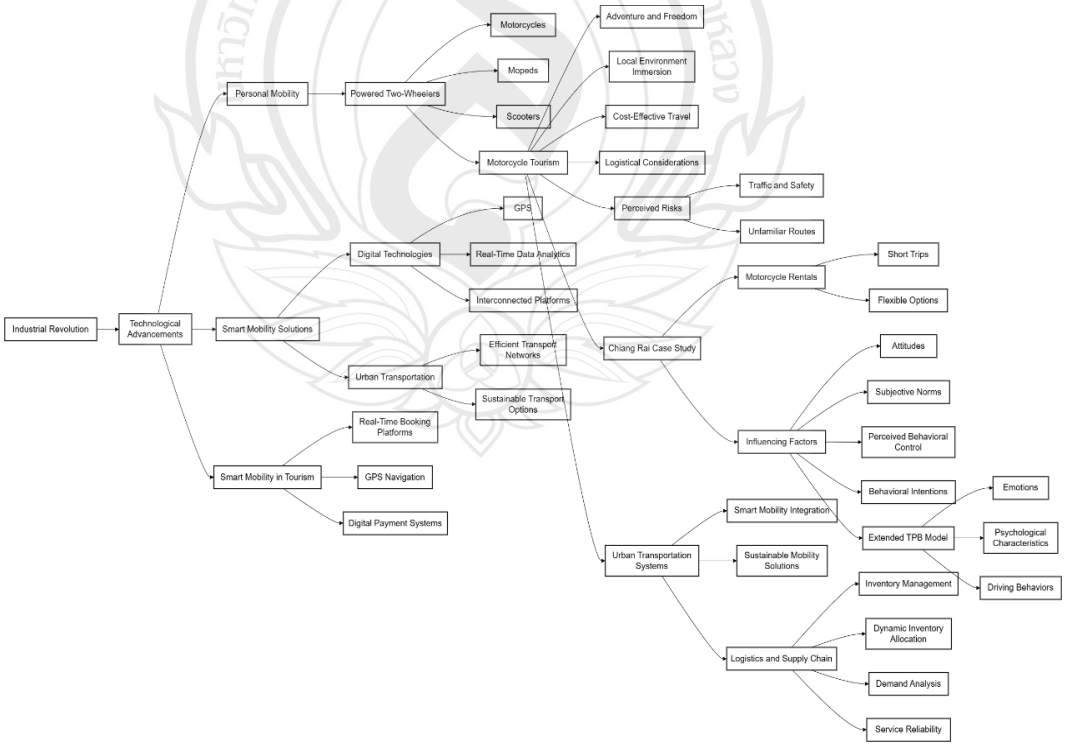


Figure 1.4 Motorcycle Tourism Minds Map

1.2 Scope of the Study

The scope of this study primarily focuses on motorcycle tourism users in Chiang Rai, Thailand. The aim is to analyze the rental behavioral intentions of motorcycle tourists in this region and investigate how psychological characteristics and emotions influence their decision-making processes and behaviors on the roads. To address the current lack of research on this topic, the study will employ a questionnaire method to gather comprehensive data on several key variables, including rental behavior, attitudes, subjective norms, perceived behavioral control, psychological characteristics, emotions, and driving behavior. This quantitative approach will facilitate an examination of the relationships between these variables within the framework of the Extended Theory of Planned Behavior (ETPB).

In addition to quantitative analysis, the study will also seek to gain a deeper qualitative understanding of the factors affecting rental behaviors. By exploring how psychological characteristics and emotions impact road behavior and decision-making, the research aims to provide valuable insights into the unique context of motorcycle tourism in Chiang Rai.

Ultimately, this study aspires to contribute to the existing body of knowledge by highlighting the interplay between psychological factors, emotional responses, and decision-making in the context of motorcycle rental behaviors. The findings could inform stakeholders in the tourism and transportation sectors, enabling them to develop more effective strategies that enhance the safety and satisfaction of motorcycle tourists in Chiang Rai.

1.3 Research Inspiration

The rapid growth of motorcycle tourism, particularly in Southeast Asia, with Chiang Rai, Thailand, as the destination for this study, highlights the need for a deeper understanding of the factors that influence this unique market segment's rental behavior intentions. However, existing research on tourist rental behavior has focused primarily

on traditional modes of transportation (public transportation or taxis), thus overlooking the unique motivations and preferences of motorcycle travelers.

The COVID-19 pandemic has further enhanced the appeal of motorcycle tourism as travelers seek more socially distant and flexible modes of transportation to allow for independent exploration. After the COVID-19 pandemic, tourists are increasingly gravitating toward outdoor, adventure-oriented activities, and given the large growth in tourists in Chiang Rai Province, motorcycle rentals offer a compelling option that fits these evolving travelers' preferences for personalized experiences.

Motorcycle tourism offers an exciting, adventurous mode of exploration that attracts a specific group of tourists seeking freedom, excitement, and immersion in the local environment. However, renting a motorcycle also comes with greater perceived risks and logistical considerations for foreign tourists compared to other modes of transportation. Therefore, the need to understand what factors influence these tourists' willingness to rent is critical for destination marketing organizations, rental service providers, and policymakers to develop targeted strategies to meet the needs of this growing market segment.

Furthermore, the classical TPB model is extended to the theoretical construct of emotions, psychological characteristics, and driving behaviors to study the complex interactions of cognitive, affective, and behavioral factors behind motorcycle tourism users' rental decisions. By applying this extended theoretical perspective to the context of Chiang Rai, a motorcycle tourism hub, this study aims to derive findings that contribute to the theoretical understanding and practical management of this market segment.

1.4 Research Objectives and Questions

The research objectives are to analyze the rental behavior intentions of motorcycle tourism users based on the TPB and understand the impact of psychological characteristics and emotions on their decision-making and behavior on the road.

Research Question 1: How do psychological characteristics, such as risk perception, adventure-seeking tendencies, and novelty-seeking behavior, influence the rental decisions of motorcycle tourism users in Chiang Rai, according to the TPB?

Objective 1: To understand the impact of psychological characteristics, such as risk perception, adventure-seeking tendencies, and novelty-seeking behavior, on the rental decisions and behavior on the roads among motorcycle tourism users in Chiang Rai, based on the TPB.

Research Question 2: How do emotions, such as excitement, fear, or confidence, impact the decision-making process of motorcycle tourism users in Chiang Rai?

Objective 2: To investigate the role of emotions in the decision-making process and riding behavior of motorcycle tourism users in Chiang Rai.

Research Question 3: How does driving behavior influence the rental decisions and road behavior of motorcycle tourism users in Chiang Rai, according to the TPB?

Objective 3: To examine the impact of prior driving behavior on the rental decisions and on-road behavior of motorcycle tourism users in Chiang Rai, based on the TPB.

1.5 Conceptual Framework

Numerous scholars have conducted extensive research in the TPB, by Conner and Armitage (1998) provides a comprehensive review of the TPB, highlighting the empirical evidence supporting its variables and their relationship to intentions and behavior. Based on the TPB and studies foreign tourists' motorcycle rental behavior based on their behavioral intentions. Furthermore, in order to address the limitations of TPB in psychological prediction and enhance the predictive power, additional dependent variables are introduced in figure 1.5: psychological characteristics, emotions, and drive behavior.

Psychological characteristics include factors such as risk perception, risk-taking tendency, and thrill-seeking behavior. These psychological characteristics have the potential to influence an individual's decision-making regarding motorcycle rentals and their behavior on the road. Emotions, on the other hand, refer to the emotional states

experienced by motorcycle touring users, such as excitement, fear, or confidence. These emotions play an important role in shaping the decision-making process and subsequent behavior in motorcycle rentals and on the road. Drive behavior represents the actual behavior of motorcycle tour users on the road, including compliance with traffic rules, safe riding habits, overall road safety, etc. Analyzing drive behavior can provide valuable insights into the actual consequences of foreign tourists' motorcycle rental behavior.

By incorporating these additional dependent variables, it is intended that the motorcycle rental behavior of foreign tourists can be comprehensively explored and predicted. It considers psychological characteristics, emotions, and drive behavior to provide a more comprehensive understanding of the factors that influence foreign tourists' motorcycle rental behavior and their subsequent road behavior.

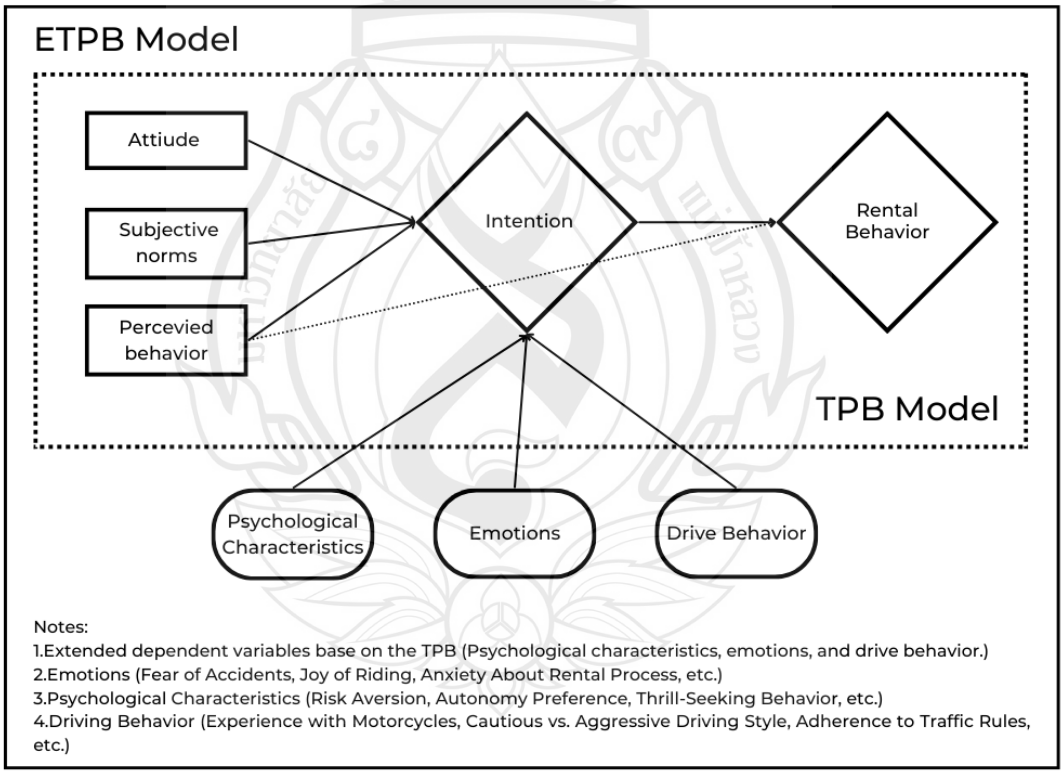


Figure 1.5 ETPB Model

CHAPTER 2

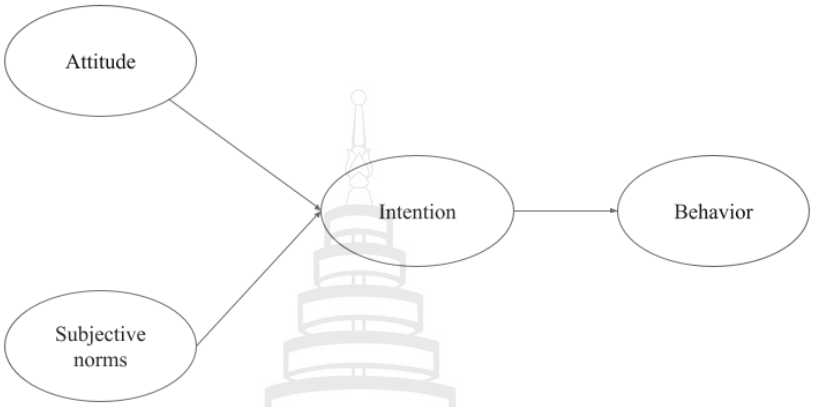
LITERATURE REVIEW

2.1 Theoretical Framework

Extensive research has shown that the Theory of Reasoned Action (TRA; Fishbein and Ajzen (1977) and the TPB (Ajzen, 1991) are well-studied models of intention, psychological models designed to explain and predict human behavior and have been shown to successfully predict and explain behavior in various domains. The TRA in figure 2.1 offers a systematic approach for predicting behavior by analyzing behavioral intentions, which are determined by two primary factors: attitudes toward the behavior and subjective norms. TRA posits that behaviors deemed socially significant can be forecasted by examining intention, which in turn is influenced by these attitudes and norms (Fishbein & Ajzen, 1977). TRA assumes that behaviors of social relevance are predictable from intention, and that intention is determined by attitudes towards the behavior and subjective norms (Da Vis' et al., 1989).

