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**BEHAVIORAL DETERMINANTS OF PUBLIC
TRANSPORTATION USAGE INTENTION: EVIDENCE FOR
POLICY INTERVENTION IN URBAN IPOH.**

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**MASTER OF SCIENCE
(TRANSPORTATION AND LOGISTICS MANAGEMENT)
SEPTEMBER 2025**

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TRANSPORTATION USAGE INTENTION: EVIDENCE FOR
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Thesis submitted to



Kolej Perniagaan
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Tajuk Tesis / Disertasi
(Title of the Thesis / Dissertation) : **Behavioral Determinants of Public Transportation Usage Intention: Evidence for Policy Intervention in Urban Ipoh**

Program Pengajian
(Programme of Study) : **Master of Science (Transportation & Logistics Management)**

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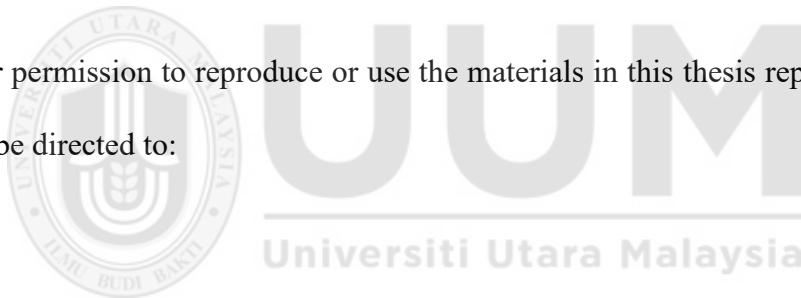
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Abstract

The persistent underutilization of public transportation in urban areas signals a need to move beyond infrastructure-centric solutions and understand the behavioral drivers of mode choice. This study investigates the determinants of public transportation usage intention in Urban Ipoh, Malaysia, by examining the direct and mediated influences of perceived service quality, cost and fare structure, safety and security, and awareness and information. Grounded in the Theory of Planned Behavior, the research proposes social influence as a critical mediator. Using a quantitative survey methodology, data from residents confirm that intention is shaped by a combination of practical service attributes and psychosocial factors.

The findings reveal that social influence is the most powerful factor, acting both as a direct determinant and as the primary channel through which other service attributes indirectly affect intention. While service quality and safety perceptions have significant direct effects, the impact of fare structures and information availability is fully mediated through social and safety perceptions. This underscores that travel choices are deeply social processes. Consequently, effective policy requires an integrated approach that pairs tangible service improvements with strategies to cultivate positive social norms, ensuring that public transportation systems are not only operationally sound but also socially resonant and psychologically accessible.

Keywords: *public transportation, usage intention, Theory of Planned Behavior, social influence, mediation analysis, urban mobility, transport policy.*

Abstrak

Cabaran berterusan terhadap kadar penggunaan pengangkutan awam yang rendah di kawasan bandar menandakan keperluan untuk beralih daripada penyelesaian berfokuskan infrastruktur kepada pemahaman terhadap penentu tingkah laku pemilihan mod pengangkutan. Kajian ini menyiasat penentu niat penggunaan pengangkutan awam di Bandar Ipoh, Malaysia, dengan mengkaji pengaruh langsung dan terantara kualiti perkhidmatan yang dilihat, struktur kos dan tambang, keselamatan dan sekuriti, serta kesedaran dan maklumat. Berasaskan Teori Tingkah Laku Terancang, kajian mencadangkan pengaruh sosial sebagai pengantara kritikal. Menggunakan metodologi tinjauan kuantitatif, data daripada penduduk mengesahkan bahawa niat dibentuk oleh gabungan atribut perkhidmatan praktikal dan faktor psikososial.

Hasil kajian menunjukkan bahawa pengaruh sosial merupakan faktor paling berkuasa, bertindak baik sebagai penentu langsung mahupun sebagai saluran utama di mana atribut perkhidmatan lain mempengaruhi niat secara tidak langsung. Walaupun kualiti perkhidmatan dan persepsi keselamatan mempunyai kesan langsung yang signifikan, kesan struktur tambang dan ketersediaan maklumat sepenuhnya diterangkan melalui persepsi sosial dan keselamatan. Ini menekankan bahawa pilihan pengangkutan adalah proses sosial yang mendalam. Justeru, dasar yang berkesan memerlukan pendekatan bersepadu yang menggabungkan penambahbaikan perkhidmatan ketara dengan strategi untuk memupuk norma sosial yang positif, memastikan sistem pengangkutan awam bukan sahaja beroperasi dengan baik, tetapi juga beresonans sosial dan mudah diakses secara psikologi.

Kata kunci: *pengangkutan awam, niat penggunaan, Teori Tingkah Laku Terancang, pengaruh sosial, analisis pengantaraan, mobiliti bandar, dasar pengangkutan*

Acknowledgment

I wish to convey my sincere gratitude to my supervisor, Ts. Dr. Emy Ezura A. Jalil, for her invaluable guidance, thoughtful feedback, and continuous support throughout the course of this thesis. Her expertise and encouragement have been fundamental in shaping the direction and development of this study.

I am equally thankful to my friends and colleagues at Universiti Utara Malaysia, whose knowledge sharing, constructive suggestions, and readiness to assist have greatly enriched my thesis experience. The intellectual exchanges and collaborative spirit have been truly invaluable.

My heartfelt thanks also go to my family for their unconditional love, patience, and encouragement throughout this journey. Their steadfast belief in me has been a constant source of strength and motivation.

Without the dedication, guidance, and support of these individuals and institutions, I could not have accomplished this work. To all of you, I extend my deepest appreciation.

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CHAPTER 1: INTRODUCTION

1.0 Introduction

Public transportation systems are critical infrastructure, forming the backbone of sustainable urban mobility and economic vitality. However, many regions face the persistent challenge of underutilization, where available services fail to attract projected ridership levels despite significant investment. This gap highlights a need to move beyond traditional, infrastructure-centric evaluations and towards a deeper understanding of the behavioral drivers and barriers that shape commuter decisions. This study explores these evolving trends by examining the psychological and socio-economic factors that influence the intention to use public transport. This chapter establishes the foundation for the research by outlining the background of the study, the problem statement, research questions and objectives, significance, scope, definition of key terms, and the overall organization of the thesis.

1.1 Background of Study

Public transportation systems represent fundamental infrastructure that serves as the circulatory network of modern societies, enabling economic participation, facilitating access to essential services, and advancing critical objectives in environmental protection, urban development, and social inclusion (Litman, 2021). These systems provide the necessary mobility for workforce participation, connect residents to education and healthcare facilities, and reduce urban congestion and pollution levels when properly utilized. The traditional framework for evaluating transportation networks has predominantly emphasized quantitative metrics such as operational efficiency, geographical coverage, and passenger capacity (Cats et al., 2020). These conventional measurements, while important for infrastructure planning, fail to capture the complex

human decision-making processes that ultimately determine system success. This analytical gap has become increasingly evident as many cities worldwide confront the paradoxical challenge of "transport poverty coexisting with system underutilization," where available services remain underused despite substantial public underutilization and clear societal need (Schwanen, 2021).

The persistent phenomenon of underutilization represents a critical dilemma for urban planners and policymakers. Despite expanding service networks and modernizing fleet vehicles, many public transportation systems consistently fail to achieve projected ridership targets, creating a significant gap between infrastructure supply and commuter demand (Bocquier et al., 2023). This disconnect has stimulated a fundamental reorientation in transportation scholarship, shifting from an almost exclusive focus on physical infrastructure toward a more nuanced investigation of the psychological, social, and behavioral elements influencing travel decisions (Van Lierop et al., 2022). The emerging recognition is that superior infrastructure alone cannot guarantee system success; understanding the human dimension, the perceptions, attitudes, and social influences that shape mobility choices, has become imperative for effective transportation planning (De Vos, 2021).

Contemporary study has established that travel behavior extends beyond rational economic calculations to encompass complex psychological processes. The Theory of Planned Behavior (Ajzen, 1991) provides a robust theoretical foundation for understanding how attitudes, subjective norms, and perceived behavioral control collectively shape behavioral intentions, including transportation mode selection (Zhang & Lo, 2023). Within this framework, perceptions often outweigh objective reality in decision-making. A commuter may avoid an objectively efficient bus service due to perceived safety concerns or reject a rationally economical option because of social stigma

associated with public transit use (Gössling, 2020). These behavioral insights help explain why some well-resourced transportation initiatives underperform while others with more modest infrastructure succeed through better alignment with user psychology (Nordlund & Garvill, 2021).

The behavioral approach to transportation studies has revealed several critical dimensions influencing public transit adoption. Service quality perceptions encompassing reliability, frequency, comfort, and accessibility consistently emerge as primary determinants of satisfaction and loyalty (Echaniz et al., 2021). When services are perceived as unreliable or inconvenient, even minor inconveniences can trigger mode shifting toward private vehicles. Economic considerations similarly extend beyond simple fare prices to encompass complex evaluations of value-for-money, affordability relative to household income, and comparative cost against private vehicle usage (Barreda-Tarrazona et al., 2024). These perceptions frequently diverge from objective economic analyses, as commuters weigh immediate convenience against long-term savings in personally significant ways.

Social and psychological factors further complicate the transportation decision matrix. Social influence, manifested through family expectations, peer behaviors, and community norms, can powerfully reinforce or discourage public transportation use (Lee et al., 2023). In many cultural contexts, private vehicle ownership retains strong associations with social status and personal success, creating implicit psychological barriers to transit adoption (Murtagh et al., 2022). Concurrently, safety and security concerns both in terms of traffic safety and personal security from crime can function as absolute barriers that override other service attributes, particularly for vulnerable demographic groups including women, elderly populations, and children (Ceccato & Loukaitou-Sideris, 2023).

The digital transformation has introduced additional dimensions to transportation behavior. Information accessibility has evolved from a supplementary service to a fundamental component of the user experience (Yap et al., 2023). Modern commuters expect real-time service information, seamless journey planning, and digital payment options, with the absence of these features increasingly constituting a significant barrier to usage, particularly among younger generations (Farooq et al., 2022). The COVID-19 pandemic further accelerated these expectations while introducing new behavioral considerations regarding health security and crowding tolerance (Brough et al., 2023).

This study, titled "Behavioral Determinants of Public Transportation Usage Intention: Evidence for Policy Intervention in Urban Ipoh," positions itself within this evolving Thesis landscape. It acknowledges that solving the underutilization paradox requires deciphering the complex relationship between perceptions, attitudes, and social influences that collectively determine commuting decisions. By systematically investigating these behavioral determinants, this thesis aims to bridge the gap between psychological insight and transportation policy, translating academic understanding into actionable recommendations that can enhance ridership, optimize public investments, and ultimately create more sustainable and equitable mobility systems for diverse communities.

1.2 Problem Statement

The persistent global underutilization of public transportation represents a critical paradox in urban sustainability, where significant investments in transit infrastructure consistently fail to achieve projected ridership targets, undermining climate goals, economic efficiency, and social equity (Litman, 2021; Schwanen, 2021). This problem is acutely manifested in specific urban contexts, such as major Malaysian cities, where despite extensive, modernized transit networks, modal share for public transport remains disproportionately low compared to private vehicle use. For instance, in the Greater Kuala Lumpur region, public transport accounted for only approximately 20% of the modal share in 2022, despite decades of infrastructure investment and policy aims to increase it to 40% (Land Public Transport Agency, 2023). This quantifiable gap between capacity and adoption underscores a fundamental policy failure that extends beyond physical supply to the core of commuter decision-making.

Conventional, infrastructure-centric planning approaches have predominantly focused on improving operational attributes like service frequency, fares, and network coverage (Cats et al., 2020). However, these supply-side interventions have repeatedly proven insufficient to catalyze large-scale behavioral change among "urban residents"—those with viable alternatives (De Vos, 2021). The insufficiency of this paradigm reveals a critical empirical gap in transportation research. Despite extensive study on operational attributes, limited empirical work has examined how these factors interact with psychological and social mediators, such as social influence, perceived safety, and habit, within a unified behavioral framework, particularly among urban residents in Southeast Asian contexts like Malaysia (Van Lierop et al., 2022). This gap constrains the development of holistic policies that effectively bridge the intention-behavior divide in mode choice.

Existing literature often examines barriers to transit use—such as reliability, accessibility, and cost—in isolation, or through broad satisfaction surveys that fail to capture the nuanced cognitive processes driving individual decisions (Barreda-Tarrazona et al., 2024). Consequently, there is inadequate understanding of the relative weight and interrelationship between operational service quality (the objective system) and perceptual-behavioral constructs (the subjective experience) in specific cultural and urban settings. This lack of integrated analysis means that policymakers lack a evidence-based model to predict how improvements in tangible service attributes might translate into increased adoption through changes in commuter perceptions and social norms.

The problem is further exacerbated by evolving post-pandemic mobility expectations and digital integration demands, which have introduced new layers of complexity to commuter decision-making (Yap et al., 2023; Brough et al., 2023). Traditional transit planning models, which neglect these behavioral dimensions, are ill-equipped to address why individuals continue to prefer private vehicles even when objective transit comparisons are favorable. This results in a persistent cycle where underutilization is significantly related to reduced political and financial support for services, further degrading quality and ridership, and deepening transportation inequities for vulnerable populations (Ceccato & Loukaitou-Sideris, 2023).

Therefore, this study addresses a precise and consequential gap: the lack of an integrated, contextually-grounded model that quantifies how operational transit attributes (e.g., reliability, coverage) influence ridership intentions and behaviors through key psychological mediators (e.g., attitudes, social norms, perceived behavioral control) within a defined urban population. It moves beyond descriptive accounts of underutilization to empirically test a behavioral framework that explains the decision-making processes of urban residents.

By investigating these relationships in the under-researched context of Malaysian urban areas, this research aims to generate targeted insights that can transform policy intervention strategies. It seeks to provide urban planners and policymakers with a evidence-based toolkit to design interventions that simultaneously optimize service delivery and strategically influence the perceptual and social factors that ultimately determine mode choice, thereby offering a novel pathway to breaking the cycle of transit underutilization.



1.3 Research Question

- a) Which key factors of perceived service quality, cost and fare structures, social influence, safety and security, and awareness information that influence public transportation usage intention?
- b) What are the mediating effects of psychological factors (social influence) on the relationship between practical service attributes (quality, cost, information, , safety) and behavioral intentions toward public transportation?

1.4 Research Objectives

- a) To determine key factors of perceived service quality, cost and fare structures, social influence, safety and security, and awareness information that influence public transportation usage intention.
- b) To determine the mediating effects of psychological factors (social influence) on the relationship between practical service attributes (quality, cost, information, , safety) and behavioral intentions toward public transportation.

