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# Willingness Switch To DAMRI Shuttle Bus As An Airport Access Mode: A Quantitative Analysis Of User Preferences

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**Abstract**

*Improving public transport use for airport access requires more than providing an alternative service; it also requires understanding why travelers are willing to switch from their current modes. This study proposes an integrated framework to examine willingness to switch to DAMRI shuttle buses as an airport access mode by combining travel-related attributes with travelers' psychological perceptions. Drawing on the Theory of Planned Behavior and the Hybrid Choice Model (HCM), the study conceptualizes how perceived service quality, perceived value, safety and comfort, accessibility, trust, environmental concern, and attitude toward switching may shape travelers' switching intentions. It also considers how observable service attributes including travel cost, in vehicle travel time, waiting time, service frequency, and access connectivity influence stated mode choices under alternative service scenarios. A quantitative research design using a stated preference survey is proposed to capture both behavioral intentions and responses to hypothetical travel choice situations. The analytical framework integrates latent variable relationships with discrete choice modelling, enabling an assessment of psychological mechanisms alongside the trade-offs travelers make between service attributes. By distinguishing willingness to switch from stated mode choice probability, the study provides a more comprehensive perspective on the potential adoption of airport shuttle services. The proposed framework contributes to airport accessibility and travel behavior research by*



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*connecting attitudinal determinants with service design attributes in a context specific public transport setting. Its anticipated practical value lies in identifying service improvements and policy scenarios that could make DAMRI shuttle services more attractive relative to competing modes. The framework can support evidence-based decisions on fare structures, service frequency, waiting-time reduction, and intermodal connectivity, subject to empirical validation using traveler data.*

**Keywords: Willingness to Switch; Airport Access Mode; Airport Shuttle Bus; Hybrid Choice Model; Stated Preference; Travel Behavior**

## INTRODUCTION

Airport ground access is an essential component of the air transportation system because the quality, reliability, and accessibility of surface transport services influence passengers' overall travel experience. The availability of efficient airport access alternatives is particularly important as passengers must coordinate their ground journeys with flight schedules, baggage requirements, departure times, and other travel-related constraints. Despite the availability of public transportation, private cars, taxis, and ride-hailing services remain attractive alternatives because they offer direct journeys, flexible departure times, and convenient door-to-door access. Conversely, public transportation may face challenges related to waiting time, service frequency, transfer requirements, and first-mile and last-mile connectivity. Previous research on airport access mode choice has demonstrated that passengers' decisions are influenced by multiple factors, including travel time, service reliability, accessibility, and the coordination of different transport modes (Airport access mode choice studies; see also Yudariansyah et al., (2023). These challenges highlight the importance of understanding not only which transport mode passengers currently use but also the conditions under which they would be willing to change their existing travel behavior.

In Indonesia, DAMRI shuttle bus services represent a potential alternative for passengers travelling to and from airports. The attractiveness of these services depends not only on their fares but also on their ability to provide reliable, comfortable, accessible, and time-efficient journeys. In the Yogyakarta–Yogyakarta International Airport (YIA) corridor, Yudariansyah et al. (2023) examined the choice between airport rail services and DAMRI buses using a binary logit model. Their findings indicated that differences in travel costs, travel time, departure delays, and



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access time to terminals or stations significantly influenced mode choice. This study provides an important empirical foundation for understanding competition between airport access modes in Indonesia. However, analyzing existing mode choice does not fully explain the process through which passengers consider abandoning their current transport mode and switching to DAMRI. Understanding this process is important because improving service provision does not automatically guarantee that passengers will change their established travel preferences.

The concept of willingness to switch offers a useful perspective for examining this behavioral transition. In the present study, willingness to switch refers to an individual's stated readiness or intention to move from their currently preferred or regularly used airport access mode to the DAMRI shuttle bus under specified travel and service conditions. This concept is related to behavioral intention, which is central to the Theory of Planned Behavior (TPB). Ajzen (1991) explains that behavioral intention is shaped by attitudes, subjective norms, and perceived behavioral control. Applied to airport transportation, passengers may develop a stronger intention to switch when they evaluate DAMRI positively, perceive that using the service is feasible, and believe that the alternative offers meaningful advantages over their current mode. Nevertheless, willingness to switch should not be interpreted as equivalent to actual switching behavior, because the intention to use a service may not necessarily translate into a subsequent real-world decision.