The TRA places a significant emphasis on predicting human behavior rather than merely assessing the outcomes of such behavior. This key distinction underscores the importance of understanding individuals' intentions as critical precursors to their subsequent actions. By focusing on intentions, TRA seeks to illuminate the cognitive processes that drive behavior, rather than simply analyzing what individuals do after the fact. Consequently, a fundamental requirement of the TRA is that the behavior in question must be under the individual's volitional control. This means that individuals should possess autonomy to choose whether or not to engage in the behavior. However, it is important to acknowledge that TRA has inherent limitations, particularly when applied to individuals who may have reduced capacity for self-regulation or who are influenced by situational constraints. (Ajzen, 1991) notes that these limitations can hinder the model's effectiveness in predicting behaviors among individuals who are less inclined to exert control over their actions. Therefore, a further requirement of TRA is

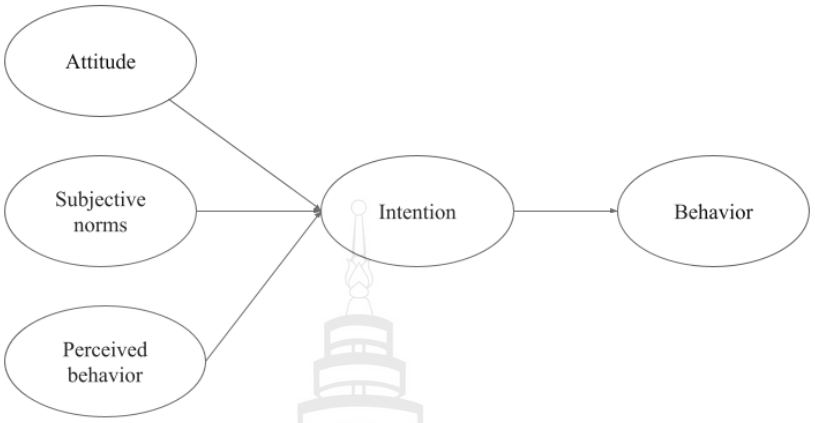
that the behavior must be under volitional control, but it is acknowledged that TRA has limitations in predicting individuals with limited inclined toward control (Ajzen, 1991).



Source Theory of Reasoned Action (1977)

Figure 2.1 Theory of Reasoned Action (TRA)

The TPB in figure 2.2 is an extension of the TRA that addresses behaviors over which people have incomplete volitional control (Ajzen, 1991). It suggests that behavioral intentions are influenced by three main factors: attitudes, subjective norms, and perceived behavioral control. Behavioral intention is influenced by attitude, subjective norm, and perceived behavioral control. Attitude refers to a person's opinion about performing a behavior, subjective norm relates to beliefs about others' approval or disapproval, and perceived behavioral control concerns individuals' beliefs in their ability to control a specific behavior (National Institutes of Health, 2005). It is now well established from variety of research that TPB suggests human action is influenced by three factors: (a) beliefs about likely outcomes and their evaluation, (b) beliefs about others' expectations and motivation to comply, and (c) beliefs about personal control and anticipated obstacles (Ajzen, 1991).



Source Theory of Planned Behavior (1991)

Figure 2.2 Theory of Planned Behavior (TPB)

Both the TPB and the TRA highlight the connection between intention and behavior. While TPB views intentions as direct drivers of behavior, it recognizes the impact of situational factors. These factors can either facilitate or hinder the conversion of intentions into actions. Therefore, precise situational alignment remains crucial for accurate prediction, a point emphasized by Foxall (1997).

2.2 Motorcycle Tourism

As a unique mode of travel, motorcycles have become a popular choice in tourism activities, and the existing literature has studied this from many perspectives. Motorcycles are defined as “Auto tourism refers to all relationships and phenomena when tourists use motor vehicles to travel and stay.” by Biedroń (2011). Among them, motorcycle tourism was pointed out and has been identified as a growing trend in the tourism industry, and the core elements of motorcycle tourism are the journey itself (the road) and the joy of riding. In comparison, the destination and the feelings associated with it may seem secondary (Walker, 2011). Therefore, motorcycle travel is different from car travel, and the destination of car travel is essential. While car-driving tourists

enjoy the scenery on their way to tourist attractions, motorcyclists are more focused on the driving experience itself (Pinch & Reimer, 2012).

But it is worth noting that compared with car tourism, motorcycle tourists care more about the travel experience. Motorcycle riding is different from other forms of travel because of the many factors involved, such as physical strength, skills and choices. Motorcycle riding not only requires riders to have good physical strength and driving skills, but also requires them to choose routes and pace according to personal preferences. This characteristic of motorcycle travel allows riders to be more deeply involved in the journey and feel the direct interaction of speed and environment. Therefore, due to these characteristics, motorcycles are considered a leisure phenomenon Walker, 2011). Although motorcycle travel, especially long-distance travel, has become an increasingly common method of travel, more than half of people in the UK choose to travel by motorcycle (Cater, 2017).

Given concerns about fossil fuel use, so most motorcycles are more fuel efficient than regular cars, motorcycle travel can be a more environmentally friendly way to travel by Cater (2017). However, motorcycle travel, as a mode of transportation, is relatively risky and usually accounts for a large proportion of fatalities and serious injuries. Bayly and Regan (2006) Researched the over-representation of motorcyclists in international accident statistics highlights their high risks rate on the roads and they are particularly prone to loss-of-control crashes and multi-vehicle accidents, which is an important factor contributing to their elevated risk level. Likewise, in addition Chang and Lai (2015) when the weather is suitable and there are no policy restrictions, many low- and middle-income people choose to travel by motorcycle for convenience and economy, even though this sacrifices traffic safety and high usage rates increase the risk of accidents. Faced with these higher risk rates, Wu et al. (2021) summarized VicRoads has identified vehicle-based Intelligent Transport Systems (ITS) technical methods to reduce the possibility of higher risk rates. In addition, VicRoads has identified the ITS technologies that have the greatest potential to improve motorcycle safety by Bayly and Regan (2006). And ITS combines with GPS to reduce motorcycle accident rates.

Destinations have been working to develop their motorcycle tourism offerings (Sykes & Kelly, 2014). Such as: Cater (2017) mentioned motorcycle enthusiasts in

North Wales, menu offers 'biker breakfast', in addition, there are many organizations in the UK that organize motorcycle shows, rallies, rides and other tourist activities. Also, as one of the countries with the largest number of motorcycle users in Southeast Asia, Thailand hosted the Bangkok Motorbike Festival 2022.

2.3 Motorcyclist Behavior Analysis Review

Motorcycle tourism is a subcultural leisure activity involving traveling on motorcycles, exploring diverse destinations including countries, small towns, wilderness areas, aboriginal lands, and national parks. It often combines various forms of recreation such as camping, fishing, and is driven by the allure of freedom (Chung, 2019). Motorcycle usage in developed countries tends to focus on leisure activities, while in developing countries, motorcycles are predominantly utilized for practical purposes (Rogers, 2008).

Therefore, by Ambak et al. (2011) employed the TPB and Health Belief Model (HBM) to predict behavioral intention towards proper helmet usage among motorcycle riders, and the impact of intervention strategies on motorcycle injury prevention programs. Nevertheless, tourists' willingness to ride motorcycles is affected by many factors, and Tunnicliff et al. (2012) studied the social psychological factors that influence motorcycle riders' intentions to engage in safe and dangerous riding behaviors were studied. They found that attitude, subjective norms, perceived behavioral control, group norms, self-identity, sensation seeking and aggression all play a role in determining riders' intentions. Made Priyantha Wedagama and Wishart (2019) believes that the intentions of international motorcycle riders regarding traffic safety are crucial, and that of tourists riding motorcycles in Bali, the intentions are influenced by sensory stimulation, fun and ideas of freedom, leading to dangerous behaviors and traffic violations. Sukor et al. (2017a) has explored the relationships between motorcyclists' psychological factors and risky riding behaviors based on self-reported utilization of various types of motorcycle facilities. According to recent research, Uttra et al. (2020) has provide SEM was employed to analyze the data collected from 1516 motorcycle riders in Thailand to understand the differences in riding behavior between men and

women. Huang et al. (2023) use the linear regression analysis method to assess the influence of tourist demographics, rental elements, non-rental elements, and the propensity to use shared motorcycles in tourism. Furthermore, Champahom et al. (2023) using SEM-based methods and the conceptual framework of TPB to study factors affecting WTP of Thai motorcyclists can help formulate policies.

Among these, rental factors significantly influence usage intention, and their impact is greater than that of tourist characteristics. Although a lot of research in table 2.1 has been done on the influence of intention on motorcycle rider behavior, there is a lack of research on the influence of intention on motorcycle rental behavior.