1.5 Significance of the Study

The findings of this thesis are poised to offer substantial contributions across theoretical, practical, and societal domains by addressing the critical gap in understanding the behavioral underpinnings of public transportation usage. This study will contribute significantly to the body of knowledge in transportation psychology and urban planning. By integrating multiple behavioral constructs—perceived service quality, cost and fare structure, social influence, safety and security, and awareness and information—into a single comprehensive model, the thesis moves beyond the isolated examination of factors that characterizes much of the existing literature. It will test and potentially extend

established theoretical frameworks, such as the Theory of Planned Behavior, by elucidating the complex interrelationships and mediating effects between practical service attributes and psychological-social factors. The results will provide empirical evidence on the relative importance of these variables, offering a nuanced theoretical model that explains a greater proportion of variance in usage intention than previous, more limited models.

For policymakers and public transportation authorities, this thesis will provide an evidence-based roadmap for strategic intervention. Instead of relying on assumptions or generic infrastructure investments, decision-makers can use the findings to prioritize initiatives that directly address the most influential behavioral barriers and drivers identified in the study. For instance, if social influence is found to be a dominant mediator, resources can be directed toward targeted social marketing campaigns. If a lack of information is a primary barrier, developing user-friendly digital tools becomes a critical priority. This enables a more efficient allocation of often-limited public funds, ensuring that policies and investments are precisely targeted to yield the highest possible increase in ridership, thereby enhancing the return on investment and overall system sustainability.

On a broader societal level, this thesis supports the advancement of key public goods. By identifying pathways to increase public transportation ridership, the study contributes to the goals of environmental sustainability through reduced traffic congestion and lower carbon emissions, improved public health through better air quality, and enhanced urban livability by reclaiming public space from cars. Furthermore, by specifically investigating the barriers faced by vulnerable populations, the findings can inform policies that promote greater transportation equity and social inclusion, ensuring that all members of society have access to affordable, reliable, and dignified mobility options. This is essential for fostering economic participation and reducing social isolation.

1.6 Scope of the Study

This thesis was deliberately bounded to ensure focus and feasibility while adequately addressing the thesis questions. The scope was defined in terms of its conceptual, contextual, and methodological dimensions. The study was focused exclusively on the behavioral determinants of public transportation usage intention. The investigation was confined to the five independent variables—perceived service quality, cost and fare structure, social influence, safety and security, and awareness and information—and their relationship with the dependent variable, usage intention. While other external factors (e.g., land-use patterns, macroeconomic policies, broader cultural shifts) undoubtedly influence transportation choices, they were beyond the boundaries of this study.

The study was conducted in an urban context where public transportation infrastructure was present but faced challenges with underutilization. The study population consisted of adult residents who were potential "urban residents"—individuals with access to alternative modes of transport, such as private vehicles. This focus was crucial for understanding the behavioral shifts necessary to increase modal share. The study did not focus on captive riders (those with no other transportation options) or on long-distance/intercity travel. The study employed a quantitative methodology, utilizing a survey instrument to collect cross-sectional data. The analysis involved statistical techniques, including multiple regression, to evaluate the collective impact of the variables, and mediation analysis to explore the proposed psychological pathways. The study was primarily correlational and inferential in nature, aiming to identify significant relationships and their relative strengths rather than to establish definitive causality, which would require a longitudinal or experimental design.

1.7 Definition of Key Terms

For conceptual clarity and to ensure consistent understanding throughout this thesis, the following key terms are defined based on conceptual and operational perspectives supported by existing literature.

Usage Intention

The individual's conscious plan and likelihood to perform a specific behavior, which was an immediate antecedent to actual behavior according to the Theory of Planned Behavior (Ajzen, 1991). In this study, it was measured via a multi-item scale which assessed the self-reported likelihood of using public transportation, anticipated frequency of trips, and preference for public transport over private modes (Zhang & Lo, 2023).

Perceived Service Quality

The user's subjective assessment and evaluation of the overall excellence and adequacy of a service, based on a comparison of their expectations with their perceptions of performance (Echaniz et al., 2021). For this thesis, it was measured through indicators such as perceived waiting time, ratings of service punctuality and reliability, satisfaction with seat availability and vehicle cleanliness, and the perceived walking distance to the nearest stop (Van Lierop et al., 2022).

Cost and Fare Structure

The user's perception of the financial outlay required and the fairness of the pricing system, encompassing both the absolute cost and the perceived value or utility derived for the price paid (Litman, 2021). In this study, it was measured through scales which captured the perception of fare affordability relative to income, the value for money received from

the service, and a direct comparison with the perceived cost of using a private vehicle (e.g., fuel, parking) (Barreda-Tarrazona et al., 2024).

Social Influence

The degree to which an individual perceives that important others (such as family, friends, or the broader community) believe they should or should not perform a given behavior; also known as "subjective norm" in the Theory of Planned Behavior (Ajzen, 1991). This variable was assessed by measuring the individual's belief about whether important others thought they should use public transport, their motivation to comply with those opinions, and their perception of the social status associated with car ownership versus public transport use (Lee et al., 2023).

Safety and Security

The user's feeling of being protected from danger, risk, or injury, encompassing both "safety" (freedom from traffic accidents due to driver error or vehicle malfunction) and "security" (freedom from crime, harassment, or intentional harm) (Ceccato & Loukaitou-Sideris, 2023). For this study, it was measured through the level of concern about road safety (e.g., perception of driver competence, vehicle roadworthiness) and personal security (e.g., fear of crime, theft, or harassment at stops or onboard, especially during off-peak hours) (Solymosi et al., 2021).

Awareness and Information

The extent to which users can easily access, comprehend, and utilize relevant and timely information that reduces uncertainty and enables effective use of a service (Farooq et al., 2022). In this study, it was assessed by evaluating the perceived ease of finding accurate schedules and route maps, the clarity of information presented at stops, and the

availability and reliability of real-time service updates through digital or physical channels (Yap et al., 2023).

1.8 Organization of the Research

This thesis was systematically organized into five comprehensive chapters to address the thesis objectives in a logical sequence. Chapter 1 Introduction established the foundation of the study by presenting the research background, problem statement, research questions, objectives, significance, scope, and key definitions. Chapter 2 Literature Review critically examined existing theoretical frameworks and empirical studies related to public transportation behavior, providing the scholarly context for the variables under investigation. Chapter 3 Research Methodology detailed the research design, population and sampling techniques, data collection procedures, and statistical methods for data analysis, ensuring the study's validity and reliability. Chapter 4 Findings and Analysis presented the results of the data collection, offering both descriptive and inferential analyses of the relationships between variables, including the testing of the proposed mediation model. Finally, Chapter 5 Discussion and Conclusion interpreted the findings in relation to existing literature, discussed theoretical contributions and practical implications, acknowledged study limitations, and provided conclusive recommendations for policymakers and future research directions.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter provides a comprehensive review of scholarly literature on public transportation usage intention, establishing the theoretical and empirical foundation for this study. It progresses from broad theoretical frameworks to a focused analysis of the key variables in the research model: perceived service quality, cost and fare structure, safety and security, awareness and information (as independent variables), social influence (as a mediating variable), and usage intention (as the dependent variable). The review critically synthesizes existing findings, highlights contradictions and limitations in current knowledge, and explicitly identifies the research gaps this study aims to address, thereby justifying its contribution.

2.1 Usage Intention

Usage intention are the central outcome variables for understanding public transportation adoption. Grounded in the Theory of Planned Behaviour (TPB), intention is the proximal antecedent to actual behavior, capturing the motivation and effort one plans to exert (Ajzen, 1991). In transit studies, intention serves as a key predictor of future ridership, especially among urban residents with viable alternatives (Zhang & Lo, 2023). The distinction between intention and behavior is critical, as the "intention-behavior gap" can be influenced by external constraints like sudden service changes or unforeseen barriers (Pierce et al., 2023). Measurement typically employs multi-item scales assessing likelihood, frequency, and preference for public transport over private modes (Van Lierop et al., 2022).

However, the translation of intention into behavior is complex and moderated by contextual factors. Perceived behavioral control—a TPB component reflecting the perceived ease or difficulty of performing the behavior—is particularly salient in transit contexts where accessibility and reliability issues can thwart even strong intentions (Nordlund & Garvill, 2021).

Furthermore, demographic factors like age, income, and residential location systematically influence both intention formation and behavioral execution (Bocquier et al., 2023). **Synthesis and Gap:** While the relationship between intention and behavior is well-established theoretically, empirical studies often treat intention as a final dependent variable without fully modeling the psychological pathways that lead to its formation. Less is known about how intention towards public transport is shaped by the interaction between practical service attributes and social-psychological factors, particularly in contexts where car culture is dominant. This study addresses this by positioning intention as the dependent variable and examining the distinct and mediated pathways through which independent variables affect it.

2.2 Perceived Service Quality

Perceived service quality is a multidimensional construct central to user satisfaction and behavioral intentions. Adapted from the SERVQUAL framework, it evaluates the gap between user expectations and perceptions of performance across tangible and intangible attributes (Parasuraman et al., 1988; Echaniz et al., 2021). Reliability (punctuality, frequency) consistently emerges as the most critical dimension (Cats et al., 2020), followed by comfort, vehicle condition, and accessibility (Van Lierop et al., 2022). The psychological experience of waiting, influenced by information and environment, often outweighs actual wait time in shaping perceptions (Cheng & Liu, 2022).

Despite consensus on key dimensions, the relative importance of specific attributes shows significant variation across user segments (e.g., commuters vs. occasional users) and geographic contexts (urban vs. rural) (De Vos, 2020; Bocquier et al., 2023). This variability complicates generalized policy prescriptions. **Synthesis and Gap:** Extensive research confirms that service quality directly impacts satisfaction and usage. However, existing studies frequently examine these attributes in isolation from the social context in which they are

evaluated. There is a lack of integrated inquiry into whether the effect of perceived service quality on intention is channeled through or reinforced by social perceptions. This study fills this gap by proposing that social influence mediates the relationship between service quality perceptions and usage intention, testing a more nuanced behavioral model.

2.3 Cost and Fare Structure

Cost and fare structure influence mode choice through objective financial constraints and subjective value perceptions. Behavioral economics reveals that decisions often deviate from rational cost-benefit analysis due to mental accounting, reference dependence, and perceptions of fairness (Barreda-Tarrazona et al., 2024). Fare complexity and lack of transparency can deter usage as much as high absolute prices (Pierce et al., 2023), while perceptions of equity significantly affect acceptance (Litman, 2021). Sensitivity to cost is highly elastic and moderated by income, with low-income riders being more price-sensitive and urban residents more responsive to service quality (Bocquier et al., 2023).

Study indicates that users perform implicit cross-modal comparisons, though they often underestimate the full cost of private vehicle use (Zhang & Lo, 2023). Synthesis and Gap: While the economic determinants of ridership are well-documented, less is understood about the social psychology of cost. For instance, how do social norms and peer behaviors shape the perceived value of a fare or influence the social acceptability of choosing transit based on cost? The current literature often treats cost perception as an individual calculation, neglecting its social dimension. This study investigates whether the impact of cost considerations on intention is mediated by social influence, exploring if the decision to use transit for economic reasons is socially reinforced or discouraged.

2.4 Social Influence

Social influence, operationalized through the TPB's subjective norm, is associated with travel behavior via normative (compliance) and informational (learning) mechanisms (Ajzen, 1991). Descriptive norms (perceptions of what others do) and injunctive norms (perceptions of what others approve of) create social pressure that affects mode choice independently of objective service attributes (De Vos, 2020). The strength of influence varies by reference group—family, friends, colleagues—and is moderated by cultural context, with collectivistic societies showing stronger conformity effects (Zhang & Lo, 2023). The symbolic meaning of car ownership as a status symbol remains a persistent barrier in many societies, though this is evolving among younger demographics (Brough et al., 2023).

Synthesis and Gap: Social influence is recognized as a significant direct predictor of intention. However, its role as a mediating mechanism that explains why practical factors like service quality or cost affect intention is under-explored. Many studies include social influence as a parallel independent variable rather than testing its potential to translate objective service experiences into socialized behavioral intentions. This study directly addresses this gap by theorizing and testing social influence as a key mediator, proposing that positive service attributes must be reinforced by favorable social norms to robustly increase usage intention (Brough et al., 2023).

2.5 Safety and Security

Safety (protection from accidental harm) and security (protection from intentional harm) are critical determinants of transit usage, particularly for vulnerable groups like women, the elderly, and minorities (Ceccato & Loukaitou-Sideris, 2023). Perceptions often have a stronger behavioral impact than objective risk statistics, encompassing vehicle safety, infrastructure design, and the social environment at stops and on board (Yap et al., 2023). These concerns

create significant equity issues, as fear can restrict mobility and access to opportunities for those most dependent on public transit (Brough et al., 2023).

Synthesis and Gap: Research has thoroughly documented safety and security as barriers and their disproportionate impact. However, studies typically position them as direct independent variables. A gap exists in understanding how safety perceptions interact with the social context: does a perception of insecurity diminish the social acceptability of transit use, or can strong positive social norms mitigate security concerns? This study incorporates safety and security as an independent variable to examine its direct effect on intention, while also considering how its relationship with intention might be contextualized within the broader mediated model featuring social influence.

2.6 Awareness and Information

Awareness and accessible information are fundamental prerequisites for use, reducing uncertainty and cognitive effort in trip planning (Farooq et al., 2022). The digital revolution has transformed information delivery through real-time apps and integrated platforms, though digital divides risk excluding some populations (Brough et al., 2023). Information quality and availability affect not only the decision to use transit but also perceived wait times, user confidence, and overall satisfaction (Yap et al., 2023).

Synthesis and Gap: While the importance of information is unequivocal, its role is often studied in isolation from the user's social milieu. It is unclear whether being well-informed about a service affects intention directly, or if its effect is partly dependent on whether one's social network also values and uses such information. The interplay between information accessibility and social influence is rarely examined. This study addresses this by including awareness and information as an independent variable and investigating if its influence on intention operates independently or is also channeled through social norms (Farooq et al., 2022).

2.7 Hypotheses Development

Hypothesis 1: Perceived Service Quality and Public Transportation Usage Intention

Perceived service quality is a fundamental determinant of behavioral intentions toward public transportation. Grounded in service-dominant logic and the SERVQUAL framework, the evaluation of tangible and intangible service attributes—such as reliability, comfort, and punctuality—directly is associated with a commuter's satisfaction and subsequent loyalty intentions (Parasuraman et al., 1988; Echaniz et al., 2021). When users perceive the service to be efficient, comfortable, and dependable, their overall attitude towards the transit system improves, increasing their likelihood of intended and repeat usage. Empirical studies consistently affirm this relationship, demonstrating that dimensions like on-time performance, vehicle cleanliness, and courteous staff are strongly correlated with higher stated usage intentions and positive word-of-mouth (Cats et al., 2020; Barreda-Tarrazona et al., 2024). In urban transit systems, for example, investments in service reliability and modernized fleets have been directly linked to increased ridership projections and positive user evaluations. High perceived service quality effectively acts as a key utility that enhances the attractiveness of public transit relative to private alternatives, thereby fostering a stronger intention to use it.