From a transport demand perspective, switching decisions are shaped by both observable journey attributes and travelers' psychological evaluations. Observable attributes include travel cost, in-vehicle travel time, waiting time, service frequency, and access distance to bus stops. These attributes determine the practical convenience and relative utility of competing transport alternatives. In contrast, psychological factors such as perceived service quality, perceived value, perceived safety and comfort, trust, environmental concern, and attitude toward DAMRI may influence how passengers evaluate the benefits and disadvantages of switching. Zeithaml (1988) conceptualizes perceived value as an overall assessment of the utility of a product or service based on perceptions of what is received and what is given. In airport access decisions, passengers may therefore be willing to accept a longer journey if the service provides substantial cost savings, while other passengers may prioritize reliability and convenience because missing a flight carries considerable consequences. Consequently, examining travel attributes independently of users' perceptions may provide an incomplete explanation of their willingness to switch.



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The Theory of Planned Behavior provides a useful theoretical foundation for explaining the attitudinal component of this process (Ajzen, 1991). In the proposed research, attitude toward DAMRI represents an individual's overall favorable or unfavorable evaluation of switching to the shuttle bus. Perceived value captures the trade-off between the benefits obtained and the costs incurred, while perceived service quality reflects passengers' evaluations of the reliability, responsiveness, and other relevant aspects of the service. Trust may be important because airport journeys require confidence that the service will operate dependably and support timely arrival. Environmental concern may also influence preferences when travelers consider the environmental implications of their transport decisions. These constructs should not automatically be assumed to have significant effects; rather, their relationships with willingness to switch need to be examined empirically in the specific context of airport access. Their inclusion enables the study to investigate whether the decision to switch is driven primarily by practical travel considerations, psychological evaluations, or a combination of both.

A methodological challenge arises because conventional discrete choice models and structural equation models address different aspects of travel behavior. Discrete choice models, including logit models, are suitable for estimating how observable attributes affect the probability of choosing among competing alternatives. However, a conventional specification may not explicitly represent psychological constructs such as attitudes, perceptions, and trust. Conversely, structural equation modelling (SEM) can examine relationships among latent constructs but does not, by itself, provide a complete representation of choices among alternatives with experimentally varied travel attributes. Ben-Akiva et al. (2002) proposed hybrid choice models as a framework for integrating discrete choice analysis with latent psychological variables and different types of behavioral data. This approach is particularly relevant to airport access research because passengers' preferences can reflect both measurable differences between transport alternatives and individual perceptions that are not directly observable.

To address this methodological challenge, the present study proposes a quantitative approach based on the Hybrid Choice Model (HCM), supported by stated preference (SP) experiments. The SP component will present respondents with hypothetical but realistic airport access scenarios in which attributes such as travel cost, travel time, waiting time, service frequency, and accessibility vary systematically across DAMRI and relevant competing modes. Respondents will be asked to select their preferred alternative under each scenario. The resulting choice data can be used to estimate the sensitivity of mode choice to changes in service attributes


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and to simulate potential responses to alternative service configurations. Simultaneously, a structured questionnaire will measure relevant latent constructs using multi-item indicators adapted from established theoretical and measurement frameworks. Integrating these data sources will enable the research to examine how psychological perceptions relate to switching intentions while estimating how changes in travel attributes influence the probability of choosing DAMRI. The model specification will need to ensure that the latent constructs enter the choice component appropriately rather than simply combining separate SEM and logit results without a coherent estimation framework (Ben-Akiva et al., 2002).

Although previous research has examined airport access mode choice and the influence of travel attributes, an important research opportunity remains in connecting these attributes with passengers' willingness to switch to a specific airport shuttle service. In the Indonesian context, Yudariansyah et al. (2023) provide evidence concerning competition between DAMRI buses and airport rail services in the Yogyakarta–YIA corridor. However, further investigation is needed to understand how travelers' psychological evaluations and preferences under alternative service scenarios jointly explain their readiness to switch from their existing modes. This study addresses that opportunity by shifting the analytical focus from existing mode choice toward willingness to switch, while integrating latent psychological constructs and observable travel attributes within a unified modelling framework. The proposed contribution is therefore not merely the application of another statistical technique, but the development of an empirically testable explanation of how service improvements and individual perceptions may jointly influence switching decisions.