Table 2.1 Motorcyclist Behavior Part Studies and Their Significance

Reference	Topic	Study Area	Analysis Methodology
Ambak et al. (2011)	Using Structural Equation Modeling and the Behavioral Sciences Theories in Predicting Helmet Use	Malaysia	Structural Equation Model (SEM)
Tunnicliff et al. (2012)	Understanding the factors influencing safe and unsafe motorcycle rider intentions	Queensland	Regression analysis
Sukor et al. (2017a)	Analysis of correlations between psychological factors and self-reported behavior of motorcyclists in Malaysia, depending on self-reported usage of different types of motorcycle facility	Malaysia	Structural Equation Model (SEM)
Chung (2019)	The study of subjective well-being in tourists of heavy motorcycle tourism in Taiwan.	Taiwan	Cronbath's alpha, SPSS, EFA (explore factor analysis)
Made Priyantha Wedagama and Wishart (2019)	Investigating the risky behavior of international tourists riding motorcycles in Bali	Bali	Principal Component Analysis (PCA) and Structural Equation Model (SEM)
Uttra et al. (2020)	Explaining Sex Differences in Motorcyclist Riding Behavior: An Application of Multi-Group Structural Equation Modeling	Thailand	Structural Equation Model (SEM)

Table 2.1 (continued)

Reference	Topic	Study Area	Analysis Methodology
Huang et al. (2023)	Applying Linear Regression Analysis to Identify Willingness of Using Environment-Friendly Electric Motorcycle-Sharing for Tourism Activities: A Case Study of GoShare	Taiwan	Linear Regression Analysis
Champahom et al. (2023)	Factors influencing the willingness to pay for motorcycle safety improvement: A structural equation modeling approach	Thailand	Structural Equation Model (SEM)
Present study	Analysis of motorcycle tourism users' rental behavior intentions: a structural equation modeling approach, evidence from Chiang Rai	Thailand	Extended Structural Equation Model (ESEM)

2.4 Psychological Characteristics

In the context of rental behavior, various psychological characteristics play pivotal roles in shaping attitudes, subjective norms, and perceived behavioral control. These psychological factors significantly influence how individuals perceive and approach renting, leading to diverse attitudes that can be categorized into several representative viewpoints. At the same time, the psychological characteristics of

motorcyclists have been a subject of interest in various studies, offering insights into how personality traits, risk perception, and psychological well-being influence their behaviors and decisions.

One prominent viewpoint emphasizes the impact of personality traits on attitudes within the TPB framework. Research conducted by Le et al. (2023) highlights that certain personality traits, such as thrill-seeking, anger, and non-compliant behavior, are directly associated with an increased frequency of risky behaviors, such as risky cycling. In contrast, traits like anxiety and altruism correlate with lower rates of such risky behaviors. This suggests that individuals with specific personality characteristics may be more inclined to engage in behaviors that affect their rental decisions, including the willingness to take risks in their rental choices or environments. For instance, motorcyclists are often perceived by car drivers as more disinhibited, neurotic, and less agreeable than they self-report, though they are generally as sensation-seeking and extraverted as expected by others (Wiley & Hill, 2024).

Personality traits significantly influence risky behaviors among motorcyclists, as evidenced by various studies. Research indicates that traits such as novelty seeking and low harm avoidance are prevalent among motorcyclists, correlating with higher instances of motorcycle accidents. For example, motorcyclists often exhibit high scores in novelty seeking, which is linked to a propensity for risk-taking behaviors (Romero et al., 2019). Similarly, a significant portion of riders demonstrates low harm avoidance, indicating a tendency to disregard potential dangers (Romero et al., 2019). Furthermore, demographic influences play a role, as riders using motorcycles for work show even higher risk-associated temperament traits compared to recreational riders. This exploratory study highlights the complex interplay between personality and riding behavior, suggesting that certain traits predispose individuals to riskier actions on the road.

Another important viewpoint posits that risk perception is a crucial psychological characteristic influencing rental behavior. Slovic (2016) explored the concept of "psychometric profiling," which identifies the underlying dimensions that shape how individuals perceive risks. He developed the "Risk Perception Framework," incorporating factors such as dread, familiarity, and controllability, which significantly influence people's judgments of risk. This framework suggests that individuals who

perceive renting as a high-risk endeavor may be less likely to engage in rental agreements or may approach such decisions with caution. Chen et al. (2022) further elucidate the role of psychological factors and personality traits in risk underestimation among drivers, which can be extrapolated to rental behavior. Their findings indicate that certain psychological characteristics, such as over-optimism or thrill-seeking tendencies, can lead individuals to underestimate risks associated with their rental choices, impacting their decision-making process. Similarly, psychological factors such as attitude, perceived behavioral control, and moral obligation significantly influence risky behaviors like speeding and neglecting helmet use, with these factors varying depending on the type of motorcycle facility used, such as exclusive or inclusive lanes (Sukor et al., 2017b).

2.5 Emotions

Emotions have been extensively discussed in literature, particularly in the context of an extended version of the TPB, to assess their impact on behavioral intentions. Emotions are defined as subjective experiences and feelings that individuals associate with specific behaviors, playing a crucial role in shaping how people approach and engaging in various actions. Pervious research has shown that La Barbera et al. (2022) demonstrates that incorporating social emotions—such as anger, sadness, contempt, dislike, shame, and disappointment—into the traditional TPB framework significantly enhances its predictive capabilities. This extended model has proven particularly effective in predicting behaviors related to reducing portion sizes, illustrating how emotions can profoundly influence decision-making processes. Similarly, Samuel et al. (2019) highlight the significant impact of emotions on motorcyclists' riding behavior, noting that riders experience a wide range of emotions that can lead to varying degrees of risky behavior. For instance, motorcyclists often experience high emotional dynamism, frequently shifting between calmness and aversive states, particularly at critical points like intersections. These emotional fluctuations can significantly influence safety outcomes, as emotions can be predicted and potentially utilized to enhance safety measures in motorcycle riding.

The emotional state of motorcyclists is a critical factor influencing their behavior and safety outcomes. Research indicates that emotions can fluctuate dramatically during riding, with negative emotions such as aggression being linked to dangerous driving behaviors (Yanuvianti et al., 2019). This suggests that emotional regulation is vital for safe riding practices, particularly among young motorcyclists, who are especially susceptible to the effects of negative emotions. On the other hand, positive emotions also play a significant role. Mohd Shafie et al. (2023) found a strong positive correlation between positive emotions and dangerous riding behaviors, concluding that motorcyclists who experience higher levels of positive emotions are more likely to engage in risky actions while riding. This duality underscores the complex interplay between emotions and behavior in high-stakes situations.

According to the TPB, attitudes are shaped by both cognitive evaluations and emotional responses toward a given behavior. This recognition positions emotions as vital determinants of attitudes within the TPB framework. Positive emotions tend to foster more favorable attitudes, encouraging individuals to engage in specific behaviors, while negative emotions can lead to unfavorable attitudes, discouraging participation. Emotional intelligence further amplifies this relationship, as higher emotional intelligence has been shown to correlate with fewer accidents among motorcyclists (Asgarian et al., 2017). Components like optimism and interpersonal relationships are particularly significant in reducing crash occurrences, emphasizing the need for emotional skill development among riders.

By integrating emotions into the TPB, researchers can gain a more nuanced understanding of the myriad factors influencing behavior. This comprehensive approach not only enriches the theoretical landscape of the TPB but also provides actionable insights for practitioners. For instance, interventions designed to evoke specific emotional responses or enhance emotional intelligence could be more effective in promoting safe riding practices. Understanding the emotional dynamics of motorcyclists—such as their susceptibility to negative emotions and the role of emotional intelligence in accident prevention—can inform the development of targeted safety measures and support systems. Ultimately, this integration of emotional factors into behavioral models offers a holistic framework for addressing the complexities of motorcyclist behavior and improving safety outcomes.

2.6 Drive Behavior

The TPB is a widely utilized framework that comprehensively examines human behavior, aiding in the prediction and understanding of actions across multiple disciplines. For instance, Chan et al. (2010) utilized the TPB to investigate the intention to drink and drive among young Chinese individuals. Their research highlighted the significant impact of perceived invulnerability on attitudes, perceived behavioral control, and intentions to engage in risky behaviors. This illustrates how individual perceptions can shape behavioral intentions, particularly in contexts involving risk. Similarly, Cristea and Gheorghiu (2016) applied the TPB to predict risky behaviors among vulnerable road users, specifically cyclists. Their study focused on the factors of attitude, social norms, and perceived behavioral control (PBC) in predicting cyclists' intentions to engage in risky behaviors, such as running red lights and making left turns in high-risk traffic situations. This underscores the applicability of the TPB in diverse traffic contexts, revealing how different factors influence intentions based on specific behaviors.

Motorcyclist behavior significantly impacts road safety, fuel consumption, and emissions. Driving patterns, influenced by personal traits, environmental conditions, and vehicle characteristics, can lead to both risky behaviors and increased environmental impact. For example, traffic violations such as not wearing helmets and illegal lane changes are prevalent among motorcyclists, posing significant risks to urban safety (Charef et al., 2024). These behaviors align with the TPB's emphasis on attitudes and perceived behavioral control, as riders' intentions to comply with safety norms are often shaped by their subjective evaluations of risk and social pressures. To address these issues, interventions such as mobile applications have been developed to provide real-time feedback to riders, promoting safer driving practices and reducing violations (Charef et al., 2024). Such tools align with the TPB framework by targeting perceived behavioral control and reinforcing positive attitudes toward safety.

However, the effectiveness of the TPB can vary among different groups of drivers. Chung and Wong (2012) pointed out that while the TPB is widely used, its applicability in explaining risky driving behavior may differ due to structural

discrepancies observed among heterogeneous driver populations. This suggests that a one-size-fits-all approach may not adequately capture the complexities of driving behavior across different demographics. For instance, motorcyclists—who face unique environmental and situational challenges—may exhibit distinct behavioral patterns compared to car drivers or cyclists. In exploring road safety campaigns, Adamos and Nathanail (2016) examined the impact of such initiatives on driving behavior and accident rates. Their research delved into the effectiveness of mass media campaigns aimed at promoting safer driving practices. By analyzing various variables, experimental scenarios, and different campaign implementations, researchers sought to determine the influence of these campaigns on issues such as drinking and driving, seat belt usage, and driving fatigue. Various research designs, including experimental, quasi-experimental, and non-experimental approaches, were employed to assess the impact of road safety communication campaigns.

Existing literature indicates that the TPB is a useful framework for comprehending road behavior. However, its application may differ depending on driver groups and contextual factors. Responsible driving behavior ensures safety and aligns with local regulations, while poor driving habits could lead to accidents or negative experiences. By examining these behaviors, the study seeks to understand how tourists' driving practices impact their rental intentions and satisfaction with the services. For motorcyclists, this involves addressing the interplay of personal traits (e.g., risk perception, attitudes toward safety) and external factors (e.g., traffic infrastructure, enforcement of regulations). Interventions tailored to enhance perceived behavioral controls such as feedback mechanisms via mobile apps—can mitigate risky behaviors while promoting environmentally conscious driving patterns. Ultimately, integrating TPB-based insights with targeted safety measures offers a holistic approach to improving road safety and sustainability in motorcycle-dependent regions.

2.7 Factors Influencing Motorcyclists' Behavior: A Review and Extension of the TPB

TPB has been extensively applied across various disciplines to understand the factors influencing human behavior. According to Yang et al. (2007) indicated the TPB has found extensive application across multiple disciplines for comprehending the factors influencing human behavior. In the context of motorcyclists' behavior, TPB has been utilized to explore the determinants of human' road-related behaviors (Satiennam et al., 2018). To clarify, Uttra et al. (2020) motorcycle riding behavior is significantly influenced by factors such as health-motivated attitudes and perceived behavior control. As a case in point evidenced by Jalaludin et al. (2021) reveals that the intention to engage in safe behavior is the primary and most influential predictor of safe conduct among motorcyclists in Jakarta. This finding underscores the importance of intention in driving behavior, suggesting that when motorcyclists are motivated to prioritize safety, they are more likely to adopt safer practices. Additionally, demographic factors, such as the age of the driver, significantly influence safety behavior. Older or more experienced riders tend to exhibit safer behaviors compared to their younger or less experienced counterparts. This age-related difference suggests that experience and maturity may contribute to more prudent decision-making on the road, reinforcing the notion that personal characteristics can shape riding behaviors.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

Rental behavior is a complex phenomenon, affected by various factors such as contracts, economics, and cultural norms. This study aims to predict rental behavior by employing psychological concepts and theories, including the TPB, to identify influential factors. Additionally, this research addresses the gap in literature by utilizing Structural Equation Modeling (SEM) and the TPB theory to segment participants by gender and analyze variance. The primary objective is to construct SEM models and test hypotheses that illuminate the key factors in tourists' motorcycle rental behavior, thus bridging existing research gaps.