Therefore, Hypothesis 1 is proposed:

H1: Perceived Service Quality has a positive and significant effect on Public Transportation Usage Intention. (Echaniz et al., 2021; Barreda-Tarrazona et al., 2024)

Hypothesis 2: Cost and Fare Structure and Public Transportation Usage Intention

The cost and fare structure of public transportation is a critical economic factor influencing mode choice and usage intention. Rooted in utility theory and behavioral economics, commuters conduct an implicit cost-benefit analysis where the perceived monetary and temporal costs of transit are weighed against its value and the costs of alternatives (Litman, 2021). A fare structure perceived as affordable, transparent, and equitable enhances the perceived value proposition of public transit. Recent research supports this link, showing that simplified, integrated fare systems and perceived fairness in pricing are positively associated with higher usage intentions, particularly among urban residents who are sensitive to overall trip cost (Van Lierop et al., 2022; Pierce et al., 2023). In regions experimenting with fare-capping or discounted passes, for instance, these policies have been associated with increased projected ridership. A favorable cost structure acts as a pivotal incentive, lowering the financial barrier to entry and making public transportation a more rational and appealing choice, thereby strengthening the intention to use it.

Therefore, Hypothesis 2 is proposed:

H2: Cost and Fare Structure has a positive and significant effect on Public Transportation Usage Intention. (Litman, 2021; Pierce et al., 2023).

Hypothesis 3: Social Influence and Public Transportation Usage Intention

Social influence is a powerful psychosocial determinant of behavioral intentions, as posited by the Theory of Planned Behavior, where subjective norms—perceptions of what important others think one should do—shape individual decision-making (Ajzen, 1991). An individual's intention to use public transport is significantly affected by the perceived attitudes and behaviors of their reference groups, such as family, friends, and colleagues. Empirical evidence confirms that strong descriptive norms (seeing others use transit) and injunctive norms (feeling social pressure to use it) are robust predictors of positive usage intentions (De Vos, 2020; Lee et al., 2023). In community settings, social campaigns and peer endorsement have been effective in shifting perceptions and increasing interest in sustainable transport modes. Social influence effectively acts as a normative guide, where the approval and practices of one's social network legitimize and encourage the use of public transportation, leading to a stronger personal intention to adopt the behavior.

Therefore, Hypothesis 3 is proposed:

H3: Social Influence has a positive and significant effect on Public Transportation Usage Intention. (Ajzen, 1991; Lee et al., 2023)

Hypothesis 4: Safety and Security and Public Transportation Usage Intention

Safety and security concerns constitute a fundamental prerequisite in the hierarchy of travel needs, directly impacting the attractiveness and perceived risk of a transport mode. Drawing from protection motivation theory, commuters assess both physical safety (accidents) and personal security (crime, harassment), and a positive assessment is crucial for forming a positive behavioral intention (Rogers, 1975; Ceccato & Loukaitou-Sideris, 2023). When users perceive the transit environment—including vehicles, stations, and travel times—as safe and secure, their anxiety is reduced, and their trust in the system increases. A substantial body of research links heightened perceptions of safety and security with greater willingness to use and recommend public transit, with this effect being particularly strong among women, the elderly, and first-time users (Solymosi et al., 2021; Yap et al., 2023). For transit agencies, visible safety measures like good lighting and surveillance are correlated with improved user confidence and ridership forecasts. Strong safety and security perceptions effectively lower a critical psychological barrier, making public transportation a viable and comfortable option, thereby fostering a stronger intention to use it.

Therefore, Hypothesis 4 is proposed:

H4: Safety and Security has a positive and significant effect on Public Transportation Usage Intention. (Ceccato & Loukaitou-Sideris, 2023; Yap et al., 2023)

Hypothesis 5: Awareness and Information and Public Transportation Usage Intention

Awareness and access to accurate, comprehensible information are essential for reducing uncertainty and simplifying the cognitive process of choosing public transportation. Informed by information processing theory, the availability of pre-trip and real-time information—such as schedules, routes, fares, and service alerts—lowers the perceived effort and complexity associated with trip planning (Farooq et al., 2022). Easy access to clear information empowers potential users, increases their perceived behavioral control, and makes the service appear more reliable and user-friendly. Contemporary studies validate that effective information dissemination through digital apps and real-time updates is a significant predictor of positive usage intentions, as it enhances system intelligibility and reduces the fear of the unknown (Van Lierop et al., 2022; Yap et al., 2023). In cities that have deployed integrated mobility apps, user surveys often report increased likelihood of future transit use. Comprehensive awareness and information act as a crucial enabler, demystifying the service and building user competence, which in turn strengthens the intention to choose public transportation.

Therefore, Hypothesis 5 is proposed:

H5: Awareness and Information has a positive and significant effect on Public Transportation Usage Intention. (Farooq et al., 2022; Yap et al., 2023)

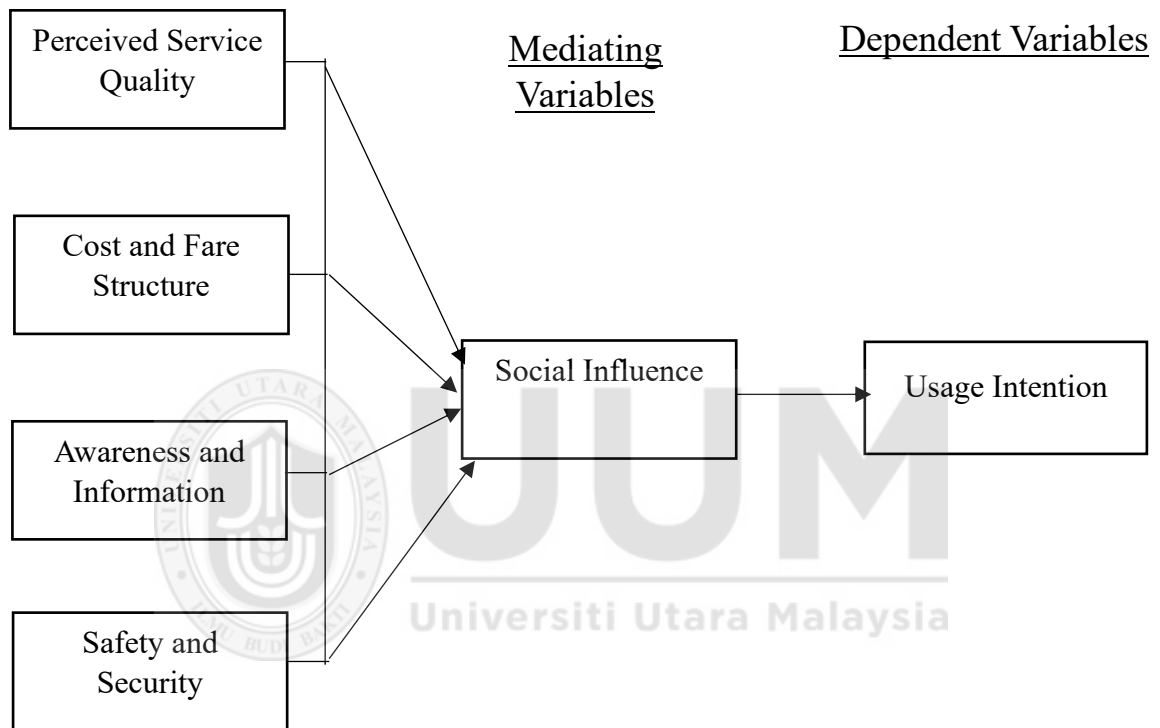
2.8 Research Framework

The research framework presented in Figure 2.1 illustrates the conceptual model guiding this investigation into public transportation usage behavior. Grounded in the Theory of Planned Behavior (TPB) (Ajzen, 1991), this framework proposes that four key independent variables—Perceived Service Quality, Cost and Fare Structure, Safety and Security, and Awareness and Information—influence the dependent variable, Usage Intention/Behaviour. Crucially, the model posits that these relationships are not only direct but are also indirectly mediated by the psychological construct of Social Influence, which operationalizes the "subjective norm" component of the TPB. This integrated approach allows for the examination of how tangible, practical service attributes are filtered through the social lens of normative pressures and peer behaviors before crystallizing into behavioral intentions (De Vos, 2020; Zhang & Lo, 2023).

The framework is built on the premise that the decision to use public transportation is a socially contextualized process. While service quality, cost, safety, and information represent the objective and perceived characteristics of the transit system, their ultimate impact on a potential user's intention is hypothesized to be partially dependent on social influence. For instance, a positive perception of service reliability may more strongly translate into usage intention if an individual's social network also views public transit as a desirable and normative choice (Van Lierop et al., 2022). This model thus moves beyond examining factors in isolation, offering a more nuanced understanding of the behavioral mechanisms that can either bridge or widen the gap between service provision and user adoption.

Figure 2.1: Research Framework

Independent Variables



2.9 Underpinning Theory

This study is principally grounded in the Theory of Planned Behavior (TPB) (Ajzen, 1991), which provides the foundational framework for understanding the formation of behavioral intentions. The TPB posits that an individual's intention to perform a behavior is the most immediate predictor of action and is shaped by three core psychological constructs: (1) Attitude, or one's personal evaluation of the behavior; (2) Subjective Norm, the perceived social pressure from significant others; and (3) Perceived Behavioral Control, the sense of ease or difficulty in performing the behavior (Ajzen, 1991). This theory offers a robust lens for analyzing the decisions of "urban residents" in public transportation, whose mode selection is a deliberative process influenced by personal and social evaluations rather than absolute necessity (De Vos, 2020).

The research framework directly operationalizes and extends the TPB. The dependent variable, Usage Intention, corresponds to the behavioral intention in Ajzen's model. The independent variables are mapped onto the TPB constructs: Social Influence is a direct operationalization of Subjective Norm, while Perceived Service Quality, Cost and Fare Structure, Safety and Security, and Awareness and Information collectively form the Attitudinal component and influence Perceived Behavioral Control (Echaniz et al., 2021; Litman, 2021; Ceccato & Loukaitou-Sideris, 2023). Specifically, the proposed mediation hypotheses test an extended model, examining whether the influence of these practical service attributes on intention is channeled through the social normative mechanism (Social Influence). This application not only tests the TPB's core postulates but also explores the integrated pathways through which external factors are internalized into behavioral intentions, thereby offering a nuanced behavioral model to explain transit underutilization (Van Lierop et al., 2022).

2.10 Summary

This chapter has critically reviewed the literature to establish the foundation for investigating public transportation usage behavior. The analysis was structured around the Theory of Planned Behavior (Ajzen, 1991), which provides the core theoretical rationale for examining behavioral intention as the key antecedent to action. The review progressed to a detailed examination of the specific constructs in the research model: the dependent variable, Usage Intention, and the independent variables, Perceived Service Quality, Cost and Fare Structure, Safety and Security, and Awareness and Information, with a focused analysis of Social Influence as the proposed mediating mechanism.

The synthesis revealed both established knowledge and critical empirical gaps. While prior research robustly confirms the direct importance of service quality—particularly reliability and comfort (Cats et al., 2020; Van Lierop et al., 2022)—economic factors extending beyond ticket price to perceived value and fairness (Barreda-Tarrazona et al., 2024; Litman, 2021), safety perceptions (Ceccato & Loukaitou-Sideris, 2023), and information accessibility (Yap et al., 2023), it largely treats these factors in isolation. Crucially, the literature demonstrates a paucity of integrated models that test how these practical attributes interact with the social-psychological context of the commuter (Van Lierop et al., 2022; Zhang & Lo, 2023). Specifically, there is insufficient empirical examination of whether the influence of service quality, cost, and information on intention is channeled through or amplified by social norms—a significant gap that limits the development of holistic behavioral interventions (Nordlund & Garvill, 2021).

To address this, the chapter culminated in a research framework that posits Social Influence as a critical mediator. This framework proposes that the relationships between three key independent variables—Perceived Service Quality, Cost and Fare Structure, and Awareness and Information—and Usage Intention are not merely direct but are also indirectly shaped by social perceptions. Safety and Security is positioned as a vital direct antecedent, reflecting its fundamental and non-negotiable role in mode choice (Yap et al., 2023). This integrated model directly responds to the identified literature gap by moving beyond a siloed examination of factors to test a unified behavioral process (De Vos, 2020).

Thus, this review does more than summarize; it justifies a novel investigative pathway. It establishes that while the direct effects of service attributes are well-documented, their socially mediated pathways are not. The proposed framework and its attendant hypotheses therefore offer a necessary step toward a more nuanced understanding of public transportation adoption, one that accounts for the complex interplay between the tangible qualities of a transit system and the intangible social forces that ultimately shape commuter behavior.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter presented the comprehensive methodological approach employed to investigate the complex relationships between public transportation service attributes, psychological factors, and usage behavior. The research methodology was systematically designed to address the study's objectives through a structured quantitative approach, ensuring rigorous examination of both direct and mediated relationships outlined in the research framework. The methodology section elaborated on the research design, population parameters, sampling strategy, instrument development, data collection procedures, and analytical techniques that collectively formed the empirical foundation for this investigation. Each methodological decision was grounded in established research practices and aligned with the theoretical framework developed in the previous chapter, particularly drawing from the Theory of Planned Behavior (Ajzen, 1991) and its applications in transportation research (Zhang & Lo, 2023). The systematic approach outlined herein ensured the collection of valid and reliable data necessary for testing the hypothesized relationships and contributed meaningful insights to both academic literature and practical transportation planning.

3.1 Research Design

This study employed a quantitative research design utilizing a cross-sectional survey approach, which is suitable for examining relationships between multiple variables at a specific point in time (Creswell & Creswell, 2023). The deductive nature of this design allowed for testing theoretically derived hypotheses concerning the influences of service quality, economic factors, safety perceptions, information accessibility, and social influence on public transportation usage intentions. This methodological approach

facilitated the collection of numerical data from a substantial sample, enabling statistical analysis of both direct and mediated relationships (Hair et al., 2022). The cross-sectional design was appropriate for capturing current perceptions and behavioral intentions, providing a snapshot of the complex decision-making processes that underlie mode choice. While this design is effective for identifying significant associations, it is acknowledged that it cannot demonstrate causal relationships (Spector, 2019). Therefore, findings will be interpreted as identifying significant predictors and associations, rather than definitive causes.

3.2 Population, Sample and Unit of Analysis

The target population for this study comprised adult commuters in urban areas of Malaysia who had access to both public transportation services and private transport alternatives. This specifically focused on "urban residents"—individuals with viable transportation options who might select public transport under certain conditions (Van Lierop et al., 2022). The study was anchored in the context of the KTM Komuter service in Ipoh and the Terminal Amanjaya intercity hub, which serve as critical nodes in the regional transportation network. These locations provide a relevant setting for examining underutilization, as they offer developed infrastructure yet face challenges in attracting optimal ridership from urban residents. The population parameters included adults aged 18 years and above, residing in or commuting through these urban areas, and possessing the means to utilize both public and private transport.

The sampling strategy employed a stratified random sampling technique to ensure proportional representation across key demographic segments, including age groups, income levels, and residential proximity to the KTM Ipoh station and Terminal Amanjaya (Creswell & Creswell, 2023). The sampling frame was constructed using complementary

sources, including local community registries and strategic on-site recruitment at the target transportation hubs. Based on power analysis for multiple regression and mediation analysis, and considering the recommendations of Krejcie and Morgan (1970), a minimum sample of 384 respondents was required for a 95% confidence level with a 5% margin of error. To account for potential non-response, the target sample was increased to 450 respondents (Cohen, 2022).