Accordingly, this study aims to develop and empirically evaluate a Hybrid Choice Model of willingness to switch to DAMRI shuttle bus services as an airport access mode. Specifically, it seeks to (1) identify the travel attributes that significantly influence passengers' stated mode choices; (2) examine the relationships between perceived service quality, perceived value, attitude toward DAMRI, perceived safety and comfort, trust, environmental concern, and willingness to switch; (3) assess the role of relevant individual and trip characteristics in explaining differences in switching preferences; and (4) simulate how alternative combinations of fares, travel times, waiting times, service frequency, and accessibility may affect the probability of choosing DAMRI. The findings are expected to contribute to airport transport research by connecting behavioral intention with attribute-based mode choice analysis. Practically, the results may inform DAMRI, airport operators, and transport policymakers in prioritizing service


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improvements and designing more attractive, accessible, and reliable airport access services. By providing evidence on the conditions under which passengers may be willing to switch, this research aims to support more informed decisions concerning public transport provision and sustainable airport ground access.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### Theoretical Foundation: Behavioral Intention and Hybrid Choice Modeling

The Theory of Planned Behavior (TPB) provides a theoretical foundation for understanding individuals' intentions to perform a particular behavior. According to Ajzen (1991), behavioral intention is influenced by attitude toward the behavior, subjective norms, and perceived behavioral control. In the context of airport access, attitude reflects passengers' evaluations of switching to DAMRI, while perceived behavioral control concerns whether they believe they can practically use the service given its availability, accessibility, affordability, and compatibility with their travel requirements. Although TPB offers a useful framework for understanding behavioral intentions, its constructs should be adapted carefully to the transport context rather than assumed to explain all mode-switching decisions.

The present study extends this behavioral perspective by considering service quality, perceived value, perceived safety and comfort, trust, and environmental concern. These constructs represent different mechanisms through which travelers evaluate the attractiveness of DAMRI relative to their current transport modes. Service quality concerns the performance of the transport service, perceived value reflects the benefits obtained relative to the sacrifices made, and attitude captures the individual's overall evaluation of switching. Trust and environmental concern represent additional considerations that may influence the evaluation of a public transport alternative.

In methodological terms, the Hybrid Choice Model provides a framework for incorporating latent psychological variables into discrete choice analysis. Ben-Akiva et al. (2002) explain that hybrid choice approaches can combine observable attributes, latent variables, and behavioral choice data within a unified modelling structure. In airport access research, Tam et al. (2011) demonstrated the relevance of incorporating travel-time reliability and perceived service quality into ground access mode choice modelling. These studies support the use of an integrated framework for investigating how passengers' perceptions and measurable journey attributes jointly shape their transport preferences.


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For this study, willingness to switch is defined as a passenger's stated readiness or intention to change from their current or preferred airport access mode to DAMRI under specified service conditions. It is important to distinguish this construct from actual switching behavior: an individual may express an intention to use DAMRI but ultimately choose another mode because of schedule constraints, luggage, weather, or other circumstances. The study therefore treats willingness to switch as a behavioral intention, while the stated preference experiment provides additional evidence about choices under alternative travel scenarios.

**Perceived Service Quality and Willingness to Switch**

Perceived service quality is an important consideration in public transport evaluation because passengers assess not only the physical characteristics of a vehicle but also the reliability, responsiveness, and consistency of the service. Parasuraman et al. (1988) developed SERVQUAL as a multidimensional framework for measuring perceived service quality, encompassing tangibles, reliability, responsiveness, assurance, and empathy. Although SERVQUAL originated in general service settings, its dimensions can be adapted to transport services by emphasizing vehicle condition, punctuality, schedule reliability, staff responsiveness, and the consistency of service delivery.

In airport access, service reliability is particularly important because passengers must arrive at the airport within a limited time window. Tam et al. (2011) found that travel-time reliability and perceived service quality were relevant to airport ground access mode choice. Passengers who perceive DAMRI as reliable, comfortable, and professionally operated may consider it a more attractive alternative to private cars, taxis, or ride-hailing services. Nevertheless, service quality may influence switching intentions both directly and indirectly, because passengers may first evaluate the benefits of the service before forming an overall attitude toward using it. Accordingly, the following hypotheses are proposed:

H1: Perceived service quality positively influences perceived value of DAMRI.

H2: Perceived service quality positively influences attitude toward switching to DAMRI.

H3: Perceived service quality positively influences willingness to switch to DAMRI.

**Perceived Value and Willingness to Switch**

Perceived value refers to a consumer's overall assessment of the utility of a service based on the relationship between the benefits received and the sacrifices made (Zeithaml, 1988). In



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airport transportation, perceived value may involve the balance between fare, journey time, convenience, reliability, comfort, and the effort required to reach a departure point. A lower fare does not necessarily generate higher perceived value if the service involves excessive waiting, inconvenient transfers, or a substantial risk of arriving late at the airport.

From this perspective, DAMRI may become an attractive alternative when passengers believe that the service provides sufficient benefits relative to its monetary and non-monetary costs. Perceived value may also shape attitude: travelers who consider DAMRI a worthwhile option are more likely to evaluate switching favorably. This reasoning is consistent with the value-based evaluation framework proposed by Zeithaml (1988) and the intention-based perspective of Ajzen (1991). The following hypotheses are proposed:

H4: Perceived value positively influences attitude toward switching to DAMRI.