3.2 Model Variable Explanations and Research Hypotheses

The present study employs an expanded version of the TPB in figure 3.1 that incorporates Psychological Characteristics, Emotions, and Driving Behavior as additional variables. The goal is to assess the effects of each element using structural equation modeling. First, attitude refers to the overall evaluation and feeling of renting a motorcycle, such as whether they think renting a motorcycle is fun, convenient or cost-effective. Second, subjective norms involve the pressure or support they perceive from important others or society on whether they should rent a motorcycle, including the local culture's views on tourists renting motorcycles. Third, perceived behavioral control is their confidence and cognition of whether they have the ability and resources to rent and drive a motorcycle, such as whether they think they have enough skills to drive a motorcycle and whether they can afford the rental fee. Fourth, psychological characteristics refer to personal psychological factors that affect their decision-making and behavior, such as risk-taking tendency and desire for new experiences. Fifth, emotions reflect their emotional state when considering and renting a motorcycle, for

example, being excited about exploring a new city on a motorcycle or worrying about accidents, all of which will affect their decision-making and rental experience. Sixth, the behavior of renting a motorcycle is the specific driving behavior that tourists show when they actually choose and drive a motorcycle, such as obeying traffic rules. It should be noted that perceived behavioral control not only affects behavior through intention (H3), but also directly affects the behavior itself (H5).

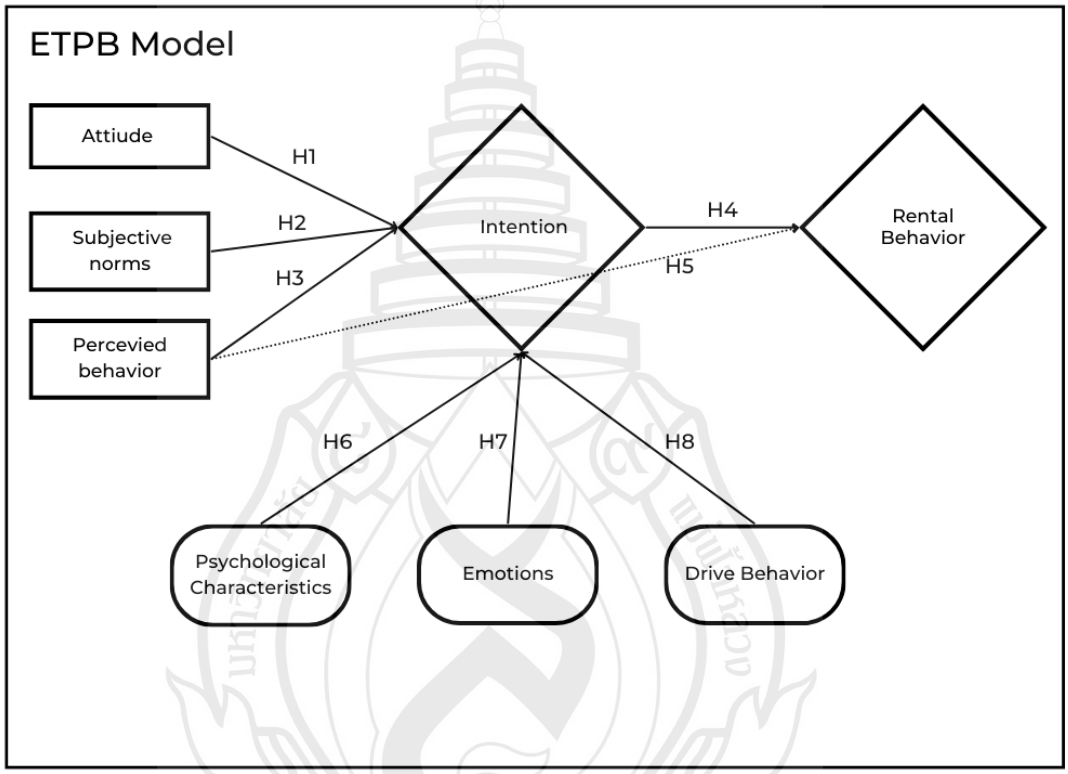


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Figure 3.1 Conceptual Framework of ETPB Model Hypotheses

Building upon the extended TPB model, the study examines the following hypotheses:

H1: Attitude has a significant and positive effect on rental behavior.

H2: Subjective norms significantly and positively affect rental behavior.

H3: Perceived behavioral control significantly and positively affects rental behavior.

H4: Intention significantly and positively affects rental behavior.

H5: Perceived behavioral control significantly and positively affects rental behavior.

H6: Psychological characteristics of the respondents have a significant effect on rental intention.

H7: Emotions of the respondents have a significant and positive effect on rental intention.

H8: Driving behavior of the respondents has a significant and positive effect on rental intention.

3.3 Data Collection

This study seeks to examine the factors influencing tourists' decision-making process regarding motorcycle rentals, utilizing the ETPB. The researchers have been conducting data collection among tourists presently in Chiang Rai. The focus group comprises individuals who have previously rented motorcycles during their travels, as well as those who have not engaged in motorcycle rentals. Respondents willingly participated in completing the questionnaire. The data collection period for this study is projected to span from July 1 to September 1, 2024, encompassing a duration of two months. Respondents can anticipate spending approximately 4-6 minutes comprehensively addressing all sections of the study.

The sample size for this research, which investigates rental behavior in tourism in Chiang Rai, was determined using the Taro Yamane formula by Yamane (1967) , a widely accepted method for estimating sample sizes in survey research. According to what I mentioned before, Chiang Rai will receive 756,821 foreign tourists in 2023, so by applying the Taro Yamane formula, we could calculate the appropriate sample size to ensure a representative sample for this study.

$$n = \frac{N}{1 + N\mathrm{e}^2} \quad (1)$$

Where

n : the sample size

N : the population size

e : the acceptable sampling error

(error standard here is 5%)

Substitute the value in the formula

$$n = \frac{756821}{1 + 756821(0.05)^2} \quad (2)$$

$$n = 399.789 \text{ or,}$$

$$n = 400 \quad (3)$$

A sample of 420 participants will be selected for this study. This sample size was determined through a statistical power analysis, considering the required confidence level and effect size. Although the initial calculation yielded a sample size of 399, an increase to 420 was decided upon to account for potential data loss or errors during data collection.

Rounding up to 420 participants ensures an adequate number of valid responses for analysis, strengthening the reliability and robustness of the study's findings. This larger sample size will provide a more accurate representation of motorcycle tourism users who rent motorcycles for tourism purposes in Chiang Rai, Thailand.

The study relied on the field intercept method to generate a large enough convenience sample for detailed analysis. The questionnaire survey was conducted at Phaholyothin Road and Thanon Baanpa Pragarn Road in Chiang Rai. These are the most popular places for tourists in Chiang Rai and the places with the largest number of tourists. Each respondent was selected by the convenience sampling method. Convenience sampling involves selecting participants based on their availability and willingness to participate, rather than random selection. Compared to interviews, convenience sampling is cheaper, faster, and reaches more people at once Sekaran (2003). Participants were approached and invited to join the study. Those who consented were asked to complete the questionnaires on-site. To maintain confidentiality and protect the privacy of the respondents, no names were collected, and all responses were kept strictly confidential and anonymous. This ensured that participants' identities remained undisclosed throughout the study.

3.4 Questionnaires

This study was designed based on the TPB and aimed to investigate the factors influencing tourists' decisions regarding motorcycle rentals during their visits to Chiang Rai. To achieve this, this study adapted measurement items from previous studies, and all scales contained multiple items.

The assessment of these constructions required self-report questionnaires that were adapted and modified for the use of rented motorcycles. To create appropriate scales for the different variables of studying tourists renting motorcycles, the existing literature was consulted to understand the available scales, and then a questionnaire on the intention to rent motorcycles was drafted. All scales will use the 5-point Likert scale provide by Likert (1932) employed in this study ranged includes the following levels: (1) Strongly Disagree, (2) Disagree, (3) Neither Agree nor Disagree, (4) Agree, and (5) Strongly Agree. Before commencing the formal survey, a focus group discussion was held with three invited experts to assess the scales for content validity. These experts evaluated each item, responding to the query: "Does this item effectively measure the intended survey goal, and is it necessary and beneficial?" Items lacking consensus were reviewed and refined until the agreement was reached on their inclusion. To further validate the questionnaire and ensure clarity for respondents, ten motorcyclists were randomly chosen to read through and respond to the survey. They offered suggestions for refining the survey items to more accurately reflect the factors influencing tourist decisions about motorcycle rentals in Chiang Rai.

3.5 Date Analysis

In this study, factor analysis played a crucial role in examining the measurement of observed variables or indicators, which are components that can be directly measured. Factor analysis was applied in exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). In the EFA analysis, SPSS software was used to process the data, aiming to classify the observed variables or indicators or reduce the number of variables through factor analysis according to the method of Muthén and Muthén (2010). Factor

loadings exceeding 0.5 were considered significant and were selected for further research (Reason et al., 1990).

Next, a multi-group SEM analysis was conducted using AMOS software to test the hypotheses based on the TPB regarding the factors that affect tourists' motorcycle rental behavior, as shown in figure 3.2. To ensure the reliability and applicability of the data model, we first conducted a reliability test (Cronbach's Alpha) to ensure that the measurement items of each latent variable had high internal consistency (Alpha value greater than 0.7). Then assessed the factor loadings to confirm that the contribution of each observed variable on its corresponding latent variable was high enough, typically factor loadings should be greater than 0.7. Next, the data was assessed for suitability through the Kaiser-Meyer-Olkin (KMO) value (recommended to be greater than 0.7) to determine if it was suitable for factor analysis.

The formula for the KMO test is:

$$KMO = \frac{\sum_{j \neq k} \sum r_{jk}^2}{\sum_{j \neq k} \sum P_{jk}^2} \tag{4}$$

The correlation between the variable in question and another variable is denoted as r_{jk}, while P_{jk} represents the partial correlation Cureton and D'Agostino (2013). Also looked at the eigenvalues and retained factors with eigenvalues greater than 1, as these factors explained a greater amount of variance in the data.

Finally, the overall model fit was validated using Confirmatory Factor Analysis (CFA), assessed through key indicators such as chi-square (χ^2), degrees of freedom (df), comparative fit index (CFI), Tucker-Lewis's index (TLI), normed fit index (NFI), goodness-of-fit index (GFI), root mean square error of approximation (RMSEA), and root mean square residual (RMR). According to Chansuk et al. (2022), the model demonstrated acceptable fit, with CFI, TLI, NFI, and GFI values exceeding 0.90, while RMSEA and RMR values were below 0.05 or close to 0, indicating a strong model fit.