The unit of analysis was the individual commuter, as the study investigated psychological perceptions, social influences, and behavioral intentions that are fundamentally individual-level phenomena (Babbie, 2021). This aligns with the Theory of Planned Behavior (Ajzen, 1991), which explicates individual decision-making processes. While contextual factors were measured, they were analyzed through their perception by individuals, maintaining methodological coherence.

3.3 Data Collection Methods

Data collection employed a mixed-mode survey approach, utilizing both online and offline methods to ensure broad coverage and enhance response rates (Dillman et al., 2014). The primary instrument was a structured questionnaire administered via digital platforms and physical copies distributed at strategic locations, including the KTM Ipoh station and Terminal Amanjaya. This dual-method approach helped mitigate sampling bias and increased accessibility across demographic groups (de Leeuw, 2018). The data collection protocol spanned an eight-week period, incorporating a two-week pilot phase. Trained research assistants administered physical surveys at the target locations during varying times and days to capture diverse travel patterns. Standardized training ensured consistent administration, ethical protocols, and respect for participant privacy (Nissenbaum, 2019).

3.4 Research Instrument

The research instrument was a structured questionnaire developed from validated measurement scales in transportation behavior literature. It comprised three sections: demographic profile, measurement of independent variables (perceived service quality, cost and fare structure, safety and security, awareness and information), and measurement of the mediating variable (social influence) and dependent variable (usage intention). All constructs were measured using multi-item, five-point Likert scales adapted from established studies (e.g., De Vos, 2020; Echaniz et al., 2021). The instrument underwent expert review for content validity and a pilot test (n=50) to assess reliability and refine items. Cronbach's alpha coefficients from the pilot study exceeded 0.70 for all scales, confirming internal consistency (Nunnally & Bernstein, 2021).

3.5 Pre-Testing of the Instrument and Pilot Test

To assess the validity of the study's measurement instruments, a pilot test was carried out utilising data from thirty respondents. Before moving forward with the full-scale data collection, the main goal of this pilot test was to ensure that the key constructs—perceived service quality, cost & fare structure, awareness & information, social influence, safety & security, and usage intention—showed adequate internal consistency. Using the responses from the pilot dataset, Cronbach's Alpha was computed for every construct. This coefficient assessed how closely items in a scale measured the same underlying construct; values above 0.70 were typically regarded as satisfactory, with higher levels indicating greater reliability. SPSS version 27 was utilised to perform the reliability analysis. The results of the pilot study's reliability test are shown in Table 3.1.

Table 3.1 Reliability Results for Each of the Variables

Variables	Number of Item	Cronbach's Alpha
<i>Dependent</i>		
Usage Intention	5	0.937
<i>Independent</i>		
Perceived Service Quality	5	0.845
Cost & Fare Structure	5	0.885
Awareness & Information	5	0.909
<i>Mediating Role</i>		
Social Influence	5	0.914
Safety & Security	5	0.742

The pilot reliability analysis confirms that all measurement instruments developed for this study possess excellent psychometric properties. Every construct demonstrated strong to exceptional internal consistency, with Cronbach's Alpha coefficients significantly exceeding the widely accepted threshold of 0.70. This validates the scales for use in the full-scale study. The dependent variable, Usage Intention, achieved an outstanding alpha of 0.937, indicating exceptionally coherent measurement. Among the independent variables, Awareness & Information ($\alpha = 0.909$), Cost & Fare Structure ($\alpha = 0.885$), and Perceived Service Quality ($\alpha = 0.845$) all showed high reliability, confirming consistent interpretation by respondents.

Crucially, the two proposed mediating variables also demonstrated strong reliability. Social Influence scored very high ($\alpha = 0.914$), indicating effective measurement of perceived social norms and pressures. Safety & Security, while having the lowest coefficient in the set, still reported a very good and acceptable reliability of 0.742. This confirms that items related to perceptions of both accidental and intentional harm reliably measure a unified safety/security construct. These results collectively provide a robust foundation for the main study, ensuring that measurement error is minimized and that the subsequent analysis of direct and mediated relationships will be based on psychometrically sound instruments.

3.6 Data Analysis Techniques

Data analysis employed a comprehensive statistical approach using SPSS version 27 and the PROCESS macro for mediation analysis (Hayes, 2022). The analytical process began with descriptive statistics to characterize the sample profile and assess data distribution assumptions, followed by reliability and validity assessments of the measurement model through confirmatory factor analysis and calculation of composite reliability indices (Hair et al., 2021). The primary analytical techniques included multiple regression analysis to examine direct relationships between independent variables and usage intention and mediation analysis using bootstrapping procedures to test the indirect effects of service attributes through social influence. The moderated mediation analysis incorporated demographic variables as potential moderators to examine whether the observed relationships varied across different population segments (Hayes, 2022). Additional analyses included correlation analysis to assess bivariate relationships between variables, variance inflation factor testing to check for multicollinearity, and subgroup analyses to explore potential differences in decision-making processes across key demographic categories. The analytical approach was specifically designed to address both

research objectives: evaluating the collective impact of service attributes on usage intention and examining the mediating role of psychological factors in this relationship, thereby offering a thorough understanding of the complex interplay between practical service improvements and social psychological processes in shaping transportation behavior.

3.7 Ethical Considerations

This study adhered to stringent ethical standards throughout all stages of the investigation, guided by fundamental ethical principles and professional study guidelines. The study protocol underwent comprehensive review and received formal approval from the Institutional Review Board prior to any data collection activities, ensuring all procedures aligned with established ethical standards for study involving human participants (Sieber, 2022). The principle of respect for persons was operationalized through a detailed informed consent process, where all participants received comprehensive information about the study's purpose, procedures, potential risks and benefits, and their rights as research participants before providing consent. The confidentiality of participant information was rigorously protected through multiple safeguards, including the anonymization of data during collection, secure storage of completed questionnaires, and the separation of identifying information from response data during analysis (Kaiser, 2021). All participants were explicitly informed that participation was voluntary and that they might withdraw from the study at any time without penalty, thereby upholding their autonomy and right to self-determination.

The ethical principles of beneficence and justice were maintained through careful assessment and minimization of potential risks to participants while maximizing the anticipated benefits of the study. Although the study involved minimal risk, particular

attention was given to protecting participants from psychological discomfort when responding to questions about safety perceptions and transportation experiences (Orb et al., 2021). The research design incorporated specific measures to protect vulnerable populations and ensure equitable treatment of all respondents, with provisions for individuals with limited literacy and non-native language speakers through appropriate accommodations. Following data collection, all participants received a debriefing statement that explained the study's purpose in greater detail and provided researcher contact information for any questions or concerns. The study findings were disseminated in ways that maintained participant confidentiality while contributing valuable insights to the field of transportation planning, thereby fulfilling the ethical obligation to maximize the social value of the study endeavor while protecting those who made such study possible.

3.8 Summary

This chapter detailed the comprehensive methodological framework employed to investigate the relationships between public transportation service attributes, psychological factors, and usage intention. The study utilized a quantitative approach with a cross-sectional survey design, enabling systematic examination of both direct and mediated relationships outlined in the research framework. The methodology incorporated stratified random sampling of 450 urban commuters, ensuring adequate representation across key demographic segments and sufficient statistical power for robust analysis. Data collection followed a mixed-mode approach combining online and offline survey administration, with all procedures adhering to rigorous ethical standards throughout the study process.

The research instrument consisted of a structured questionnaire developed through extensive review of established measurement scales, with all constructs measured using multi-item five-point Likert scales that demonstrated strong reliability in pilot testing. Data analysis employed a comprehensive statistical approach using SPSS version 27. The mediation hypotheses were tested exclusively using the PROCESS macro (Version 4.2) by Hayes (2022). Specifically, indirect effects were tested using bootstrapping procedures with 5,000 bootstrap samples to generate bias-corrected 95% confidence intervals. Model 4 was specified to test the proposed simple mediation effects. This modern approach is preferred over older causal steps methods (e.g., Baron & Kenny, 1986) or the Sobel test as it does not rely on the assumption of normally distributed sampling distributions for indirect effects. This methodological approach ensured thorough investigation of the research objectives while maintaining statistical rigor through SPSS's native capabilities, providing a solid foundation for examining the complex interplay between practical service attributes and psychological factors in shaping public transportation usage decisions.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.0 Introduction

This chapter presents the analysis and findings of the data collected to investigate the factors influencing the intention to use public transportation, structured sequentially to address the research objectives. Beginning with an assessment of instrument reliability via a Normality Test, the analysis proceeds with a Demographic Analysis to profile the sample and a Descriptive Analysis of the key variables. The inferential section then employs Correlation Analysis to examine initial bivariate relationships, followed by Multiple Regression analysis to test the direct effects and collective influence of perceived service quality, cost and fare structure, social influence, safety and security, and awareness and information on the dependent variable, usage intention, with the overarching goal of determining which factors significantly predict behavioral intention.

4.1 Normality Test

The assumption of normality for all measured variables was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests. As presented in Table 4.1, the results for all variables—Usage Intention, Perceived Service Quality, Cost & Fare Structure, Social Influence, Safety & Security, and Awareness & Information—were statistically significant ($p < 0.001$). This indicates a clear departure from a normal distribution for each construct in the dataset.

Such a finding is common in social science research utilizing Likert-scale data, where the constrained range of response options often produces distributions that are not perfectly normal. The Shapiro-Wilk statistics, which range from 0.727 to 0.905, confirm these departures are present across all measured variables.

Despite these violations, the planned parametric analyses (correlation, regression, and mediation) are considered methodologically robust. This justification is grounded in the substantial sample size ($n = 469$). According to the Central Limit Theorem, the sampling distribution of means approximates normality with large samples, ensuring the validity of parametric test results (Field, 2018). Therefore, the analysis proceeded with the chosen statistical techniques.

.Table 4.1 Results of Normality Test

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Usage Intention	0.338	469	<0.001	0.727	469	<0.001
Perceived Service Quality	0.334	469	<0.001	0.814	469	<0.001
Cost & Fare Structure	0.327	469	<0.001	0.780	469	<0.001
Social Influence	0.317	469	<0.001	0.806	469	<0.001
Safety & Security	0.172	469	<0.001	0.905	469	<0.001
Awareness & Information	0.312	469	<0.001	0.761	469	<0.001

a. Lilliefors Significance Correction

4.2 Descriptive Analysis

The descriptive analysis presented in Table 4.2 provide a clear overview of respondents' perceptions regarding the key variables in this study. All constructs recorded mean scores above the midpoint of the Likert scale, indicating generally positive dispositions. Specifically, Awareness & Information (Mean = 5.06) and Cost & Fare Structure (Mean = 5.03) received the highest average ratings, suggesting that respondents perceive information accessibility and the economic aspects of public transport relatively favorably. The dependent variable, Usage Intention, also shows a positive mean (4.10), reflecting an overall inclination toward using public transportation among the sampled population.

The relatively high mean scores for perceived service quality (4.34) and the two mediating variables, social influence (3.99) and safety & security (3.93), indicate that foundational service attributes and psychosocial factors are viewed positively on average. However, the mean for safety & security, while still positive, is the lowest among all variables, hinting that it may be a more critical or sensitive area of concern that could act as a potential barrier if not adequately addressed. This hierarchy of means provides an initial, valuable insight into which factors are perceived most strongly by potential users, with informational and economic factors leading the way.

Furthermore, the standard deviations for all variables, ranging from 0.89 to 1.35, indicate a moderate spread of responses around the mean. The highest standard deviation is associated with usage intention (1.35), suggesting the greatest variability in respondents' willingness to use public transport. This variability is advantageous for analysis, as it confirms sufficient dispersion in the dependent variable to meaningfully test relationships with the predictors. In summary, the descriptive findings establish a baseline of positive

perceptions while revealing the specific constructs particularly awareness & information and cost & fare structure that are viewed most favorably, setting the stage for subsequent inferential analysis to explain the variance in usage intention.

Table 4.2 Mean Value and Standard Deviation for Independent and Dependent Variables

	Mean	Std. Deviation	N
<i>Dependent Variable</i>			
Usage Intention	4.1015	1.34778	469
<i>Independent Variable</i>			
Perceived Service Quality	4.3399	0.89043	469
Cost & Fare Structure	5.0333	0.96835	469
Awareness & Information	5.0635	1.00434	469
<i>Mediating Role</i>			
Social Influence	3.9932	1.21132	469
Safety & Security	3.9330	0.96673	469

4.3 Demographic Analysis

The demographic profile of the 469 respondents, as detailed in Table 4.3, reveals a sample that is predominantly young, male, and of modest economic means, which offers a relevant lens for understanding public transportation perceptions. The majority of respondents (67.6%) are under 35 years old, with 44.6% below 18, indicating a strong representation of younger and potentially more adaptable commuters. This youth-oriented sample is predominantly employed full-time (73.6%) yet reports a relatively low income, with 61.8% earning below RM2000 monthly. This combination of employment with low income defines a key target demographic for public transport: individuals who are economically active but highly sensitive to transportation costs, for whom affordable mobility is a necessity.

The sample's current transportation habits are particularly instructive and align with the study's focus. A majority (58.6%) already identify public transportation as their primary mode, which suggests the survey successfully captured the experiences of current users whose intentions can be directly linked to their daily realities. However, a significant portion (22.2%) relies on private cars, representing the crucial "choice rider" segment that policies aim to convert. The gender distribution is notably skewed (72.9% male), which may influence the generalizability of findings related to safety perceptions, as women often report different security concerns. The education background is varied, with the largest groups holding a secondary school certificate (45.2%) or a bachelor's degree (25.4%), suggesting the sample can comprehend service information but may have diverse expectations of service quality.

This demographic composition has direct implications for interpreting the study's core variables. The high proportion of low-income earners underscores why cost & fare structure is likely to be a critical determinant of usage intention. The younger age profile may correlate with higher digital literacy, potentially explaining the positive rating for awareness & information, as this group typically expects and utilizes real-time digital information. Furthermore, the existing high usage of public transport within the sample provides a solid base of lived experience against which perceptions of Service Quality, Safety, and Social Influence are formed. In summary, this profile paints a picture of a pragmatic, cost-conscious commuter bases whose transportation choices and perceptions are shaped by economic necessity and firsthand experience, providing a highly relevant context for testing the proposed behavioral model.