H5: Perceived value positively influences willingness to switch to DAMRI.

**Perceived Safety and Comfort**

Safety and comfort are relevant to transport decisions because passengers evaluate whether a mode can provide a secure and acceptable travel experience. Perceived safety concerns an individual's assessment of potential risks during the journey, while perceived comfort concerns the physical and experiential conditions of travel, including seating, cleanliness, crowding, and the suitability of the vehicle for passengers carrying luggage. These constructs are related but should be measured separately if the empirical instrument is intended to distinguish risk perceptions from comfort evaluations.

In the airport access context, passengers may be reluctant to switch to a shuttle bus if they anticipate uncomfortable journeys, unsafe boarding conditions, or uncertainty during transfers. Conversely, a positive assessment of safety and comfort may strengthen their overall evaluation of DAMRI. These effects are expected to be especially relevant when the service is compared with alternatives that provide greater privacy or direct access. However, their actual magnitude will depend on the characteristics of the study location and the competing modes. The following hypotheses are proposed:

H6: Perceived safety and comfort positively influence attitude toward switching to DAMRI.

H7: Perceived safety and comfort positively influence willingness to switch to DAMRI.



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**Accessibility and Travel Attributes**

Accessibility represents the ease with which passengers can reach and use a transport service to complete their journeys. Geurs and van Wee (2004) explain that accessibility assessment involves the relationship between transport systems, land use, and the opportunities that individuals can reach. For airport access, relevant considerations include distance to the DAMRI boarding point, availability of feeder transport, ease of transfers, service frequency, and the compatibility of departure schedules with flight times.

Accessibility can influence willingness to switch because a service that is inexpensive but difficult to reach may not be perceived as a practical alternative. Conversely, convenient boarding locations and reliable connections with other modes may reduce the time and effort associated with switching. In addition to perceived accessibility measured through questionnaire items, the study will examine observable travel attributes using stated preference scenarios. This distinction is important: perceived accessibility is a psychological evaluation, whereas access distance or feeder travel time can be represented as measurable attributes in a choice model.

Travel cost, in-vehicle travel time, waiting time, service frequency, and access time will therefore be included in the discrete choice component. The airport access research of Tam et al. (2011) demonstrates the relevance of travel-time reliability and service quality to mode choice, while Geurs and van Wee (2004) provide a broader framework for understanding accessibility. The following hypotheses are proposed:

H8: Perceived accessibility positively influences attitude toward switching to DAMRI.

H9: Perceived accessibility positively influences willingness to switch to DAMRI.

For the stated preference component, the following directional expectations are specified:

H10a: Higher DAMRI travel costs reduce the probability of choosing DAMRI, all else being equal.

H10b: Longer DAMRI travel times reduce the probability of choosing DAMRI, all else being equal.

H10c: Longer waiting times reduce the probability of choosing DAMRI, all else being equal.

H10d: Higher DAMRI service frequency increases the probability of choosing DAMRI, all else being equal.

H10e: Better access connectivity increases the probability of choosing DAMRI, all else being equal.

These hypotheses concern the choice component of the hybrid model, rather than the Likert-scale measurement model.



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**Trust in DAMRI Services**

Trust reflects an individual's willingness to rely on a service provider based on expectations of reliability, integrity, and dependable performance. Morgan and Hunt (1994) emphasize the importance of trust in relationship development and commitment. Although their framework originated in relationship marketing, the underlying concept is relevant to transport services in which passengers must rely on the operator to deliver the promised service.

For airport access, trust may be especially important because an unreliable journey can have substantial consequences, including missed flights and additional expenses. Passengers who trust DAMRI to operate consistently and provide dependable information may be more willing to consider it as an alternative to their current transport mode. Trust may also influence attitude by reducing uncertainty surrounding the decision to switch. The following hypotheses are proposed:
H11: Trust in DAMRI positively influences attitude toward switching to DAMRI.
H12: Trust in DAMRI positively influences willingness to switch to DAMRI.

**Environmental Concern**

Environmental concern refers to an individual's awareness of, and concern about, the environmental consequences of human activities. Stern (2000) discusses the relationship between environmental concern, values, and environmentally significant behavior. In transport decisions, environmental concern may encourage individuals to consider public transportation as an alternative to private vehicles because shared transport has the potential to reduce per-passenger emissions when occupancy and operating conditions are favorable.

However, environmental concern does not necessarily translate into a willingness to switch. Travelers may continue to prioritize travel time, convenience, or reliability, particularly when they have strict flight schedules or limited access to public transportation. Therefore, the relationship between environmental concern and willingness to switch should be treated as an empirical question rather than assumed to be universally strong.