The population CFI can be expressed as follows by Bentler (1990):

$$CFI = \frac{F_k}{F_0} \tag{5}$$

Where F_K and F_0 represent the minimum values of a discrepancy function for the postulated model and the baseline model, respectively.

The population TLI can be expressed as follows by Bentler (1990) :

$$TFI = 1 - \frac{F_k / df_k}{F_0 / df_0} \quad (6)$$

Where $F_0 \ / \ df_0$and $F_k \ / \ df_k$represent the misfit per degree of freedom for the baseline model and the postulated model, respectively.

The RMSEA measures by Steiger (1990) the discrepancy due to the approximation per degree of freedom as follows:

$$RMSEA = \sqrt{\frac{F_k}{df_k}} \quad (7)$$

Where F_k denotes the minimum of a discrepancy function that measures the difference between the population covariance matrix $\mathbf{\Sigma}$ and the model implied covariance matrix $\mathbf{\Sigma_0}$ for the hypothesized model.

These steps ensure that it could had a reliable and suitable data model for testing the hypothesis and gaining a deep understanding of the factors influencing tourists' motorcycle rental behavior.

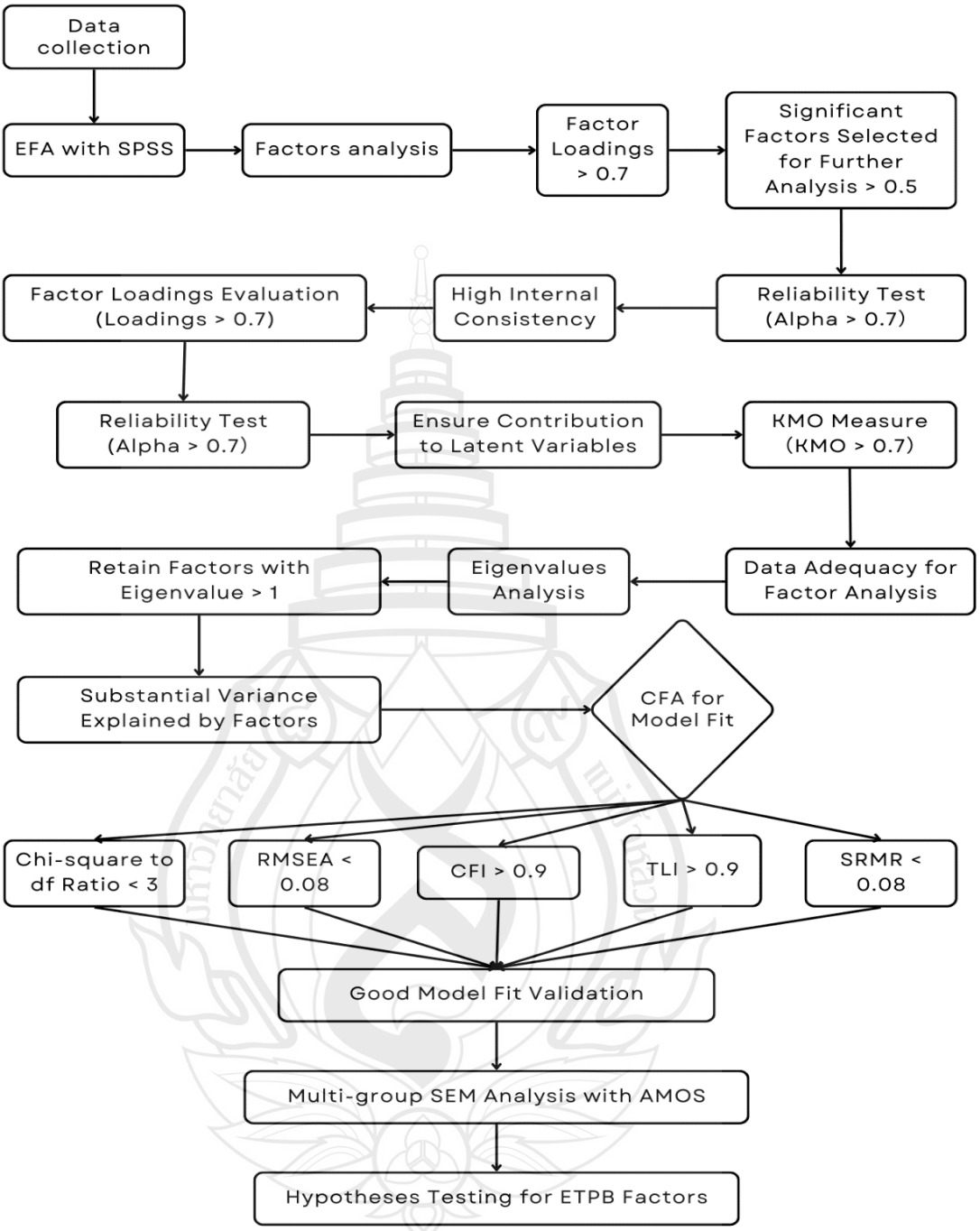

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Figure 3.2 Analysis Modelling

3.6 Ethical Consideration

Ensuring the ethical integrity of this research on motorcycle tourism in Chiang Rai, Thailand, is a fundamental priority. To achieve this, the study adheres to strict ethical principles, beginning with informed consent: all participants will receive a comprehensive form detailing the study's purpose, procedures, and their rights, including the voluntary nature of participation and the ability to withdraw at any time without penalty. Additionally, confidentiality and data protection are paramount; participants' personal information and responses will be anonymized and securely stored using encryption and password-protected systems, with access limited to authorized researchers to prevent unauthorized use. Furthermore, the study emphasizes voluntary participation, ensuring participants are fully aware that their involvement is optional and that they can discontinue at any stage without providing a reason or facing negative consequences. These measures are designed to uphold transparency, protect participants' rights, and maintain the credibility and reliability of the research findings.

3.7 Descriptive Statistics Analysis

When analyzing the motorbike rental behavior of tourists in Chiang Rai, Thailand, a comprehensive descriptive statistical analysis can provide valuable insights into the characteristics and patterns of this market segment. The analysis will delve into various aspects including demographics, travel preferences, rental behavior, perceived risk, and the impact of social factors.

Demographic Variables (Age, Gender, Country of Origin, Income Level, Have a motorcycle driver's license.)

Travel Preferences (Frequency of Travel, Independent vs. Guided Tours, Length of Stay in Chiang Rai.)

Rental Behavior (Frequency of Motorcycle Rentals, Duration of Rental Periods, Primary Purpose of Renting.)

Attitudes and Beliefs (Attitude Towards Motorcycle Rental, Subjective Norms, Perceived Behavioral Control.)

Emotions (Fear of Accidents, Joy of Riding, Anxiety About Rental Process, etc.)

Psychological Characteristics (Risk Aversion, Autonomy Preference, Thrill-Seeking Behavior, etc.)

Driving Behavior (Experience with Motorcycles, Cautious vs. Aggressive Driving Style, Adherence to Traffic Rules, etc.)

3.8 Expectation Result and Research Schedule

This study examines the key factors influencing motorcycle tourism users' rental behavior intentions in Chiang Rai, Thailand, using the ETPB framework. It explores the relative importance and interrelationships of critical factors such as attitude, subjective norm, perceived behavioral control, psychological characteristics, emotions, and driving behavior. Additionally, it investigates the role of psychological characteristics, emotions, and driving behavior as dependent variables shaping rental decisions. By providing insights into the multidimensional decision-making process, this research aims to inform tourism operators and local authorities on developing targeted marketing strategies and service enhancements. Furthermore, it contributes to the existing literature on motorcycle tourism and extends the application of the expanded TPB model within Thailand's travel landscape.

The proposed research project will be conducted according to the following schedule in figure 3.3.

	February	March	April	May	June	July	August	September	October	November	December
Draft the research											
Draft Chapter 1											
Draft Chapter 2											
Draft Chapter 3											
Draft the Questionnair											
Collect & Analyze data											
Draft Chapter 4											
Draft Chapter 5											
Final Presentation											

Figure 3.3 Research Schedule

CHAPTER 4

RESULTS

4.1 Introduction

In this chapter, I present the findings from my survey, which aimed to explore the factors influencing foreign tourists' motorcycle rental behavior in Chiang Rai. I initially designed the survey with a target sample size of 400, but I ended up collecting 438 responses and utilized 420 of them for my analysis. This larger sample allows for a more robust analysis and provides deeper insights into the behaviors and attitudes of motorcycle rental users.

Guided by TPB, my research extends this framework into what I refer to as ETPB. By incorporating additional psychological factors such as emotions and past driving experiences, I aim to gain a more nuanced understanding of how these elements interact and influence decision-making in the context of motorcycle tourism.

Furthermore, it's important to consider how these findings relate to logistics and supply chain management. Understanding tourists' rental behaviors can inform rental service providers and local businesses on how to optimize their services and operations to better meet customer needs. This chapter will outline the key themes and patterns identified in the data, setting the stage for a comprehensive discussion in the subsequent sections.

4.2 Description of Statistical Variable

The demographic analysis of the 420 respondents in Chiang Rai 48.6% were male, 48.1% female, and 3.3% LGBTQA+. Most were aged 26–35 (61%), 76.7% held a university degree, and 21.4% had graduate education. 45.5% earned over 25,000 THB. The main occupations were self-employed (36.4%) and managers (26.7%). Most respondents were from Asia (45%), Europe (40.7%), and North America (7.6%). The details are as shown on table 4.1.

Table 4.1 Description Statistics of Respond' Tourist Demographic Variables (N=420)

Variables	Items	Frequency	Percent
Gender	Male	204	48.6
	Female	202	48.1
	LGBTQA+	14	3.3
Age	18-25	100	23.8
	26-35	256	61.0
	36-45	47	11.2
	46-55	10	2.4
	56 and up	7	1.7
Education Level	Primary	1	0.2
	High school	7	1.7
	Undergraduate school	322	76.7
	Graduate school	90	21.4
Income Level	<10,000 THB	76	18.1
	10,000-15,000 THB	52	12.4
	15,000-20,000 THB	51	12.1
	20,000-25,000 THB	50	11.9
	>25,000 THB	191	45.5
Occupation	Education	56	13.3
	Manager	112	26.7
	Self-employed	153	36.4
	Housework	7	1.7
	Student	81	19.3
	Others	11	2.6
Continent	Asia	189	45.0
	Europe	171	40.7
	Africa	5	1.2
	North America	32	7.6
	South America	8	1.9
	Australia	15	3.6

In table 4. Most participants (53.6%) reported having a motorcycle license from their home country, though only 24% held a Thai license. A significant majority (81%) had prior riding experience, and 66.7% had previously rented motorcycles in Thailand, highlighting the popularity of rentals among tourists. In terms of travel habits, 53.8% traveled once a year, and 54.5% preferred independent travel over guided tours. The majority stayed in Chiang Rai for 4–6 days (55.2%) and chose accommodations near tourist attractions (48.8%), showing a preference for convenience. Regarding vehicle preference, 52.4% favored scooters due to their ease of use, and 57.9% had insurance coverage during rentals.

Additionally, 68.3% typically rode with a passenger and kept speeds under 60 km/h, reflecting cautious riding behavior. Most respondents (63.1%) expected daily rental prices between 200–400 THB, and 61.7% planned to use motorcycles mainly for exploring urban areas.