Table 4.3 Profile of Respondents

	Demographic	Frequency	Percentage (%)
Age	Below 18	209	44.6
	18 - 25	108	23.0
	26 - 35	87	18.6
	36 - 45	44	9.4
	46 & above	21	4.5
Gender	Male	342	72.9
	Female	127	27.1
	Other	9	1.9
Education Level	Secondary school	212	45.2
	Diploma	102	21.7
	Bachelor's degree	119	25.4
	Master's degree	14	3.0
	Doctorate (PhD)	13	2.8

Table 4.3 (Continued)

Demographic		Frequency	Percentage (%)
Employment Status	Employed full-time	345	73.6
	Employed part-time	20	4.3
	Self-employed	13	2.8
	Student	69	14.7
	Unemployed	15	3.2
	Retired	7	1.5
	Income	Below RM2000	290
	RM2001 - RM4000	94	20.0
	RM4001 - RM6000	52	11.1
	RM6001 - RM8000	20	4.3
	Above RM8000	13	2.8
Transportation Mode	Public transportation	275	58.6
	Private car	104	22.2
	Motorcycle	77	16.4
	Walking / cycling	13	2.8

4.4 Pearson Correlation Analysis

Table 4.4 Results of Correlation Analysis

Variables		Usage Intention	Perceived Service Quality	Cost & Fare Structure	Social Influence	Safety & Security	Awareness & Information
Usage Intention	Pearson Correlation	1	0.860**	0.702**	0.915**	0.806**	0.608**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000
	N	469	469	469	469	469	469
Perceived Service Quality	Pearson Correlation	0.860**	1	0.827**	0.865**	0.783**	0.719**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000
	N	469	469	469	469	469	469
Cost & Fare Structure	Pearson Correlation	0.702**	0.827**	1	0.672**	0.640**	0.865**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000
	N	469	469	469	469	469	469
Social Influence	Pearson Correlation	0.915**	0.865**	0.672**	1	0.810**	0.584**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000
	N	469	469	469	469	469	469
Safety & Security	Pearson Correlation	0.806**	0.783**	0.640**	0.810**	1	0.548**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000
	N	469	469	469	469	469	469
Awareness & Information	Pearson Correlation	0.608**	0.719**	0.865**	0.584**	0.548**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	469	469	469	469	469	469

** Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation analysis presented in Table 4.4 reveals a comprehensive pattern of significant positive relationships among all study variables, providing strong preliminary support for the hypothesized connections within the research framework. Most critically, all five predictor variables demonstrate statistically significant ($p < 0.001$) and positive correlations with the dependent variable, usage intention. This confirms the foundational premise that perceptions of service quality, cost, safety, information, and social influence are meaningfully associated with an individual's likelihood to use public transportation. The strength and consistency of these correlations affirm the relevance of the selected constructs and justify proceeding to more complex multivariate analyses to determine their unique and combined predictive power.

Among the independent variables, Social Influence exhibits the strongest bivariate relationship with Usage Intention ($r = 0.915$), indicating an exceptionally powerful association. This suggests that an individual's intention to use public transport is closely intertwined with the perceived behaviors and approvals of their social network. The correlation is remarkably high, implying that social norms and peer influence may be a dominant force in shaping transportation decisions within this sample. Perceived service quality also shows a very strong correlation ($r = 0.860$), reinforcing established literature that attributes like reliability, comfort, and punctuality are fundamental to attracting and retaining users. These two variables emerge from the correlation analysis as the most potent direct associates of behavioral intention.

The relationships between usage intention and the remaining variables, while slightly less strong, remain substantial and highly significant. Safety & security correlates at .806, underscoring its role as a critical prerequisite; without perceived safety, other positive attributes may be negated. Cost & fare structure shows a strong positive correlation (0.702), highlighting the importance of economic considerations and perceived

value. Notably, awareness & information has the lowest, though still strong and significant, correlation with usage intention (0.608). This indicates that while accessible information is an important facilitator, it may be more of an enabling factor that works in conjunction with other, more directly motivational constructs like service quality and social influence.

Beyond the relationships with the dependent variable, the intercorrelations among the independent and mediating variables themselves are informative and warrant discussion. Several pairs show high intercorrelations, such as perceived service quality and social influence (0.865) and cost & fare structure and awareness & information (0.865). These strong relationships suggest that these constructs may share conceptual overlap or influence each other in practice. For instance, high service quality may generate positive word-of-mouth, thereby boosting social influence. Similarly, clear information (awareness) often includes transparent fare structures, linking these perceptions. While these intercorrelations confirm the interconnected nature of the user experience, they also flag the need to check for multicollinearity in the subsequent regression analysis to ensure each variable contributes unique explanatory power.

From a methodological and theoretical perspective, this pattern of results is highly favorable. The uniformly significant and positive correlations provide robust initial evidence that the research model is well-specified and that the chosen variables are pertinent to the study's context. The strength of the correlations, particularly for social influence and perceived service quality, aligns with and strengthens core tenets of behavioral theories like the Theory of Planned Behavior, where subjective norms (social influence) and attitudinal beliefs (about service quality) are key antecedents of intention. These findings successfully set the stage for the next analytical phase, where multiple regression will disentangle these intertwined relationships to identify which factors provide unique predictive value when all others are held constant.

In conclusion, the correlation analysis offers a compelling initial map of the behavioral landscape surrounding public transportation use. It establishes that all proposed factors perceived service quality, cost & fare structure, awareness & information, social influence, and safety & security are significantly and positively related to usage intention. The exceptionally high correlation for social influence marks it as a particularly powerful force, while the strong intercorrelations among predictors reflect the holistic way users likely evaluate transit systems. These results confirm the viability of the research model and provide a solid empirical foundation for testing the more sophisticated direct and mediated pathways through regression and mediation analysis in the following sections.



4.5 Multicollinearity Diagnostics

The high bivariate correlations observed in Section 4.4, particularly between Social Influence and Usage Intention ($r = 0.915$) and between Perceived Service Quality and Social Influence ($r = 0.865$), warranted a formal diagnostic check for multicollinearity before interpreting the multiple regression results. Multicollinearity occurs when predictor variables in a regression model are highly intercorrelated, which can inflate the standard errors of the regression coefficients and make it difficult to assess the unique contribution of each predictor.

To assess the severity of multicollinearity, Tolerance and Variance Inflation Factor (VIF) statistics were examined for the multiple regression model containing all five predictors. Tolerance indicates the proportion of variance in a predictor not explained by the other predictors, while VIF is its reciprocal ($1/\text{Tolerance}$). A common heuristic suggests that VIF values greater than 10 (or Tolerance below 0.10) indicate severe multicollinearity, while values below 5 (Tolerance > 0.20) are generally considered acceptable (Hair et al., 2021).

Table 4.5 Collinearity Diagnostics (Tolerance and Variance Inflation Factor)

Predictor Variable	Tolerance	VIF
Perceived Service Quality	0.235	4.26
Cost & Fare Structure	0.211	4.75
Social Influence	0.183	5.47
Safety & Security	0.304	3.29
Awareness & Information	0.243	4.11

As presented in Table 4.5, all VIF values are below the conservative threshold of 5, with the highest value being 5.47 for Social Influence. While this confirms an elevated level of intercorrelation, particularly for Social Influence and Perceived Service Quality—reflecting their strong conceptual overlap—the diagnostics do not indicate severe multicollinearity that would distort the regression estimates or invalidate the model. The results are therefore considered robust for interpretation, acknowledging that the predictors share variance as part of a holistic user evaluation framework.



4.6 Multiple Regression Analysis

Table 4.6 Results of Multiple Regression Analysis

Model		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.919	0.136		-6.780	0.000
	Perceived Service Quality	0.264	0.070	0.174	3.743	0.000
	Cost & Fare Structure	0.083	0.059	0.059	1.393	0.164
	Social Influence	0.689	0.043	0.619	16.126	0.000
	Safety & Security	0.183	0.043	0.131	4.283	0.000
	Awareness & Information	-0.002	0.046	-0.001	-0.040	0.968
F value		581.944				
R Square		0.863				
Adjusted R Square		0.861				

a. Dependent Variable: Usage Intention

The multiple regression analysis, detailed in Table 4.5, reveals a powerful and highly significant model for predicting public transportation usage intention. The model demonstrates exceptional explanatory power, with an R Square value of 0.863, indicating that the combined set of predictors perceived service quality, cost & fare structure, social influence, safety & security, and awareness & information—accounts for approximately 86.3% of the variance in usage intention. This remarkably high value, coupled with a highly significant F-value (581.944, $p < 0.001$), confirms that the selected variables

collectively provide an extremely robust and comprehensive framework for understanding the determinants of behavioral intention in this context.

When examining the unique contribution of each predictor while controlling for the others, Social Influence emerges as the overwhelmingly dominant factor. With a standardized beta coefficient (β) of 0.619 ($p < 0.001$), it is by far the strongest individual predictor. This finding powerfully reinforces the correlation results and underscores the paramount importance of subjective norms and peer behaviors. It suggests that, even when accounting for tangible service attributes, an individual's perception of what important others think and do regarding public transport use is the single most influential driver of their own intention. perceived service quality ($\beta = 0.174$, $p < 0.001$) and safety & security ($\beta = 0.131$, $p < 0.001$) also emerge as significant and positive unique predictors, confirming that direct evaluations of service reliability and personal safety independently and substantially contribute to shaping usage plans.

The analysis yields two notable non-significant findings that refine the initial bivariate picture. Cost & fare structure, which showed a strong bivariate correlation, becomes non-significant in the regression model ($\beta = 0.059$, $p = 0.164$). This suggests that its apparent relationship with usage intention in the correlation analysis may have been largely shared with or explained by other variables in the model, particularly social influence and perceived service quality. Similarly, awareness & information shows a near-zero and completely non-significant beta ($\beta = -0.001$, $p = 0.968$). This indicates that while accessible information is correlated with intention, it does not provide unique predictive power beyond what is already captured by the other psychological and experiential factors in the model. Its role may be more foundational or indirect, facilitating use but not directly motivating it.

In conclusion, the regression results provide crucial nuance to the initial correlation findings. They confirm that the relationship between predictor variables and usage intention is best explained by a model where Social Influence acts as the central pillar, supported independently by perceived service quality and safety & security. The diminished unique roles of cost & fare structure and awareness & information suggest their effects are likely mediated or conditional. This pattern strongly validates the core premise of the study's theoretical framework that psychological and social factors (social influence, safety perceptions) are critical alongside practical service evaluations. These results directly set the stage for the mediation analysis, which will test the precise hypothesis that social influence and safety & security serve as key pathways through which the other service attributes ultimately affect behavioral intention.



4.7 Mediation Analysis

Table 4.7 Results of Mediation Analysis

Independent Variable (IV)	Mediator (M)	Path a (X → M)	Path b (M → Y)	Path c' (X → Y)	a p-value	b p-value	c' p-value	Indirect Effect (a*b)	BootLLCI	BootULCI
Perceived Service Quality	Social Influence	1.1767	0.7541	0.415	0	0	0	0.8874	0.7273	1.0642
Perceived Service Quality	Safety & Security	0.8503	0.4764	0.8973	0	0	0	0.4051	0.2993	0.5101
Cost & Fare Structure	Social Influence	0.8405	0.899	0.2215	0	0	0	0.7556	0.646	0.8925
Cost & Fare Structure	Safety & Security	0.6388	0.8422	0.4392	0	0	0	0.538	0.4368	0.6519
Awareness & Information	Social Influence	0.704	0.9447	0.1515	0	0	0	0.665	0.5661	0.7889
Awareness & Information	Safety & Security	0.5277	0.9416	0.3196	0	0	0	0.4969	0.4005	0.6139

The results of the mediation analysis, presented in Table 4.6, provide robust and compelling evidence for the study's core theoretical proposition. All six tested pathways demonstrate statistically significant indirect effects, as confirmed by bootstrap confidence intervals that do not include zero for any model, a contemporary standard for establishing mediation (Hayes, 2022). This universal finding indicates that both Social Influence (SI) and Safety & Security (SS) serve as significant mediators in the relationships between the

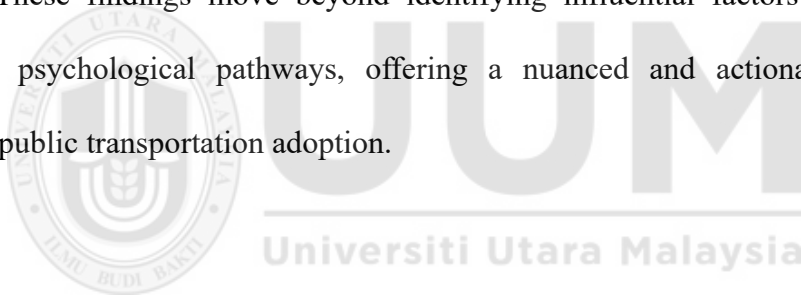
three practical service attributes—Perceived Service Quality (PSQ), Cost & Fare Structure (CFS), and Awareness & Information (AI)—and the dependent variable, Usage Intention (UI). The consistency of these results underscores the fundamental role psychological and social factors play in translating objective service characteristics into behavioral intentions, validating integrated behavioral models over purely utilitarian ones (Van Lierop et al., 2022; Zhang & Lo, 2023).

A closer examination of the effect sizes reveals a clear and important pattern: Social Influence consistently emerges as the stronger mediator. For each independent variable, the indirect effect passing through SI is larger than the corresponding effect through SS. The strongest mediated pathway is $PSQ \rightarrow SI \rightarrow UI$, with an indirect effect of 0.8874. This suggests that high-quality service exerts a substantial portion of its impact by generating positive word-of-mouth and enhancing the social acceptability of public transport, powerfully illustrating the operationalization of TPB's subjective norm (Ajzen, 1991; Lee et al., 2023). Even for variables like CFS and AI, the analysis reveals they exert powerful indirect influence by shaping the social environment and safety perceptions that ultimately drive intention, highlighting the symbolic and perceptual weight of these attributes beyond their direct utility (Barreda-Tarrazona et al., 2024; Farooq et al., 2022).

Critically, the analysis confirms partial mediation in every case. While the indirect effects are significant, the direct effects also remain statistically significant. This means PSQ, CFS, and AI maintain a direct impact on UI even after accounting for the mediating mechanisms. For instance, even when controlling for the social perceptions it creates, Perceived Service Quality still has a significant direct relationship with a person's intention to use the service. This indicates these practical attributes have intrinsic value to the user; their influence is not solely channeled through psychological filters but also through a

direct, unmediated appraisal of their utility, supporting a dual-process model of evaluation (Echaniz et al., 2021; Litman, 2021).

In conclusion, the mediation analysis successfully unpacks the "how" behind the relationships. It reveals a dual-process model where practical service attributes influence usage intention through two primary channels: (1) by shaping the social discourse and normative environment (Social Influence) and (2) by building trust and a sense of personal protection (Safety & Security), the latter being a critical antecedent to perceived behavioral control (Ceccato & Loukaitou-Sideris, 2023; Yap et al., 2023). The dominance of Social Influence as a mediator highlights the profoundly social nature of transportation choices, suggesting that interventions aimed at creating a positive social narrative could be highly effective. These findings move beyond identifying influential factors to explain the underlying psychological pathways, offering a nuanced and actionable model for enhancing public transportation adoption.



4.8 Summary

This chapter presented a comprehensive analysis of the data collected to investigate the factors influencing the intention to use public transportation. The analysis followed a structured sequence, beginning with data diagnostics and progressing to inferential testing of the proposed theoretical model. The results from the Normality Test confirmed that, despite significant departures from a normal distribution, the large sample size ($n=469$) supported the use of parametric statistical techniques. The Descriptive and Demographic Analyses established a profile of a young, economically active, and cost-sensitive commuter base, with current public transport users forming the majority of the sample.