The proposed study will examine whether environmental concern directly influences willingness to switch and whether its influence operates indirectly through attitude toward DAMRI.
H13: Environmental concern positively influences attitude toward switching to DAMRI.
H14: Environmental concern positively influences willingness to switch to DAMRI.


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**Attitude Toward DAMRI and Willingness to Switch**

Attitude is a central construct in the Theory of Planned Behavior. Ajzen (1991) defines attitude toward a behavior in terms of an individual's favorable or unfavorable evaluation of performing that behavior. In the present study, attitude toward DAMRI refers specifically to the evaluation of switching to the shuttle bus as an airport access mode, rather than a general opinion about the operator.

A positive attitude may develop when passengers believe that DAMRI offers an acceptable combination of affordability, accessibility, reliability, comfort, and convenience. Such an evaluation can strengthen their intention to switch from their current transport mode. Nevertheless, actual mode choice remains contingent on the attributes of competing alternatives and the constraints encountered during the journey. Based on TPB, the following hypothesis is proposed:

H15: Attitude toward switching to DAMRI positively influences willingness to switch to DAMRI.

**The Mediating Roles of Perceived Value and Attitude**

The proposed framework assumes that service characteristics may affect willingness to switch through passengers' evaluations of the benefits and desirability of using DAMRI. Perceived value is expected to act as an evaluative mechanism through which perceived service quality affects switching intentions. When passengers consider the service reliable and convenient relative to its cost, they may perceive greater value and subsequently develop a stronger willingness to switch (Zeithaml, 1988).

Attitude is proposed as a second mediating mechanism. According to Ajzen (1991), a favorable attitude toward a behavior contributes to behavioral intention. In this study, perceived service quality, perceived safety and comfort, perceived accessibility, trust, and environmental concern may shape attitude toward switching. Attitude may then translate these evaluations into a stronger willingness to use DAMRI. This mediation framework distinguishes the evaluation of service attributes from the final intention to change modes. The following mediation hypotheses are proposed:

H16: Perceived value mediates the relationship between perceived service quality and willingness to switch to DAMRI.

H17: Attitude toward switching to DAMRI mediates the relationship between perceived service quality and willingness to switch.



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H18: Attitude toward switching to DAMRI mediates the relationship between perceived safety and comfort and willingness to switch.
H19: Attitude toward switching to DAMRI mediates the relationship between perceived accessibility and willingness to switch.
H20: Attitude toward switching to DAMRI mediates the relationship between trust in DAMRI and willingness to switch.
H21: Attitude toward switching to DAMRI mediates the relationship between environmental concern and willingness to switch.

These mediation hypotheses should be tested through estimates of indirect effects and their confidence intervals. A significant indirect effect does not, by itself, establish that the corresponding direct effect is significant or that mediation is complete.

**Individual Characteristics and Heterogeneity in Switching Preferences**

Passengers differ in their travel needs, economic circumstances, and experience with airport transportation. Age, income, trip purpose, current transport mode, and frequency of airport travel may influence how individuals evaluate cost, time, reliability, and convenience. For example, frequent air travelers may place greater emphasis on schedule reliability, while travelers with limited budgets may be more sensitive to fare differences. Passengers traveling with substantial luggage or family members may also evaluate transfers and accessibility differently.

These characteristics should initially be included as explanatory variables or controls in the empirical model. Their inclusion helps account for observed heterogeneity in switching preferences. If the research specifically seeks to establish moderation, interaction effects must be explicitly formulated and tested; demographic characteristics should not be described as moderators merely because they are collected in the questionnaire. Accordingly, the following exploratory hypothesis is proposed:
H22: The probability of choosing DAMRI and the willingness to switch to DAMRI differ according to passengers' socioeconomic characteristics, current transport modes, and trip characteristics.

This hypothesis will be examined through appropriate subgroup comparisons or interaction terms, subject to the sample size and model specification.


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**Summary of the Proposed Research Framework**

The literature review suggests that willingness to switch to DAMRI may be explained by the interaction of service evaluations, psychological factors, and measurable journey attributes. The proposed framework combines the behavioral intention perspective of TPB with the attribute-based choice perspective of HCM. Perceived service quality, perceived safety and comfort, perceived accessibility, trust, and environmental concern are expected to influence attitude, while perceived value represents an additional mechanism through which service quality may affect switching intentions. Observable travel attributes are incorporated into the discrete choice component to estimate the probability of choosing DAMRI relative to competing modes.