Table 4.2 Description Statistics of Respond's Tourist Travel Performance Variables (N=420)

Variables	Items	Frequency	Percent
Do you have a motorcycle license from your country?	Yes	225	53.6
	No	195	46.4
Do you have a Thailand motorcycle license?	Yes	101	24.0
	No	319	76.0
Do you have experience riding motorcycle?	Yes	340	81.0
	No	80	19.0
Do you have experience renting a motorcycle in Thailand?	Yes	280	66.7
	No	140	33.3
Frequency of travel	Monthly	19	4.5
	Every few months	127	30.2
	Once a year	226	53.8
	Rarely	48	11.4
Preference for Independent vs. Guided Tours	Independent	229	54.5
	Guided tours	31	7.4
	Mix of independent travel and guided tours	160	38.1

Table 4.2 (Continued)

Variables	Items	Frequency	Percent
Length of stay in Chiang Rai	1-3 days	123	29.3
	4-6 days	232	55.2
	7-9 days	48	11.4
	>9 days	17	4.0
What type of hotel location do you generally prefer when traveling?	Downtown	191	45.5
	Near tourist places	205	48.8
	Quite suburban	19	4.5
	Others	5	1.2
Which type of motorcycle do you prefer to rent?	Scooter	220	52.4
	Standard motorcycle	151	36.0
	Adventure bike	37	8.8
	Others	12	2.9
Do you have insurance coverage for riding a rented motorcycle in Thailand?	Yes	243	57.9
	No	177	42.1
Do you typically ride alone or with a passenger on a rented motorcycle?	Alone	133	31.7
	With a passenger	287	68.3
How long do you typically use a rented motorcycle per day when traveling in Chiang Rai?	1-4 hours	126	30.0
	4-7 hours	78	18.6
	8-11 hours	206	49.0
	>12 hours	10	2.4
What is the typical speed you maintain when riding a rented motorcycle in Chiang Rai?	Slow (under 40 km/h)	62	14.8
	Moderate (40-60	346	82.4
	km/h)	12	2.9
	Fast (over 60 km/h)		
What is the typical daily rental rate for the motorcycle you prefer?	<200 THB	60	14.3
	200-400 THB	265	63.1
	400-600 THB	88	21.0
	>600 THB	7	1.7
Which places you want to go after rent a motorcycle?	Urban area	259	61.7
	Sub-urban area	130	31.0
	Rural area	31	7.4

4.3 Reliability Test

After summarizing the demographic characteristics of my survey respondents, I conducted a reliability test using Cronbach's alpha. For this analysis, I utilized SPSS Version 27. This statistical measure assesses the internal consistency of the items within the survey, indicating how closely related they are as a group. Cronbach's alpha value of 0.70 or above is generally considered acceptable for social science research. As shown in table 4.3, which alpha ranges from 0.792 to 0.893. This range indicates acceptable to good internal consistency across the items for each construction. Specifically, ATT shows an alpha of 0.829, demonstrating strong reliability. The SN construct has an alpha of 0.798, indicating satisfactory reliability. PBC construct shows a reliability of 0.921, within the acceptable range. PC construct has a reliability of 0.823, indicating strong internal consistency. EM construct shows excellent reliability with an alpha of 0.823. Notably, PBCa construct has a reliability of 0.773, while the DB construct shows a reliability of 0.851, reflecting good internal consistency.

Table 4.3 Description Statistics of Reliability Test (30 Items)

Factor	Item	Mean	SD	Alpha
Attitude; ATT	ATT1	4.12	0.851	0.829
	ATT2	4.03	0.820	
	ATT3	4.00	0.801	
	ATT4	4.01	0.887	
Subjective norms; SN	SN1	4.00	0.961	0.798
	SN2	3.95	0.905	
	SN3	4.03	0.880	
	SN4	3.91	0.912	
Perceived behavioral Control; PBC	PBC1	3.83	1.249	0.921
	PBC2	3.79	1.229	
	PBC3	3.75	1.214	
	PBC4	3.81	1.220	
PBC to rental behavior; PBCa	PBCa1	4.08	0.993	0.773
	PBCa2	3.95	0.885	
	PBCa3	3.90	0.866	
Intention to rental behavior; IN	IN1	4.14	0.894	0.795
	IN2	3.98	0.860	
	IN3	4.00	0.877	
Psychological characteristics; PC	PC1	4.12	1.013	0.823
	PC2	4.02	0.943	
	PC3	4.15	0.909	
	PC4	4.08	1.001	
Emotion; EM	EM1	4.20	0.898	0.823
	EM2	4.08	0.878	
	EM3	4.01	0.877	
	EM4	4.07	0.860	
Drive behaviors; DB	DB1	4.53	0.755	0.851
	DB2	4.32	0.845	
	DB3	4.32	0.828	
	DB4	4.37	0.834	

4.4 EFA Analysis

EFA was used to uncover the factor structure of the study constructs. Data suitability was confirmed with a KMO of 0.885 and a significant Bartlett's test ($p < 0.05$). PCA with varimax rotation identified eight components with eigenvalues over 1, explaining 69.75% of the total variance. Items with loadings above 0.50 were retained, supporting the expected factor structure. So, the results were as follows in table 4.4.

Table 4.4 Rotated Component Matrix[a]

Rotated Component Matrix[a]								
	Component							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
ATT1			0.830					
ATT2			0.781					
ATT3			0.795					
ATT4			0.673					
SN1						0.824		
SN2						0.742		
SN3						0.721		
SN4						0.669		
PBC1	0.901							
PBC2	0.854							
PBC3	0.868							
PBC4	0.841							
PBCa1							0.755	
PBCa2							0.772	
PBCa3							0.800	
IN1								0.720
IN2								0.796
IN3								0.727
PC1					0.748			
PC2					0.712			

Table 4.4 (Continued)

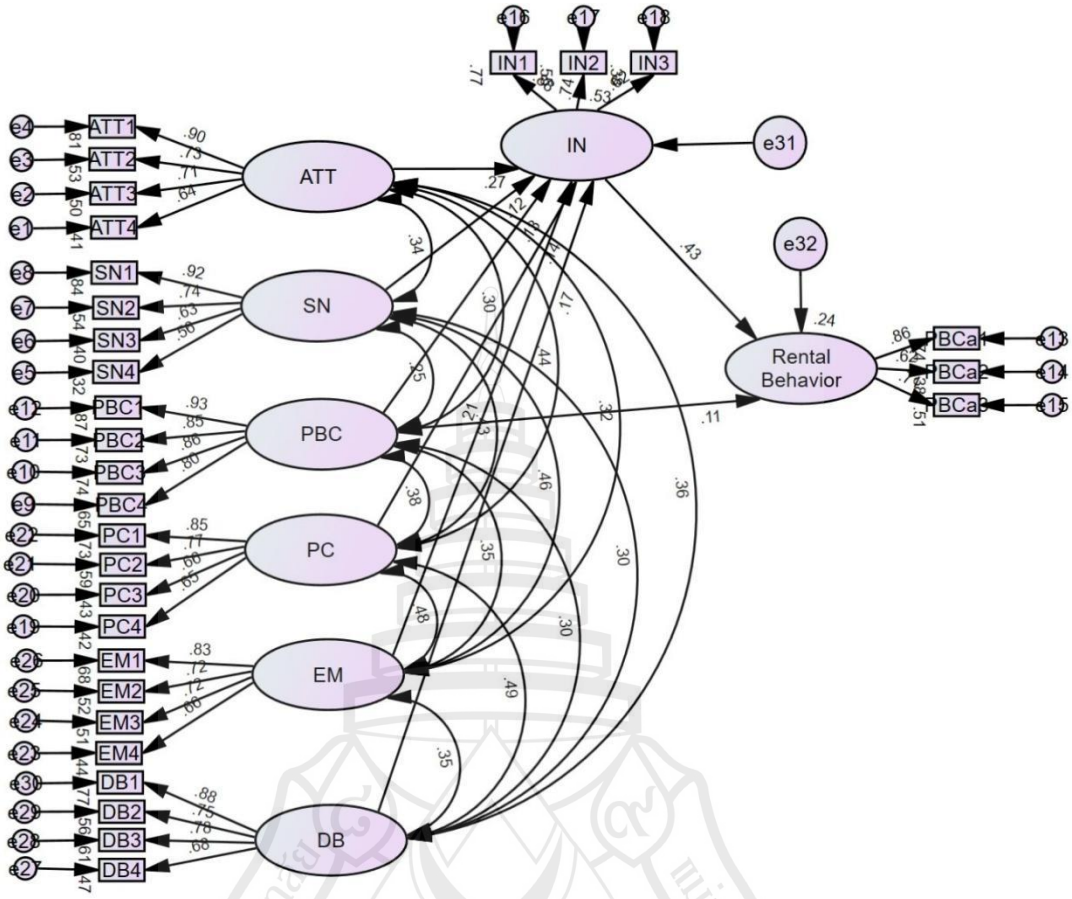
Rotated Component Matrix[a]								
	Component							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
PC3					0.755			
PC4					0.741			
EM1				0.767				
EM2				0.733				
EM3				0.777				
EM4				0.746				
DB1		0.844						
DB2		0.789						
DB3		0.821						
DB4		0.714						

4.5 CFA Analysis

As shown in Table 4.5, the factor loadings for all observed variables range from 0.563 to 0.931, with all p-values below 0.001, indicating statistical significance and substantial contributions to their respective latent constructs. Confirmatory Factor Analysis (CFA), which verifies the hypothesized relationships between observed variables and underlying latent factors, supports the proposed measurement model. All factor loadings exceed the 0.50 threshold, demonstrating adequate structural validity. The Average Variance Extracted (AVE) values range from 0.525 to 0.747, surpassing the recommended 0.50 level and confirming sufficient convergent validity. Composite Reliability (CR) values range from 0.777 to 0.922, all above the 0.70 benchmark, indicating strong internal consistency. Overall, the model demonstrates a good fit to the data, as evidenced in Figure 4.1 by the following fit indices: $\chi^2 = 644.291$, df = 382, $\chi^2/df = 1.687$, $p < 0.001$, CFI = 0.967, TLI = 0.951, NFI = 0.901, GFI = 0.904, RMSEA = 0.040, and RMR = 0.045.

Table 4.5 Confirmatory Factor Analysis

Factor	Items	Loading	Sig	AVE	CR
Attitude; ATT	ATT1	0.902	<0.001	0.562	0.834
	ATT2	0.726	<0.001		
	ATT3	0.705	<0.001		
	ATT4	0.639	<0.001		
Subjective norms; SN	SN1	0.917	<0.001	0.525	0.810
	SN2	0.736	<0.001		
	SN3	0.633	<0.001		
	SN4	0.562	<0.001		
Perceived behavioral Control; PBC	PBC1	0.934	<0.001	0.747	0.922
	PBC2	0.854	<0.001		
	PBC3	0.860	<0.001		
	PBC4	0.804	<0.001		
PBC to rental behavior; PBCa	PBCa1	0.858	<0.001	0.541	0.777
	PBCa2	0.615	<0.001		
	PBCa3	0.714	<0.001		
Intention to rental behavior; IN	IN1	0.876	<0.001	0.565	0.793
	IN2	0.740	<0.001		
	IN3	0.617	<0.001		
Psychological characteristics; PC	PC1	0.854	<0.001	0.544	0.825
	PC2	0.768	<0.001		
	PC3	0.659	<0.001		
	PC4	0.650	<0.001		
Emotion; EM	EM1	0.827	<0.001	0.539	0.823
	EM2	0.721	<0.001		
	EM3	0.715	<0.001		
	EM4	0.664	<0.001		
Drive behaviors; DB	DB1	0.876	<0.001	0.600	0.856
	DB2	0.748	<0.001		
	DB3	0.778	<0.001		
	DB4	0.685	<0.001		



Source Researcher

Figure 4.1 The Structural Model with Standardized Estimates

4.6 Hypothesis Testing

The results of the SEM analysis method model test are summarized in table 4.6. According to the 95% confidence criterion, a p-value below 0.05 signifies a statistically significant effect. The findings from this research reveal that tourists' ATT have a substantial influence on their IN, thereby confirming the validity of hypothesis H1, with β is 0.375 and a p-value less than 0.001. This indicates that a positive attitude towards motorcycle rentals positively enhances tourists' intentions to engage in rental activities, thereby increasing the likelihood of such rentals occurring.