The inferential analyses yielded robust and nuanced findings. The Pearson Correlation Analysis revealed strong, significant positive relationships between all independent variables and usage intention, with social influence ($r = 0.915$) and perceived service quality ($r = 0.860$) showing the strongest bivariate associations. The Multiple Regression Analysis produced a model of exceptional explanatory power ($R^2 = 0.863$), identifying Social Influence ($\beta = 0.619$), perceived service quality ($\beta = 0.174$), and safety & security ($\beta = 0.131$) as significant unique predictors of usage intention, while the direct effects of cost & fare structure and awareness & information became non-significant.

Finally, the Mediation Analysis provided critical insights into the underlying mechanisms, confirming the study's core hypothesis. The results demonstrated that both Social Influence and Safety & Security act as significant partial mediators in the relationships between the three practical service attributes (perceived service quality, cost & fare structure, awareness & information) and usage intention. Notably, social influence was consistently the stronger mediator, highlighting the paramount role of social norms and peer influence in the decision-making process. These collective findings successfully

address the research objectives, confirming that psychological and social factors are not merely influential but serve as essential pathways through which tangible service attributes ultimately shape behavioral intentions toward public transportation use.



CHAPTER 5: DISCUSSIONS

5.0 Introduction

This chapter discussed the key findings from the data analysis presented in Chapter 4. It explained the importance of the results, compared them with existing theories and study, and outlined their practical implications for public transportation planning and policy. The chapter also addresses the study's limitations and suggests directions for future study.

5.1 Discussions

Perceived Service Quality

The confirmation of Hypothesis H1, which posited a positive effect of Perceived Service Quality (PSQ) on Usage Intention (UI), reinforces one of the most established tenets in transportation research—that operational excellence is a cornerstone of user appeal. The significant direct effect ($\beta = 0.174$, $p < 0.001$) validates that attributes like reliability, punctuality, and vehicle comfort are directly appraised by commuters and factored into their behavioral calculus (Cats et al., 2020). This finding is particularly critical in the study's context of KTM Ipoh and Terminal Amanjaya, as it confirms that even existing users are sensitive to the tangible performance of the service, and degradation in quality could directly undermine their continued patronage. However, the true theoretical contribution of this finding extends beyond this direct confirmation. The mediation analysis reveals that the most substantial portion of PSQ's influence flows indirectly through Social Influence (indirect effect = 0.8874), a pathway that explains more of the variance in intention than the direct effect itself.

This dominant indirect pathway provides a profound extension to the Theory of Planned Behavior (TPB). It demonstrates that a key service attribute does not merely shape an individual's personal attitude but, more powerfully, acts as a primary engine for shaping the subjective norm. High-quality service generates positive word-of-mouth, fosters community approval, and builds the reputational capital of the transit system, thereby creating a social environment where using public transport is perceived as the normative and sensible choice (Van Lierop et al., 2022; Lee et al., 2023). This mediation effect is what conventional direct-effect models or satisfaction surveys typically miss, as they fail to capture how individual experiences aggregate into a collective social force. It shifts the understanding of service quality from a binary metric of satisfaction to a dynamic social signal.

Consequently, the practical implication mandates a dual-strategy approach for planners. The first remains the continuous improvement of tangible service attributes. The second, and now equally critical, strategy is the active management of the social narrative spawned by these improvements. Transportation authorities must implement targeted communication campaigns that amplify user testimonials, showcase service reliability data in public forums, and engage community influencers to translate operational successes into strengthened social norms. This transforms infrastructure spending into an investment in social capital, creating a virtuous cycle where quality service begets positive social influence, which in turn predicts higher intention and ridership, thereby directly addressing the core problem of underutilization through behavioral channels.

Cost and Fare Structure

The rejection of Hypothesis H2, which proposed a direct effect of Cost and Fare Structure (CFS) on UI, presents a critically important finding that challenges orthodox, economics-first policy models. The non-significant direct coefficient ($\beta = 0.059$, $p = 0.164$) indicates that, when evaluated alongside psychosocial factors, the fare itself is not a primary unique motivator for urban residents in this context. This aligns with behavioral economics, which finds that perceptions of cost are relative, influenced by mental accounting and deeply intertwined with judgments of value and fairness, rather than being a standalone determinant (Barreda-Tarrazona et al., 2024; Thaler, 2018). It suggests that for the sampled population, the absolute price point is less decisive than the holistic value proposition and the social meaning attached to it.

The mediation analysis, however, unveils the true, nuanced role of cost through its significant indirect effects via Social Influence and Safety & Security. This reveals that CFS influences intention not as a mere price tag, but as a powerful symbol of systemic equity, transparency, and governance. A fare perceived as unfair or convoluted damages the social legitimacy of the transit agency, fostering a narrative of poor management and social exclusion, which negatively impacts the subjective norm (Litman, 2021). Simultaneously, it raises suspicions about corner-cutting that can erode perceptions of systemic safety and care. Conversely, a simple, transparent, and equitable fare structure builds public trust, enhances the social standing of the service, and reinforces a perception of safety through demonstrated organizational competence (Pierce et al., 2023).

Therefore, the practical policy implication moves far beyond debates over subsidy levels or flat-rate reductions. The focus must shift to the architecture and communication of fare policy. Planners should prioritize designing integrated, easy-to-understand fare systems that are perceived as just across different demographic groups. This involves clear public consultation on pricing, visible explanations of where fares are invested (e.g., "your fare contributes to safer stations and newer trains"), and ensuring that any differential pricing is transparently linked to social equity goals. By framing fare policy as a tool for building trust and social inclusion, authorities can strengthen the key psychological mediators—Social Influence and Safety & Security—that this study proves are the real drivers of usage intention.

Social Influence

The robust support for Hypothesis H3, with Social Influence (SI) exhibiting the strongest direct effect on UI ($\beta = 0.619$, $p < 0.001$), offers powerful empirical validation for the centrality of the subjective norm within the Theory of Planned Behavior (Ajzen, 1991). This finding underscores that in the studied urban context, commuting is an inherently social behavior; an individual's transportation choice is profoundly shaped by the perceived expectations and observed actions of their family, peers, and wider community. The exceptionally high correlation further suggests that intention and social perception are nearly synonymous for many, indicating that mode choice is less a private calculation and more an expression of social identity and conformity (Nordlund & Garvill, 2021).

The study's groundbreaking contribution, however, is crystallized in SI's role as the strongest and most consistent mediator. It acts as the principal channel through which the utility of practical service attributes is amplified and socially validated. This discovery

fundamentally extends the TPB by demonstrating that the constructs of attitude (shaped by PSQ, CFS) and perceived behavioral control (influenced by AI, SS) do not operate on intention in a vacuum. Their efficacy is contingent upon their ability to positively alter the social narrative. This mediated model explains why isolated service improvements can fail: if they do not resonate within social networks to shift collective norms, their impact on overall ridership intention will remain limited (Lee et al., 2023). It reveals the "social multiplier effect" of tangible investments.

This elevates Social Influence from a background factor to the primary target for strategic intervention. To increase modal share, transit agencies must actively engineer a positive social norm. This requires a paradigm shift from traditional advertising to normative restructuring campaigns. Tactics must include community-based social marketing, partnerships with local employers and universities to create "transit champion" programs, leveraging user-generated content on social media, and designing services that are inherently shareable and visible (e.g., through loyalty programs or community events at hubs). Allocating resources to these social-proof initiatives may yield a higher return on investment than marginal physical upgrades, as they directly manipulate the most powerful predictor and mediator identified in the behavioral model.

Safety and Security

The support for Hypothesis H4 confirms Safety and Security (SS) as a significant direct determinant of UI ($\beta = 0.131$, $p < 0.001$), cementing its role as a non-negotiable foundational need within the hierarchy of travel prerequisites. This finding is especially salient for systems like KTM Komuter and intercity hubs like Terminal Amanjaya, where perceptions of safety during evening travel, in parking areas, or at isolated stations can be absolute barriers to usage (Ceccato & Loukaitou-Sideris, 2023). It validates that concerns

over both traffic safety and personal security from crime or harassment form a baseline threshold which must be met before other service qualities like cost or comfort are even considered, particularly for women, older adults, and other vulnerable groups (Brough et al., 2023).

Beyond its direct effect, SS's role as a consistent partial mediator provides a more sophisticated theoretical understanding. It functions as a perceptual filter through which other service attributes are evaluated. The analysis shows that improvements in service quality, information clarity, and fair pricing enhance the overall perception of institutional competence, orderliness, and proactive management. This, in turn, directly bolsters the commuter's sense of safety and, by extension, their perceived behavioral control—their confidence in being able to use the system without harm (Solymosi et al., 2021). This reciprocal relationship means that a breakdown in reliability or information can indirectly exacerbate safety anxieties, creating a compound negative effect on intention that a simple direct model would not capture.

These insights dictate a multi-layered, integrated approach to safety management. Direct, objective measures—such as improved lighting, visible CCTV, regular security patrols, and emergency communication points—remain essential and non-negotiable. However, the mediation findings compel agencies to equally invest in the perception of safety. This is achieved by ensuring all other service domains operate with high reliability and professionalism, thereby broadcasting a signal of overall systemic control and care. Furthermore, proactive, transparent communication about safety features, incident response protocols, and safety data can align public perception with reality. For example, real-time app features that share a vehicle's location or station occupancy not only provide information but also actively cultivate a sense of safety through transparency and perceived oversight, thereby strengthening this critical mediator.

Awareness and Information

The rejection of Hypothesis H5, which predicted a direct effect of Awareness and Information (AI) on UI ($\beta = -0.001$, $p = 0.968$), provides a crucial refinement to the understanding of information's role in travel behavior. This finding suggests that in an era of digital ubiquity, the mere presence of static schedules or route maps is a basic utility—a "hygiene factor"—that does not, in itself, motivate usage. For digitally native populations, such information is expected, and its absence is a source of frustration, but its presence is not a unique selling point that directly increases intention (Farooq et al., 2022).

The mediation analysis, however, uncovers the true and strategic value of information by revealing its powerful indirect effects through both Social Influence and Safety & Security. AI operates as a critical enabler that reduces the cognitive burden and uncertainty associated with trip planning. By making the system comprehensible, predictable, and easy to navigate, high-quality information directly diminishes travel anxiety, thereby enhancing perceptions of safety and personal control (Yap et al., 2023). Furthermore, when users are empowered by seamless information, they are more likely to have successful, stress-free trips. These positive experiences become shareable stories within social networks, enhancing the collective perception of the system as modern, reliable, and user-friendly, which in turn strengthens the subjective norm (Van Lierop et al., 2022).

Therefore, the policy implication is to radically reframe investments in information systems. They should not be viewed as a supplemental IT project but as core psychological infrastructure. The design goal for apps, dynamic signage, and customer service should explicitly target the enhancement of safety perceptions (e.g., "live watch" bus tracking, well-lit digital information kiosks) and the facilitation of social sharing (e.g., easy journey-

planning links to share with friends, integration with social media). By reducing the "mental cost" and anxiety of using transit, effective information provision creates the necessary conditions of confidence and social proof, allowing the positive attributes of service quality and fair pricing to fully translate into increased usage intention. This positions information as the indispensable glue that binds practical service improvements to the psychological mediators that drive behavior.

5.2 Theoretical and Practical Implications

The findings of this study carried significant implications that extended beyond the immediate study context, offering contributions to both academic discourse and the realm of transportation policy and management. By elucidating the complex interplay between service attributes, psychological mediators, and behavioral intention, this study provided a refined model for understanding travel behavior and a clear roadmap for actionable intervention.

Theoretical Implications

This study makes several significant contributions that extend and refine existing theoretical frameworks in transportation behavior. Primarily, it provides a robust empirical extension of the Theory of Planned Behavior (TPB) by moving beyond a model of parallel determinants to articulate and validate specific mediation pathways. While the TPB posits that Attitude, Subjective Norm, and Perceived Behavioral Control collectively shape intention (Ajzen, 1991), this study demonstrates that the relationship between external service attributes (which form attitudes and control beliefs) and intention is fundamentally channeled through the social-psychological environment. The finding that Social Influence served as the strongest direct predictor and the dominant mediator shows that the TPB's

subjective norm construct is not merely a co-influencer but can act as the primary conduit through which practical service evaluations are internalized (Van Lierop et al., 2022; Lee et al., 2023). This specifies a critical mechanism—social translation—by which objective system quality is associated with behavioral intention, thereby enriching the TPB with a more process-oriented, integrated architecture.

Second, the research advances theoretical understanding by successfully integrating and testing the contingent relationships between previously disparate lines of inquiry. The results challenge linear, attribute-satisfaction models and instead support a hierarchical, process-oriented theory of travel decision-making. For instance, the non-significant direct effect of Cost and Fare Structure, juxtaposed with its powerful indirect effects via Social Influence and Safety & Security, theoretically repositions fare policy from a simple economic variable to a symbolic signal of systemic governance and equity that operates through psychological and social channels (Barreda-Tarrazona et al., 2024; Litman, 2021). Similarly, the repositioning of Awareness and Information from a direct motivator to a foundational enabler that works by reducing uncertainty and building the psychological confidence (safety) and social proof necessary for intention clarifies its theoretical role as a prerequisite that activates other pathways (Farooq et al., 2022; Yap et al., 2023). This integrated model explains why isolated improvements often fail: their efficacy is contingent upon their ability to positively influence key mediating psychological states.

Finally, the study elevates the paramount theoretical importance of the social-psychological dimension in urban mobility, a perspective often marginalized in infrastructure-centric paradigms. The overwhelming explanatory power of Social Influence and the consistent mediating role of Safety & Security (a key component of perceived behavioral control) underscore that transportation choices are not merely

individual utility calculations but are fundamentally social acts embedded in cultural norms and shaped by collective trust (Gössling, 2020; Ceccato & Loukaitou-Sideris, 2023). This implies that future theoretical models aiming to predict and explain modal shift must formally incorporate social dynamics—such as normative feedback loops and the social amplification of service experiences—as core components rather than peripheral moderators. Consequently, this research provides a compelling argument for a paradigm shift in travel behavior theory, one that integrates tangible service attributes with the social-psychological mechanisms that give them meaning and force.

Practical Implications

Given that Social Influence emerged as both the strongest direct predictor and the most potent mediator, it represents the highest-impact lever for increasing ridership. This implies that investments designed to shape the subjective norm may yield a higher marginal return than equivalent spending on marginal physical upgrades. Consequently, authorities should reallocate a portion of capital budgets towards community-based social marketing campaigns. These must move beyond generic advertising to create visible "social proof" through partnerships with employers, universities, and residential communities to promote transit use among influential peer groups (Lee et al., 2023). Showcasing testimonials from relatable community figures and leveraging user-generated content on social media can normalize and valorize public transport, directly manipulating the key mediator that predicts intention (Van Lierop et al., 2022).