An important methodological consideration is that the hybrid model should be estimated as a coherent choice framework if the study intends to claim an HCM contribution. The latent-variable measurement equations and structural relationships should be linked to the utility or choice component, rather than treating separate SEM and logit estimates as automatically equivalent to a hybrid model (Ben-Akiva et al., 2002). The stated preference experiment will provide the choice observations needed to estimate sensitivity to travel attributes, while the questionnaire will measure the psychological constructs. The resulting model can be used to investigate both the factors associated with willingness to switch and the likely effects of alternative service scenarios on DAMRI choice probabilities.

## RESEARCH METHODOLOGY

### Research Design

This study employs a quantitative, explanatory research design to investigate the factors influencing passengers' willingness to switch to DAMRI shuttle bus services as an airport access mode. The study combines a questionnaire-based assessment of psychological constructs with a stated preference (SP) experiment designed to capture respondents' choices among alternative airport access modes. The proposed analytical framework is the Hybrid Choice Model (HCM), which integrates latent psychological variables with observable travel attributes in a discrete choice framework (Ben-Akiva et al., 2002).

The research design distinguishes between two related but different outcomes. First, willingness to switch represents respondents stated intention to move from their current airport access mode to DAMRI. Second, stated mode choice represents the alternative selected by


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respondents when presented with hypothetical travel scenarios. This distinction is important because an intention to switch does not necessarily result in an actual change in travel behavior (Ajzen, 1991). The questionnaire will therefore measure switching intention directly, while the SP experiment will provide choice observations for estimating preferences under different travel conditions.

The empirical investigation will focus on the airport access corridor selected for the study. The specific airport and the relevant DAMRI routes will be finalized before fieldwork to ensure that the travel attributes, competing alternatives, and hypothetical scenarios reflect realistic conditions. The competing alternatives may include private cars, ride-hailing services, conventional taxis, and airport rail services where available.

**Population, Sample, and Sampling Technique**

The target population comprises adults who travel to or from the selected airport and have experience using, or realistic opportunities to use, alternative ground transportation modes. Both current DAMRI users and passengers who primarily use competing modes will be included because the research aims to explain willingness to switch, rather than merely satisfaction among existing DAMRI passengers.

A purposive sampling technique will be used to recruit respondents who meet the following criteria: (1) aged 18 years or older; (2) have travelled to or from the selected airport within the previous 12 months, or have a clearly defined upcoming airport journey; (3) can identify their current or most frequently used airport access mode; and (4) are able to evaluate the proposed transport scenarios. Recruitment will seek variation in current transport mode, travel frequency, income group, and trip purpose.

The initial target is 300 valid respondents, subject to confirmation through a formal sample-size assessment and the complexity of the final model. This target is intended to support the questionnaire-based analysis and provide multiple SP choice observations per respondent. However, the adequacy of the sample cannot be established by a fixed respondent threshold alone. It will be assessed using the number of estimated parameters, expected effect sizes, model complexity, and the number of choice observations and alternatives. Simulation-based sample-size assessment is preferable for the final hybrid choice specification because repeated choices from the same respondent are not statistically independent (de Bekker-Grob et al., 2015).


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The study will clearly acknowledge that purposive sampling is non-probability sampling; consequently, the results will primarily describe the preferences of the recruited sample and should not automatically be interpreted as representative estimates for all airport passengers.

**Research Variables and Operational Definitions**

The proposed model comprises a dependent variable, explanatory latent constructs, observable travel attributes, and individual characteristics. The latent constructs will be measured through multiple questionnaire items, whereas observable travel attributes will be represented by numerical values or experimentally varied levels in the SP scenarios.

**Table 1. Operational definitions of the research variables**

| Variable | Role | Operational definition and measurement |
|---|---|---|
| Willingness to Switch (WS) | Dependent variable | Respondents' intention to switch from their current airport access mode to DAMRI, measured through intention, willingness, and future-use items. |
| Perceived Service Quality (PSQ) | Independent latent variable | Perceived reliability, punctuality, cleanliness, vehicle condition, and responsiveness of DAMRI services. Adapted from Parasuraman et al. (1988). |
| Perceived Value (PV) | Mediating latent variable | Respondents' evaluation of the benefits of DAMRI relative to monetary and non-monetary sacrifices. Based on Zeithaml (1988). |
| Attitude Toward DAMRI (ATT) | Mediating latent variable | Overall favourable or unfavourable evaluation of switching to DAMRI as an airport access mode. Based on Ajzen (1991). |
| Perceived Safety and Comfort (PSC) | Explanatory latent variable | Perceived safety of the journey and comfort associated with seating, cleanliness, crowding, and luggage handling. |
| Perceived Accessibility (PA) | Explanatory latent variable | Perceived ease of reaching DAMRI boarding points, accessing feeder modes, and completing |