Additionally, SN demonstrated a significant effect on IN, which supports the establishment of hypothesis H2. This relationship is characterized by β is 0.179 and a

p-value below 0.05, suggesting that the social pressures and influences from peers or family members can significantly affect tourists' rental intentions.

PBC also exhibited a significant impact on IN, thereby verifying hypothesis H3, with β is 0.106 and a p-value less than 0.01. This suggests that tourists' perceptions of their ability to rent motorcycles are influential in shaping their rental intentions.

Further analysis revealed a significant relationship between IN and RB, confirming hypothesis H4, with β is 0.468 and a p-value less than 0.001. This indicates that a higher intention to rent correlates strongly with actual rental behavior.

Conversely, PBC did not demonstrate a significant effect on RB, leading to the rejection of hypothesis H5 ($\beta = 0.095$, $p > 0.05$). This finding suggests that while perceived control may influence intention, it does not directly affect actual rental behavior, potentially due to external factors that obscure an individual’s sense of control.

Moreover, PC were found to have a significant impact on IN, thus supporting hypothesis H6 with b is 0.174 and a p-value below 0.05. This highlights those personal traits, such as adventurousness and a desire for new experiences, significantly influence tourists' intentions to rent motorcycles.

EM also significantly affected IN, with a strong significance level that confirms hypothesis H7 ($\beta = 0.287$, $p < 0.001$). This underscores that positive emotions associated with motorcycle riding, such as excitement and joy, play an important role in enhancing rental intentions.

Finally, DB showed a significant impact on IN, supporting the establishment of hypothesis H8 with β is 0.234 and a p-value less than 0.01. This finding suggests that tourists' prior driving experiences significantly influence their intentions to rent motorcycles, further emphasizing the importance of experience in the decision-making process.

Table 4.6 Results of the Structural Model

Hypotheses	Estimate (β)	t	p-value[a]	Decision
H1: ATT→IN	0.375	4.979	***	Supported
H2: SN→IN	0.179	2.169	0.030*	Supported
H3: PBC→IN	0.106	2.746	0.006**	Supported
H4: IN→RB	0.468	6.782	***	Supported
H5: PBCa→RB	0.095	1.871	0.061	Not supported
H6: PC→IN	0.174	2.279	0.023*	Supported
H7: EM→IN	0.287	3.538	***	Supported
H8: DB→IN	0.234	3.147	0.002**	Supported

CHAPTER 5

CONCLUSION

5.1 Overview

Motorcycle rental has become a convenient way for foreign tourists to explore the local scenery and culture in Thailand, and this study uses a tourist destination like Chiang Rai as an investigation. This study is based on the ETPB and adds three new key variables: EM, including fear of accidents, enjoyment of riding, and anxiety about the rental process; PC, such as risk aversion, autonomy preference, and thrill-seeking behavior; DB, such as motorcycle driving experience, driving style (cautious or aggressive), and compliance with traffic rules.

Through SEM analysis of survey data of 438 foreign tourists, the study found that EM, PC and DB all significantly affect IN, while revealing the impact of PBC on RB. The direct impact is not significant. This study explores how motorcycle rental services can enhance the tourist experience by optimizing logistics and supply chain links, including aspects of urban transportation and mobility, such as vehicle supply, distribution, and maintenance. This research provides theoretical support for service optimization in supply chain management within the motorcycle rental industry and suggests new directions for improving industry practices, particularly in the context of urban transportation and mobility.

5.2 Discussion

First, ATT has a significant effect on IN, indicating that tourists are more inclined to choose adventurous and flexible transportation modes when deciding on motorcycle rentals. This finding aligns with the foundational principle of the Theory of Planned Behavior, where a positive evaluation of a behavior enhances the likelihood of performing it. In the context of logistics, supply chain, and urban transportation, rental providers should emphasize the adventurous and flexible aspects of their services to

meet modern tourists' expectations. For instance, a solo traveler seeking to explore remote cafes and attractions around Chiang Rai may be more motivated to rent a scooter if the platform offers flexible pick-up/drop-off points, scenic route recommendations, or hourly pricing plans. These design elements cater directly to the traveler's attitude and mobility preferences, and when integrated into smart mobility infrastructures such as multimodal hubs and digital booking systems—they can support seamless, sustainable, and user-centered travel across urban spaces.

Second, SN significantly influences IN, underscoring the importance of social environments and peer influence in shaping tourists' rental decisions. Social platforms, reviews, and digital communities play a critical role in smart mobility systems by creating trust and reducing uncertainty. For example, a tourist who encounters multiple social media posts and highly-rated reviews from fellow travelers—showcasing motorcycle rides in Chiang Rai—may be more inclined to rent due to perceived social validation. From a logistics and supply chain perspective, such behavior creates valuable feedback loops that can be used for predictive inventory management. If tourists consistently rate certain locations and vehicle types highly, providers can dynamically allocate vehicles based on demand trends and review sentiment analysis.

Third, the significant influence of PBC on IN, along with the strong effect of IN on RB, suggests that when tourists believe they have the necessary resources, skills, and confidence, they are more likely to intend and proceed with rental activities. This supports the use of digital tools that reduce cognitive and logistical barriers—such as safety tutorials, ride-planning assistance, and pre-ride instructions—to strengthen the user's sense of control. For instance, a tourist with prior experience riding motorcycles in Southeast Asia may feel confident navigating Chiang Rai's streets and, upon encountering a rental app offering safety maps and live traffic updates, may easily transition from intention to behavior. However, the non-significant relationship between PBC and actual rental behavior (H5 rejected) indicates that while tourists may feel capable, their final decision is still contingent on service-side factors such as real-time vehicle availability, weather conditions, or customer service responsiveness. A confident rider may abandon rental plans if no suitable motorcycles are available at the desired location—demonstrating that service reliability and operational readiness must complement perceived ability. This calls for enhanced logistics strategies, including

accurate inventory forecasting, well-maintained fleets, and responsive customer support mechanisms.

Fourth, the significant impact of PC on IN confirms that individual traits—such as thrill-seeking, novelty-seeking, or risk tolerance—play a meaningful role in shaping tourists' rental decisions. This supports the integration of data-driven personalization within smart mobility systems. Platforms can utilize customer segmentation tools to identify rider profiles and offer targeted recommendations. For example, a traveler who rates adventure activities highly in their app profile may be offered scenic countryside routes or high-performance motorcycles. Aligning inventory and content offerings with psychological preferences not only improves service satisfaction but also optimizes fleet utilization by matching vehicle types to rider needs.

Fifth, the significant relationship between EM and IN illustrates that affective states such as joy, fear, excitement, or anxiety significantly drive behavioral intention. In practice, rental platforms can reduce anxiety and elevate enjoyment through user-friendly features such as automated check-in, clear pricing, video guides, and route previews. A tourist who initially hesitates to rent due to safety concerns may gain confidence when the app offers beginner-friendly scooters, instructional videos, and visible customer ratings. Emotion-sensitive design therefore contributes to both demand stimulation and customer loyalty. From a supply chain standpoint, supporting these emotional needs requires responsive vehicle distribution and location-aware stock levels to ensure emotionally reassuring vehicles—such as smaller or automatic models—are readily available in high-footfall zones.

Lastly, the significant effect of DB on IN suggests that tourists with prior motorcycle riding experience are more likely to rent. This insight highlights the value of incorporating rider history and skill level into rental platforms. Tourists with previous riding experience in similar traffic environments, for example, may prefer larger or manual motorcycles and be more inclined to explore non-urban areas. By integrating experience-based filters and intelligent recommendation algorithms, platforms can personalize offerings and align logistics with demand patterns. For instance, a system that recognizes a user’s past rentals in Vietnam or Indonesia could prioritize Chiang Rai’s rural touring packages, ensuring that suitable vehicles are deployed in those areas.

On the supply chain side, this supports strategic fleet diversification and adaptive vehicle redistribution to serve segmented markets effectively.

5.3 Limitation

This study provides valuable insights into the factors influencing foreign tourists' intentions and behaviors regarding motorcycle rentals. However, several limitations must be addressed, particularly in the context of urban transportation, smart mobility, logistics, research scope, and survey methodology.

5.3.1 Urban Transportation, Smart Mobility, and Logistics Limitations

Vehicle Availability and Geographic Distribution: The study does not explore how the availability and geographic distribution of motorcycles impact tourists' rental options. Uneven vehicle distribution or insufficient maintained motorcycles in high-demand urban areas can hinder tourists' mobility. In the context of urban transportation and logistics, optimizing vehicle placement and inventory management is critical. Future research could explore how integrating real-time availability systems, supported by smart mobility platforms, can align tourists' needs with service efficiency, enhancing seamless urban travel.

Operational Flexibility: This study does not analyze external factors, such as traffic conditions, weather, and fuel supply, which are central to urban transportation and smart mobility systems. Dynamic service adjustments, such as offering alternative routes or on-demand vehicle switching during peak traffic or adverse weather, could significantly enhance user satisfaction. Exploring how these factors integrate into mobility platforms and logistics systems can further improve reliability and adaptability in real-world operations.

Integration of Technology and Data Analytics: Advanced smart mobility technologies, such as IoT-enabled motorcycles and AI-powered route optimization, were not considered. These innovations can enhance urban transportation and logistics efficiency, ensuring better resource allocation and improving user experience. Future studies could examine the impact of such technologies on tourists' rental behavior and satisfaction.

5.3.2 Research Scope Limitations

Geographic Limitation: This study was conducted in Chiang Rai, Thailand, which may limit its applicability to other regions with varying urban transportation networks and mobility patterns. For instance, metropolitan areas with developed smart mobility systems or stricter traffic regulations might influence tourists' decisions differently. Future research should expand to diverse locations, including cities with advanced urban transportation infrastructures, to improve generalizability.

Tourist Segmentation: The study focuses on foreign tourists as a whole without analyzing sub-groups, such as demographics (age, nationality) or trip purpose (business, leisure). These factors could significantly impact tourists' psychological characteristics, emotional motivations, and transportation preferences. For urban transportation and logistics planning, understanding these variations is essential for designing targeted services and improving resource allocation.