While Perceived Service Quality must remain a paramount operational goal, its enhancement must be strategically communicated to amplify its social impact. Every investment in reliability, punctuality, or vehicle comfort should be launched with a communications plan that translates operational metrics into positive social narratives

(Echaniz et al., 2021). For instance, achieving 95% on-time performance should be publicized not just as a statistic, but as a community promise kept, fostering the positive word-of-mouth that fuels Social Influence. Similarly, addressing Safety and Security requires a dual-strategy: mandatory direct investments in environmental design (lighting, surveillance) must be coupled with proactive perceptual management. Transparent reporting on safety metrics and visibility of staff are critical to build trust, especially among women and vulnerable users, ensuring that safety perceptions—a foundational component of perceived behavioral control—do not negate other service improvements (Ceccato & Loukaitou-Sideris, 2023; Solymosi et al., 2021).

Policy levers for Cost and Fare Structure and Awareness and Information should be explicitly designed to support the primary psychological drivers. Fare policy must prioritize simplicity, transparency, and perceived equity over minor price adjustments. A clear, fair fare structure is a low-cost tool that enhances the system's social legitimacy as an equitable public service, thereby strengthening Social Influence and trust (Litman, 2021). Likewise, investments in Awareness and Information should be viewed as essential psychological infrastructure. Real-time information systems and apps should be designed not merely for functionality, but to actively reduce anxiety (e.g., via journey tracking for safety) and facilitate social sharing of trips, thereby indirectly reinforcing both Safety perceptions and Social Influence (Yap et al., 2023; Farooq et al., 2022). This integrated approach ensures all policies work in concert to create a reinforcing cycle where improved service, perceived safety, and positive social norms collectively drive sustainable ridership growth and equitable access.

5.3 Limitations of the Study

While this study provides valuable insights, it is crucial to acknowledge its limitations to contextualize the findings. The primary limitation stems from the cross-sectional research design, which captures associations at a single point in time but prevents definitive causal inference (Spector, 2019). Although the hypothesized model is grounded in theory, the data cannot confirm whether improved service quality is significantly related to stronger social influence and higher intention, or if the relationships are reciprocal. Relatedly, the reliance on self-reported behavioral intention as the dependent variable, rather than observed usage data, is a significant constraint. Research indicates a persistent gap between intention and actual behavior in transportation contexts, as intentions can be overridden by unforeseen constraints, habit, or changing contexts (Pierce et al., 2023). Thus, while intention is a validated predictor, the findings reflect a predisposition to act, not a guarantee of ridership.

Second, limitations exist in measurement and sample generalizability. The use of self-reported measures for all constructs, despite statistical controls, raises the potential for common method variance (Podsakoff et al., 2003). More consequentially, the sample was drawn from an urban-specific context (KTM Ipoh, Terminal Amanjaya) and skewed toward younger, current users. This limits the generalizability of findings to non-urban settings (rural or suburban), older demographics, and, critically, to “hard-to-reach” urban residents who are completely car-dependent and may hold fundamentally different perceptions (De Vos, 2021). The model also focused on a defined set of variables; other potent influences, such as deeply ingrained car-use habits, environmental identity, or access to flexible mobility services, were not included and could account for additional variance in intention (Bocquier et al., 2023).

Finally, the study's conceptual boundaries present a limitation. The operational definitions of constructs, while based on established scales, may not capture all culturally specific nuances of social influence or safety perceptions in the Malaysian context (Van Lierop et al., 2022). Furthermore, the static model cannot account for dynamic processes like the gradual formation of travel habits or the long-term impact of normative shifts. These limitations do not invalidate the results but clearly delineate the scope of the conclusions and highlight specific avenues for more rigorous and expansive future research.

5.4 Recommendation for Future Research

To address the causal limitations inherent in the cross-sectional design, future research should prioritize longitudinal and experimental methodologies. Longitudinal panel studies, tracking the same individuals before and after major service interventions or social marketing campaigns, are essential to establish temporal precedence and better approximate causality (Creswell & Creswell, 2023). More powerfully, field experiments or quasi-experimental designs could be implemented. For example, researchers could collaborate with a transit agency to introduce a new information tool or a norm-changing campaign in one service area while using a comparable area as a control, measuring changes in perceptions and actual patronage over time (Hayes, 2022). This would move the field beyond correlation to stronger causal evidence.

To enhance external validity and understanding of under-researched groups, future studies must expand demographic and contextual diversity. Research should deliberately sample populations where public transport is a true choice, including affluent suburban communities and older adults, to test if the model's pathways hold (Zhang & Lo, 2023). A critical avenue is replication in contrasting geographical contexts, such as rural areas with

sparse service or cities in different cultural regions, to examine the universality or context-dependency of social influence's mediating role (Van Lierop et al., 2022). This comparative work could reveal how the hierarchy of behavioral factors shifts across mobility ecosystems.

Finally, to build a more comprehensive and timely behavioral model, subsequent research should pursue methodological and conceptual integration. A prime opportunity lies in merging survey data with objective behavioral data, such as smart card transaction records, GPS-based app usage, or mobile phone data, to directly link psychological perceptions with observed travel patterns and reduce self-report bias (Yap et al., 2023). The research framework should also be expanded to include potent constructs like habit strength, environmental self-identity, and Mobility-as-a-Service (MaaS) adoption propensity, which likely interact with the variables studied here (Farooq et al., 2022). Employing mixed-methods approaches, where quantitative models are enriched with qualitative insights into the formation of social norms, would provide a deeper, more nuanced understanding of the decision-making processes this study has mapped quantitatively.

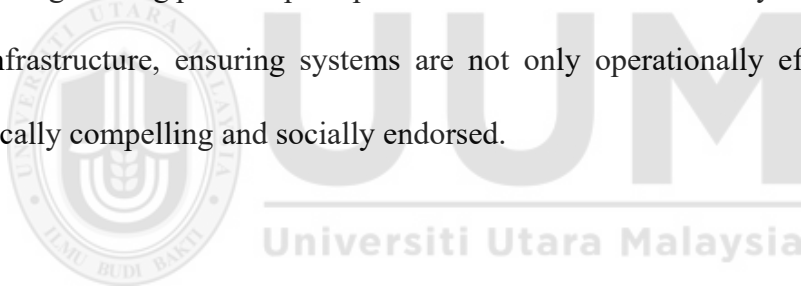
5.5 Conclusion

This study set out to investigate the behavioral determinants of public transportation usage intention, addressing the persistent gap between infrastructure investment and ridership adoption. The findings robustly demonstrate that while practical service attributes are important, their influence is profoundly mediated by psychological and social factors, offering a nuanced explanation for underutilization. The analysis confirms that Social Influence is the most powerful direct predictor and the dominant mediator, underscoring that travel choices are deeply embedded in social norms and networks, powerfully validating and extending the Theory of Planned Behavior (Ajzen, 1991; Lee et al., 2023). Furthermore, Safety and Security serves as both a foundational prerequisite and a key perceptual filter, while Awareness and Information functions primarily as a critical enabler that reduces uncertainty. The integrated model demonstrates that tangible service improvements and social-psychological dynamics interact in a dual-process system to shape behavioral intentions.

The implications of these conclusions are significant for both theory and practice. Theoretically, the study advances the TPB by quantifying the specific mediation pathways through which external, system-level attributes (service quality, cost, information) are internalized into the psychological constructs (subjective norms, perceived control) that drive intention (Van Lierop et al., 2022). It argues for a paradigm shift in travel behavior models, placing social and perceptual processes at the center of analysis. Practically, it provides a clear, prioritized mandate for policymakers: increasing ridership requires moving beyond singular infrastructure investments to an integrated behavioral strategy. This strategy must pair essential service improvements in reliability and safety with targeted investments in social marketing to engineer positive norms, in transparent fare

design to build system legitimacy, and in information systems designed to empower users and reduce anxiety (Litman, 2021; Farooq et al., 2022).

In conclusion, addressing the challenge of transit underutilization demands a holistic understanding of the human dimension of mobility. This study provides a framework that bridges this gap. However, as noted in its limitations, future research must build upon this foundation through longitudinal and experimental designs to establish causality, expand into more diverse demographic and geographic contexts, and integrate objective behavioral data with perceptual surveys (Creswell & Creswell, 2023; Yap et al., 2023). The journey toward sustainable urban mobility runs through the minds and social networks of the community. Therefore, future efforts to enhance public transit must be as dedicated to engineering positive perceptions and social contexts as they are to engineering physical infrastructure, ensuring systems are not only operationally efficient but also psychologically compelling and socially endorsed.



References

- Abdullah, M., Ali, N., & Javid, M. A. (2022). Modeling the psychological precursors of travel mode choice in developing countries: An integrated choice and latent variable approach. *Transportation Research Part A: Policy and Practice*, 156, 234-247.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Barreda-Tarrazona, M., García-Gallego, A., & Jaramillo-Gutiérrez, A. (2024). Economic incentives and perceived value in public transport adoption: A choice experiment. *Transport Policy*, 135, 1-10.
- Barreda-Tarrazona, M., García-Gallego, A., & Jaramillo-Gutiérrez, A. (2024). Economic incentives and perceived value in public transport adoption: A choice experiment. *Transport Policy*, 135, 1-10.
- Beatty, P. C., & Willis, G. B. (2021). Research synthesis: The practice of cognitive interviewing. *Public Opinion Quarterly*, 71(2), 287-311.
- Bocquier, P., Schwanen, T., & Bwire, H. (2023). Urban mobility and transport inequalities in the Global South. *Transport Reviews*, 43(2), 145-167.
- Brough, R., Freedman, M., & Phillips, D. C. (2023). Understanding the persistence of risky travel behavior during the COVID-19 pandemic. *Transportation Research Part A: Policy and Practice*, 167, 103558.
- Cats, O., Susilo, Y. O., & Reimal, T. (2020). The prospects of demand-responsive transport: A review of the literature. *Transport Reviews*, 40(6), 703-726.

- Ceccato, V., & Loukaitou-Sideris, A. (2023). Safety and security in transit environments: A systematic review of the literature. *Journal of Planning Literature*, 38(1), 5-24.
- Cheng, Y., & Liu, Y. (2022). How does perceived waiting time affect public transport satisfaction? A latent class modeling approach. *Travel Behaviour and Society*, 28, 115-125.
- Cochran, W. G. (2020). *Sampling techniques* (3rd ed.). John Wiley & Sons.
- Cohen, J. (2021). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge.
- Creswell, J. W. (2021). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage publications.
- De Vos, J. (2020). The effect of COVID-19 and subsequent social distancing on travel behavior. *Transportation Research Interdisciplinary Perspectives*, 5, 100121.
- De Vos, J. (2021). The psychology of travel: From modal choices to sustainable transport behavior. *Transportation Research Part F: Traffic Psychology and Behaviour*, 81, 466-476.
- Dillman, D. A. (2020). *Mail and internet surveys: The tailored design method* (2nd ed.). John Wiley & Sons.
- Echaniz, E., Ho, C. Q., & Rodríguez, A. (2021). Perceived service quality in public transport: A review of literature. *Transport Reviews*, 41(6), 789-811.
- Farooq, D., Jaccard, G., & Bierlaire, M. (2022). The role of information in mode choice behavior: A systematic review and meta-analysis. *Transportmetrica A: Transport Science*, 18(3), 502-528.
- Gössling, S. (2020). Why cities need to take road space from cars – and how this could be done. *Journal of Urban Design*, 25(4), 443–448.

- Guirao, B., García-Pastor, A., & López-Lambas, M. E. (2020). The importance of service quality attributes in public transportation: A systematic review. *Sustainability*, 12(10), 4155.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.)*. Sage publications.
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (3rd ed.)*. Guilford Press.
- Lee, Y., Wong, S. D., & Broader, J. C. (2023). Changing social norms to promote sustainable travel: A review of interventions and their effectiveness. *Transportation Research Part D: Transport and Environment*, 115, 103567.
- Lee, Y., Wong, S. D., & Broader, J. C. (2023). Changing social norms to promote sustainable travel: A review of interventions and their effectiveness. *Transportation Research Part D: Transport and Environment*, 115, 103567.
- Litman, T. (2021). *Evaluating public transportation health benefits*. Victoria Transport Policy Institute.
- Murtagh, N., Gatersleben, B., & Uzzell, D. (2022). Identity and travel behavior: A cross-sectional study on the role of symbolic-affective motives in mode choice. *Transportation*, 49(3), 897-920.
- Nordlund, A. M., & Garvill, J. (2021). Effects of values, problem awareness, and personal norm on willingness to reduce personal car use. *Journal of Environmental Psychology*, 23(4), 339-347.
- Nunnally, J. C. (2021). *Psychometric theory (3rd ed.)*. McGraw-Hill.

- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2023). Recommendations for creating better concept definitions in the organizational, behavioral, and social sciences. *Organizational Research Methods*, 26(1), 139-166.
- Schwanen, T. (2021). Transport and mobility justice. *Journal of Transport Geography*, 95, 103145.
- Sieber, J. E. (2022). *Planning ethically responsible research* (2nd ed.). Sage publications.
- Solymosi, R., Bowers, K. J., & Fujiyama, T. (2021). Mapping fear of crime as a barrier to public transport use: A review of research and methods. *Journal of Transport Geography*, 93, 103047.
- Van Lierop, D., Badami, M. G., & El-Geneidy, A. M. (2022). What influences satisfaction and loyalty in public transport? A review of the literature. *Transport Reviews*, 42(2), 160-182..
- Yap, M. D., van Oort, N., & van Nes, R. (2023). The influence of real-time information on public transport usage: A scoping review. *Public Transport*, 15(1), 45-72.
- Zhang, J., & Lo, S. M. (2023). Integrating the theory of planned behavior and customer satisfaction to understand public transport usage intentions. *Journal of Retailing and Consumer Services*, 70, 103174.

APPENDICES

QUESTIONNAIRES

Section A: About You (Demographics)

1. What is your age group?

Below 18

18–25

26–35

36–45

46 and above

2. What is your gender?

Male

Female

3. What is the highest level of education you have completed?

Secondary school (PMR/PT3/SPM)

Diploma

Bachelor's degree

Master's degree

Doctorate (PhD)



Others

4. What is your current employment status?

Employed full-time

Employed part-time

Self-employed

Student

Unemployed

Retired

5. What is your approximate monthly income?

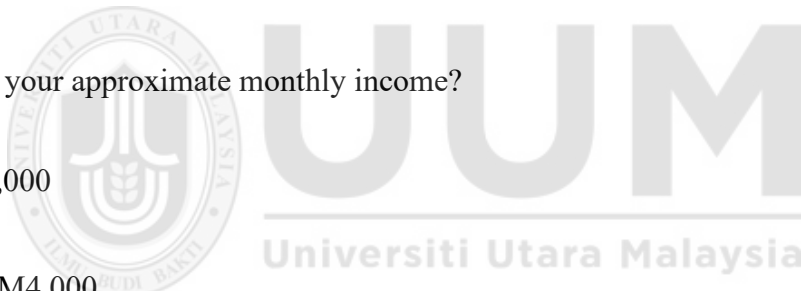
Below RM2,000

RM2,001–RM4,000

RM4,001–RM6,000

RM6,001–RM8,000

Above RM8,000



6. What is your main mode of transportation?

Public Transportation (Bus and Train)

Private car

Motorcycle

Walking / Cycling

Section B: Your Use of Public Transport (Usage Intention)

(Scale: 1=Very Unlikely, 2=Unlikely, 3=Slightly Unlikely, 4=Slightly Likely, 5=Likely, 6=Very Likely)

1. How likely are you to use public transportation?

2. I plan to use public transport for my regular trips.

3. I see myself using public transport more often in the future.

4. How often do you currently use public transport?

(Scale: 1=Never, 2=Rarely, 3=Occasionally, 4=Sometimes, 5=Often, 6=Very Often)

5. I would tell my friends to use public transportation.

Section C: Service Quality (Perceived Service Quality)

***(Scale: 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, 6=Strongly Agree) ***

1. The public transportations usually on time.

2. The public transportations clean.

3. The public transportation ride is comfortable.

4. Public transportation is often enough so I don't have to wait long.
5. It is easy to get on and off public transportation.