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| | | |
|---|---|---|
| | | transfers. Informed by Geurs and van Wee (2004). |
| Trust (TR) | Explanatory latent variable | Confidence in DAMRI's service reliability, consistency, and ability to deliver the promised service. |
| Environmental Concern (EC) | Explanatory latent variable | Concern about the environmental consequences of transport choices and support for reducing transport-related emissions. Informed by Stern (2000). |
| Travel Cost (TC) | Observable choice attribute | Total monetary cost of the relevant airport access journey, including applicable feeder and transfer costs. |
| Travel Time (TT) | Observable choice attribute | Expected in-vehicle journey time from the respondent's origin to the airport. |
| Waiting Time (WT) | Observable choice attribute | Expected time spent waiting for the selected transport service. |
| Service Frequency (SF) | Observable choice attribute | Number of departures per unit of time or the corresponding headway between departures. |
| Access Connectivity (AC) | Observable choice attribute | Characteristics of access to boarding points and connections with other transport modes. |
| Passenger Characteristics | Control variables | Age, income, trip purpose, current mode, airport travel frequency, and relevant journey characteristics. |

The psychological constructs will initially be measured using three to five items per construct on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The final items will be adapted to the DAMRI airport access context, reviewed by subject-matter experts, and pilot-tested before the main survey. The wording and number of items will be


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finalized before data collection to ensure content validity and avoid excessive questionnaire length.

For the willingness-to-switch construct, example items include "I intend to use DAMRI for a future airport journey," "I would be willing to switch to DAMRI if its service met my travel needs," and "I would seriously consider DAMRI instead of my current airport access mode." These items measure intention rather than observed switching behavior. Their suitability and measurement properties will be assessed empirically.

Perceived service quality will be adapted from SERVQUAL, but not every original SERVQUAL dimension will necessarily be retained. Instead, items will be selected according to their relevance to airport shuttle services. Perceived value will focus on the relationship between benefits and sacrifices, while attitude items will assess whether switching to DAMRI is perceived as beneficial, desirable, or sensible. Safety and comfort will be evaluated separately where the measurement model supports distinguishing the two dimensions.

The questionnaire will also include questions about respondents' current transport choices and recent airport journeys. This information will help distinguish the characteristics of existing DAMRI users from those of potential switchers and provide a basis for interpreting heterogeneity in the results.

**Stated Preference Experiment**

The SP experiment will present respondents with hypothetical but realistic airport access scenarios involving DAMRI and relevant competing transport modes. The scenarios will systematically vary attributes such as total travel cost, in-vehicle travel time, waiting time, service frequency, and access or transfer conditions. The levels will be established using preliminary information on actual routes, published fares, observed or reported journey times, and consultation with relevant transport stakeholders where feasible.

A pilot study will be conducted to assess whether respondents understand the scenarios, whether the attribute levels are plausible, and whether the choice tasks impose an excessive cognitive burden. An efficient experimental design will then be used to select combinations of attribute levels that provide adequate variation for parameter estimation. The number of choice tasks per respondent will be limited to maintain response quality.

For each scenario, respondents will select their preferred alternative from the available options. Where appropriate, a "none of these alternatives" option may be included if it reflects a


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realistic decision. The choice tasks will be designed to minimize implausible combinations—for example, an unrealistically short journey time paired with an unusually low fare—and to reduce dominant alternatives that make the choice trivial.

The SP data will provide repeated observations for each respondent. Because these observations are clustered within individuals, the statistical analysis will account for respondent-level dependence where required by the chosen model specification. The SP experiment is intended to estimate preferences under the presented scenarios; it will not, by itself, demonstrate that respondents subsequently switch modes in actual travel.

**Data Collection Procedures**

Data collection will be conducted through a structured questionnaire administered online and, where access permits, through face-to-face surveys at relevant airport access locations or passenger recruitment points. Respondents will first receive an explanation of the study's purpose, the voluntary nature of participation, and the confidentiality of their responses. Informed consent will be obtained before the questionnaire begins.

The questionnaire will consist of four sections: (1) screening questions and informed consent; (2) demographic characteristics and current airport travel behavior; (3) Likert-scale items measuring the latent constructs; and (4) SP choice tasks. The pilot test will be used to refine wording, assess completion time, and identify potentially confusing or repetitive questions.

Data collection will target 300 valid respondents, subject to the final sample-size assessment. Responses will be screened for eligibility, missing information, implausible completion patterns, and inconsistent answers. Exclusion criteria will be defined before the main analysis and applied consistently. Data collection will follow the institution's applicable research ethics requirements, including appropriate consent and protection of respondent information.