5.3.3 Survey Methodology Limitations

Data Collection Mode: Data was collected through both online and offline surveys, potentially introducing sampling biases. Online surveys may disproportionately attract tech-savvy tourists familiar with smart mobility platforms, while offline surveys might capture those already engaging with rental services. Future studies should adopt more balanced sampling methods to ensure a representative understanding of both urban and non-urban users.

Self-Reported Data: Relying on self-reported data for psychological characteristics, emotions, and driving behavior can introduce inaccuracies, such as over- or underestimation of actual behavior. Combining self-reported data with objective metrics, such as rental transaction records or GPS tracking of vehicle usage, could provide a more accurate depiction of tourists' urban mobility behaviors.

Cross-Sectional Design: The use of a cross-sectional design limits the ability to observe how tourists' behavior changes over time. Longitudinal studies could reveal how urban transportation needs, psychological states, or emotional factors evolve during the travel process and influence rental behavior.

5.3.4 Unexplored Factors in Urban Transportation, Smart Mobility, and Logistics

Service Recovery and Adaptability: The study does not examine how rental providers address service disruptions, such as vehicle breakdowns or delays. In urban transportation and logistics systems, efficient service recovery mechanisms—like offering replacement vehicles or real-time troubleshooting—can significantly boost tourist trust and satisfaction.

Integration of Feedback Loops: While psychological and emotional factors were analyzed, the role of real-time feedback mechanisms in smart mobility and logistics systems remains unexplored. For instance, allowing users to rate vehicle conditions, service quality, or route recommendations in real time could influence rental decisions and improve service delivery.

5.4 Recommendation

5.4.1 Enhance Urban Mobility Integration with Smart Systems

To improve tourists' motorcycle rental experiences, providers should consider integrating smart mobility solutions into their operations. This could include the use of GPS-enabled motorcycles, real-time inventory tracking, and dynamic route optimization based on traffic and weather conditions. By leveraging data from smart transportation platforms, rental providers can offer more flexible and efficient services that cater to tourists' evolving needs in real time. Additionally, urban transportation networks can be better aligned with rental services, enabling seamless transfers between different modes of transport, such as from motorcycles to public transport.

5.4.2 Optimize Logistics and Resource Allocation

Rental providers should focus on improving logistics to ensure that motorcycles are available in high-demand areas and at peak times. By adopting smart logistics systems that track motorcycle availability, providers can optimize vehicle distribution and anticipate demand surges. This will ensure that tourists in urban locations or popular tourist spots have access to the vehicles they need, reducing wait times and improving overall satisfaction. Furthermore, providing flexible rental durations and customizable return locations can help meet tourists' preferences for convenience and spontaneity.

5.4.3 Utilize Data Analytics for Personalization

With the rise of big data and AI, motorcycle rental services should incorporate advanced analytics to personalize the rental experience for tourists. By analyzing customer behavior, preferences, and psychological characteristics, rental providers can offer tailored services. For example, tourists who exhibit a thrill-seeking behavior might be offered more adventurous routes or high-performance motorcycles, while those who are risk-averse could receive safer options or additional insurance coverage. This level of personalization can enhance tourists' satisfaction and increase the likelihood of repeat business.

5.4.4 Incorporate Real-Time Feedback and Social Influence

In the context of urban transportation and mobility, real-time feedback mechanisms can significantly enhance tourists' trust in rental services. Providers should allow tourists to provide instant reviews on vehicle quality, service reliability, and overall experience. This feedback not only helps future tourists make informed decisions but also supports rental providers in continuously improving their offerings. Integrating these reviews into the rental platforms can enhance the social influence on tourists' rental decisions, as they are more likely to follow the recommendations of their peers.

5.4.5 Enhance Operational Flexibility to Address External Factors

To accommodate tourists' needs in dynamic urban environments, rental providers should adopt flexible operational strategies that can adjust to external factors like traffic conditions, weather, and peak tourist seasons. For example, during heavy traffic or inclement weather, rental services could offer alternative routes or on-demand motorcycle swaps to ensure that tourists can still enjoy their rides safely and conveniently. This kind of flexibility is particularly important for enhancing the overall experience in urban areas, where unpredictable factors can significantly impact mobility.

5.4.6 Expand Geographic Coverage and Tourist Segmentation

Future research should explore the expansion of rental services across different geographic regions and among varied tourist groups to enhance the comprehensiveness of the findings. Different regions may exhibit unique traffic patterns, infrastructure capabilities, and cultural attitudes toward motorcycle usage, which can influence rental behaviors. Additionally, segmenting tourists by age, nationality, or purpose of travel

can help providers tailor services more effectively. For instance, younger travelers may seek convenience and digital accessibility, while older tourists may prioritize safety features and guided routes. By comparing diverse areas and user groups, both research and practice can yield deeper insights into the factors influencing rental intentions and behaviors.

5.4.7 Develop Smart Mobility Partnerships

Rental providers should explore collaborations with other transportation services, such as ride-sharing platforms or public transport systems, to create a more integrated and comprehensive mobility ecosystem. This could involve offering bundled services, such as combined tickets for public transportation and motorcycle rentals or discounted rates for tourists using both services. These partnerships can enhance the flexibility and convenience of transportation options for tourists, contributing to the development of a smart mobility framework that supports sustainable urban travel.

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APPENDIX

QUESTIONNAIRE

Thesis Survey Questionnaire

Questionnaire on motorcycle tourism users' rental behavior intention in Chiang Rai

Note: This research at Mae Fah Luang University explores factors influencing motorcycle rental decisions and safety practices among international visitors to Chiang Rai, Thailand. Your responses will be anonymous and confidential, used solely for research purposes, and will not be shared publicly.

Please read each question carefully and select the response that best reflects your experiences.

The survey will take approximately 4-6 minutes to complete. Thank you for participating in this study on motorcycle rental experiences in Thailand!

Part 1 Demographic

Gender:

Male

Female

LGBTQA+

Age:

18-25

26-35

36-45

46-55

56 and up

Education level:

Primary

High school

College/University

Graduate school

Income level:

<10,000 THB

10,000-15,000 THB

15,000-20,000 THB

20,000-25,000 THB

>25,000 THB

Do you have a motorcycle license from your country?

Yes

No

Do you have a Thailand motorcycle license?

Yes

No

Do you have experience riding motorcycle?

Yes

No

Do you have experience renting a motorcycle in Thailand?

Yes

No

Occupation:

Education

Manager

Self-employed

Housework

Student

What continent are you from?

Asia

Europe

Africa

North America

South America

Australia

Part 2 Travel performance

Do you have a motorcycle license from your country?

Yes

No

Do you have a Thailand motorcycle license?

Yes

No

Do you have experience riding motorcycle?

Yes

No

Do you have experience renting a motorcycle in Thailand?

Yes

No

Frequency of travel:

Very Frequent

Frequent

Occasional

Rare

Preference for Independent vs. Guided Tours:

Independent

Guided tours

Mix of independent travel and guided tours

Length of stay in Chiang Rai:

1-3 days

4-6 days

7-9 days

>9 days

What type of hotel location do you generally prefer when traveling?

Downtown

Near tourist places

Quite suburban

Others

What type of motorcycle do you prefer to rent?

Scooter

Standard motorcycle

Adventure bike

Other

Do you have insurance coverage for riding a rented motorcycle in Thailand?

Yes

No

Do you typically ride alone or with a passenger on a rented motorcycle?

Alone

With a passenger

How long do you typically use a rented motorcycle per day when traveling in Chiang Rai?

1-4 hours

4-7 hours

8-11 hours

>12 hours

What is the typical speed you maintain when riding a rented motorcycle in Chiang Rai?

Slow (under 40 km/h)

Moderate (40-60 km/h)

Fast (over 60 km/h)

What is the typical daily rental rate for the motorcycle you prefer?

<200 THB

200-400 THB

400-600 THB

>600 THB

Do you have insurance coverage for riding a rented motorcycle in Thailand?

Yes

No

Which places you want to go after rent a motorcycle?

Urban area

Sub-urban area

Rural area

Part 3 TPB (This survey is based on the Theory of Planned Behavior (TPB), which explores how attitudes, social norms, and perceived control influence decisions.)

The 5-point Likert scale provide by Likert (1932) employed in this study ranged includes the following levels: (1) Strongly Disagree, (2) Disagree, (3) Neither Agree nor Disagree, (4) Agree, and (5) Strongly Agree.

Attitude:

1.I believe renting a motorcycle during my vacation is a good intention.

1 2 3 4 5

2.Renting a motorcycle will make my trip more enjoyable.

1 2 3 4 5

3.Motorcycle rental is an economical mode of transportation for tourists.

1 2 3 4 5

4.I feel that renting a motorcycle will enhance my travel experience.

1 2 3 4 5

Subjective norms:

1.My friends support my decision to rent a motorcycle.

1 2 3 4 5

2.I feel social pressure to rent a motorcycle when I travel.

1 2 3 4 5

3.The local tourism industry promotes motorcycle rentals for visitors.

1 2 3 4 5

4.I believe that my social circle considers renting a motorcycle to be a trendy and adventurous activity.

1 2 3 4 5

Perceived behavior:

1.I feel confident in my ability to rent a motorcycle while traveling.

1 2 3 4 5

2.I believe I have the skills necessary to ride a motorcycle safely.

1 2 3 4 5

3.I am capable of handling a motorcycle in foreign traffic conditions.

1 2 3 4 5

4.I find it easy to adhere to traffic rules while riding a motorcycle.

1 2 3 4 5

Perceived behavior to rental behavior:

1.I believe renting a motorcycle is a safe option for travelling in Chiang Rai.

1 2 3 4 5

2.I believe that following safety practices (like wearing a helmet) is important when renting a motorcycle.

1 2 3 4 5

3.I believe that following safety practices (like wearing a helmet) is important when renting a motorcycle.

1 2 3 4 5

Intention to rental behavior:

1.I planned to rent a motorcycle during my visit to Chiang Rai.

1 2 3 4 5

2.I would feel comfortable renting a motorcycle in Chiang Rai.

1 2 3 4 5

3.I expect that renting a motorcycle will be more cost-effective than other transportation options.

1 2 3 4 5

Part 4 TPB Extension (This section extends the Theory of Planned Behavior (TPB) by incorporating psychological characteristics, emotions, and drive behavior.)

Psychological Characteristics:

1.I often seek out new and thrilling experiences.

1 2 3 4 5

2.I am drawn to the excitement of riding a motorcycle.

1 2 3 4 5

3.I am aware of the risks associated with renting a motorcycle.

1 2 3 4 5

4.I perceive riding a motorcycle as a high-risk activity.

1 2 3 4 5

Emotions:

1.I feel excited at the thought of renting a motorcycle during my trip.

1 2 3 4 5

2.I experience fear when thinking about riding a rented motorcycle in a foreign country.

1 2 3 4 5

3.I am worried about the potential dangers of renting a motorcycle.

1 2 3 4 5

4.I feel calm and relaxed when riding a motorcycle.

1 2 3 4 5

Drive Behavior:

1.I always follow traffic rules when riding a motorcycle.

1 2 3 4 5

2.I make sure to wear a helmet every time I ride a motorcycle.

1 2 3 4 5

3.I maintain a safe distance from other vehicles while riding a motorcycle.

1 2 3 4 5

4.I would pull over and stop riding if I ever felt fatigued, distracted, or unable to safely control the motorcycle.

1 2 3 4 5

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