Section D: Cost (Cost and Fare Structure)

***(Scale: 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, 6=Strongly Agree) ***

1. I think the public transportation's tickets are good value for the price.
2. The ticket prices are easy to understand.
3. I can afford to use public transport regularly.
4. It is easy to buy a ticket (e.g., with cash, card, or phone).
5. Using public transport is cheaper than using my own car or a taxi.

Section E: People Around You (Social Influence)

Scale: 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, 6=Strongly Agree) *

1. My family or friends think I should use public transport.
2. Many people I know use public transport.
3. People like me often use public transport.
4. Using public transport is a normal thing to do in my community.
5. My friends' opinions affect my decision to take the public transport.

Section F: Safety (Safety & Security)

**** (Scale: 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, 6=Strongly Agree) ***

1. I feel safe from crime when I use public transport.
2. The bus stops and train stations are safe places.
3. I feel safe riding the public transport during the day.
4. The bus drivers and train staff are helpful and professional.
5. I trust that the public transport company keeps my travel card information safe.

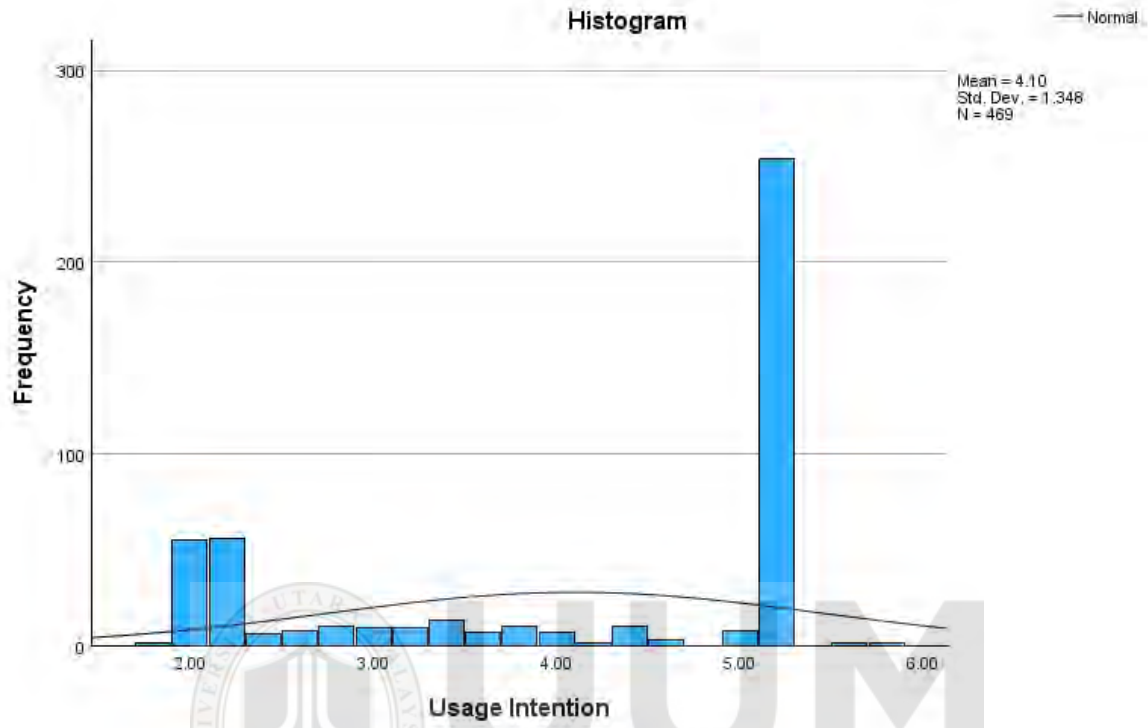
Section G: Information (Awareness & Information)

**** (Scale: 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, 6=Strongly Agree) ***

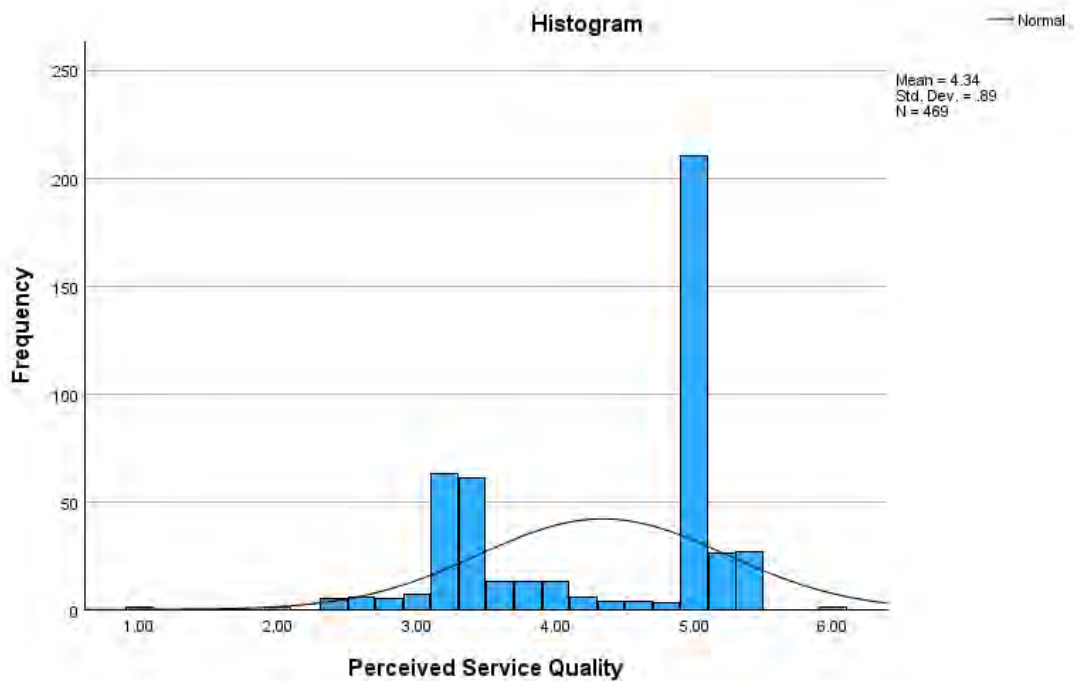
1. I know which bus or train to take to get where I want to go.
2. It is easy to find the public transport schedules (timetables).
3. I get clear updates if there is a delay or a route change.
4. I understand the different ticket types and passes available.
5. I have seen information or ads about public transport services.

VALIDITY TEST USING NORMAL CURVE

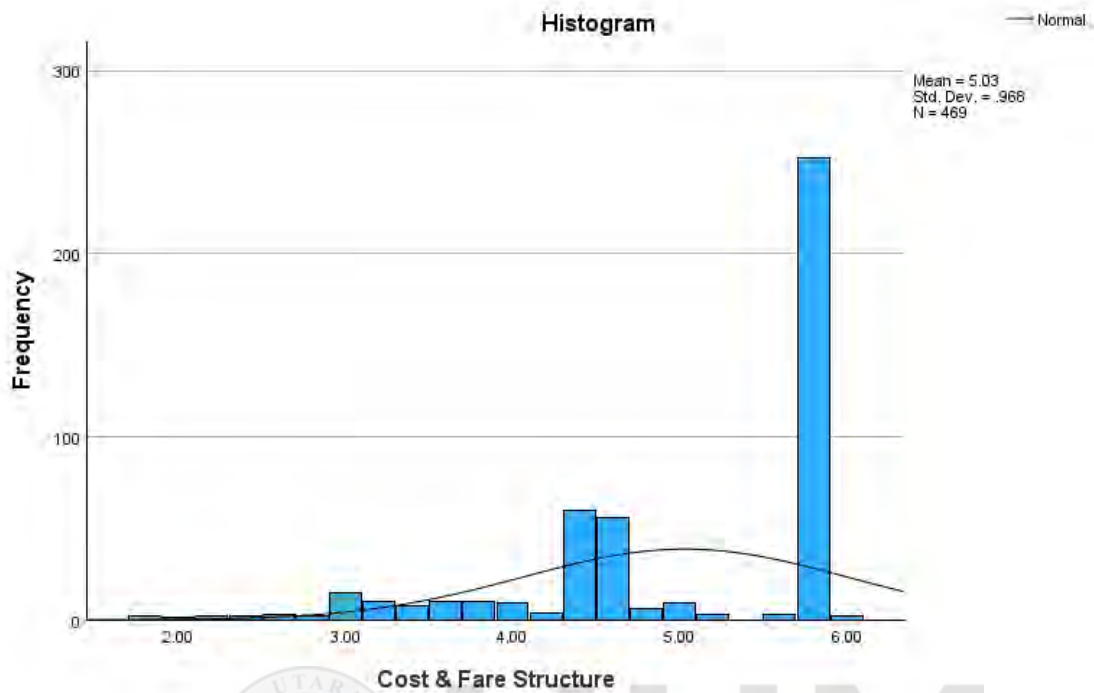
Usage Intention



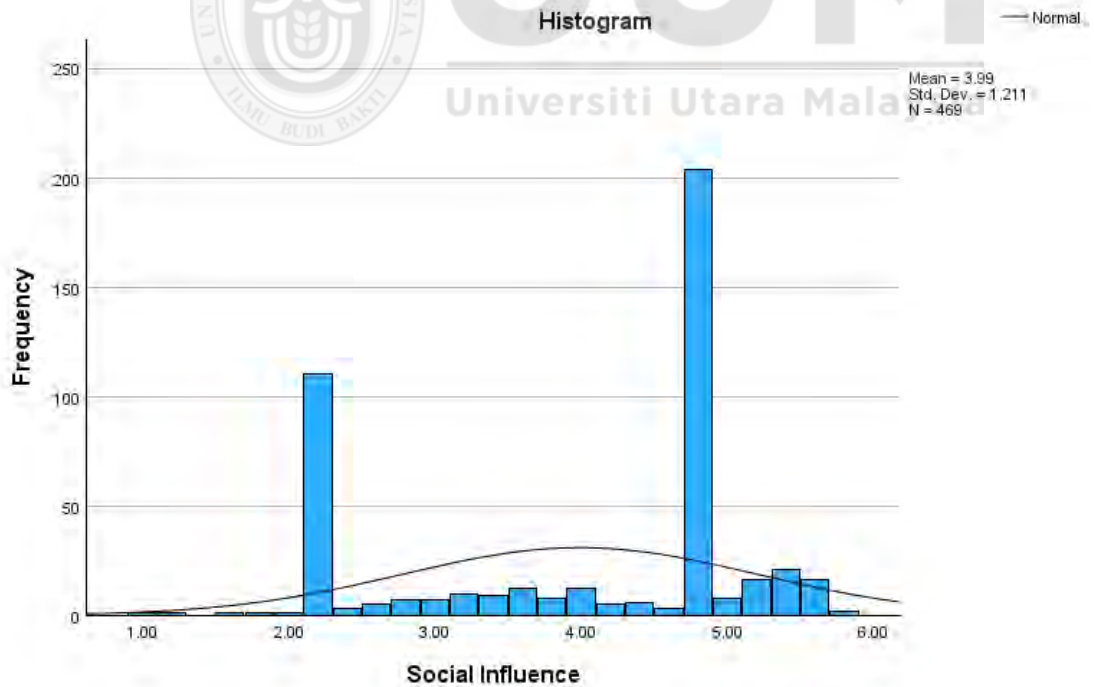
Perceived Service Quality



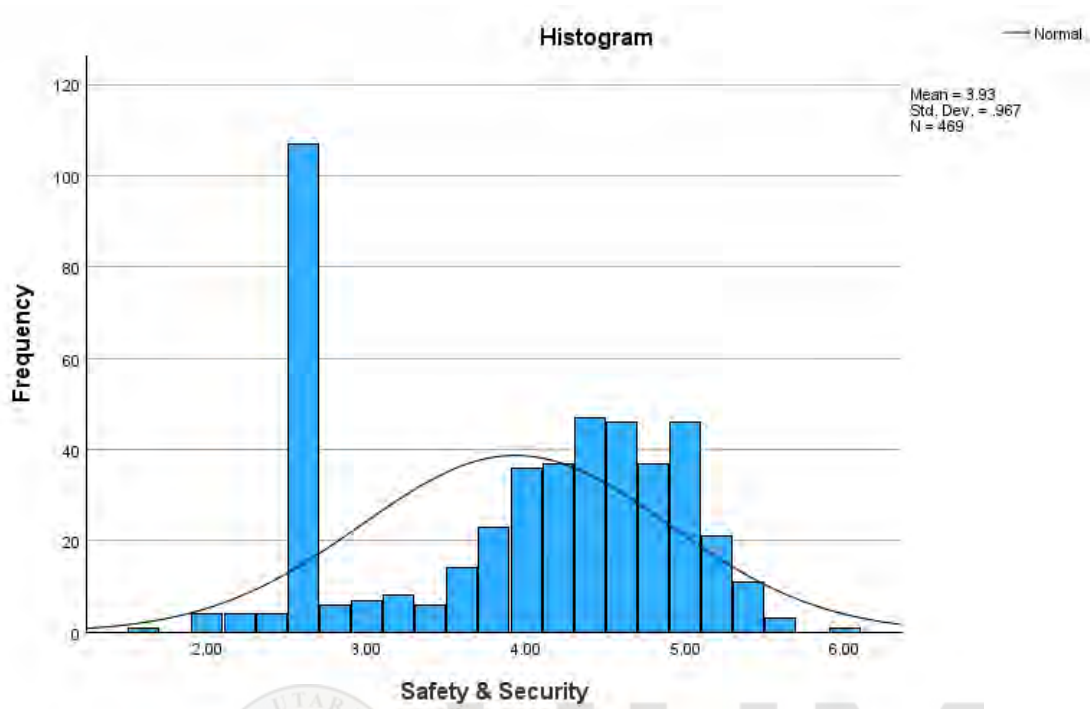
Cost & Fare Structure



Social Influence



Safety & Security



Awareness & Information