**Data Analysis Techniques**

The analysis will proceed in five stages. First, descriptive analysis will summarize respondents' demographic profiles, current airport access modes, travel frequency, and stated preferences. Means, standard deviations, frequencies, and cross-tabulations will be used as appropriate to identify initial patterns in the data.

Second, measurement model assessment will evaluate the reliability and validity of the latent constructs. Where the questionnaire is analyses using a latent-variable framework, internal


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consistency will be assessed using composite reliability and, where appropriate, Cronbach's alpha. Convergent validity will be assessed through standardized factor loadings and average variance extracted (AVE), while discriminant validity will be examined using the heterotrait–monotrait ratio (HTMT) and theoretically appropriate supporting evidence. The thresholds will be interpreted in conjunction with the measurement model, rather than applied mechanically. Measurement items may be revised or removed only when there is a defensible theoretical and statistical justification.

Third, discrete choice analysis will estimate the influence of observable travel attributes on respondents stated choices. A multinomial logit model may be used as an initial benchmark if the alternatives are mutually exclusive and the model's assumptions are appropriate.

The expected signs are negative for travel cost, travel time, and waiting time, and positive for service frequency and improved access connectivity. These are theoretical expectations to be tested rather than predetermined empirical findings. If the independence of irrelevant alternatives assumption is inappropriate or preferences vary substantially across respondents, a mixed logit or another suitable discrete choice specification will be considered.

Fourth, hybrid choice model estimation will integrate the latent constructs into the choice framework. The model will include measurement equations linking observed questionnaire indicators to latent variables and a structural component describing the relationships among the latent variables. The latent constructs will then enter the utility function, directly or through theoretically justified structural relationships, to explain choice probabilities. This approach follows the integrated modelling principles discussed by Ben-Akiva et al. (2002).

For example, the utility of DAMRI may be specified as a function of its fare, travel time, waiting time, service frequency, access connectivity, and relevant latent psychological variables. The precise specification will depend on the finalized theoretical framework, the available data, and identification requirements. Because the same respondent answers multiple SP tasks, the estimation procedure will account for the repeated-choice structure. Separate SEM and logit analyses may be reported as preliminary or benchmark models, but they will not be described as a fully integrated HCM unless the latent and choice components are linked in the estimation framework.

Fifth, hypothesis testing and scenario simulation will assess the proposed direct and indirect relationships and estimate the predicted probability of choosing DAMRI under alternative service conditions. Indirect effects will be evaluated using appropriate confidence


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intervals. Scenario simulations may compare changes in fares, waiting times, travel times, or service frequency to identify which improvements produce the largest predicted changes in DAMRI choice probability. These simulations will be conditional on the estimated model and should not be interpreted as causal effects of actual policy implementation without additional supporting evidence.

**Model Evaluation and Robustness Checks**

The final model will be evaluated in terms of theoretical consistency, parameter significance, goodness of fit, and predictive performance. For the discrete choice component, the assessment will consider log-likelihood, likelihood-ratio tests where applicable, information criteria such as AIC and BIC, and measures of predictive accuracy. For the latent-variable component, the assessment will consider construct reliability, convergent and discriminant validity, and the adequacy of the specified measurement relationships.

Robustness checks will examine whether the main findings remain consistent under alternative model specifications, such as comparing the benchmark multinomial logit model with a mixed logit specification when supported by the data. The analysis may also investigate heterogeneity across current transport modes, trip purposes, and travel-frequency groups. Any subgroup analysis or interaction effects will be conducted only when sample sizes and model identification permit reliable estimation.

The final interpretation will distinguish statistically supported relationships from exploratory findings. The estimated parameters will be used to identify the travel attributes and psychological factors associated with stronger willingness to switch and higher predicted probabilities of choosing DAMRI. These findings will inform practical recommendations for improving the attractiveness of airport shuttle services.

**Research Ethics and Expected Methodological Contribution**

The study will protect respondents' privacy and ensure that participation is voluntary. Data will be used for academic research, stored securely, and reported in aggregate form wherever possible. Ethical approval or institutional clearance will be obtained when required by the relevant institution.

Methodologically, the study is expected to contribute by integrating stated preferences for airport access alternatives with latent psychological constructs in a hybrid choice framework.


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The integration is intended to provide a more comprehensive explanation of why passengers may consider switching to DAMRI and how variations in service attributes could influence their stated choices. The empirical findings will also provide a basis for developing policy scenarios related to fare competitiveness, service reliability, accessibility, and intermodal connectivity.

The practical recommendations will be grounded in the estimated model and the limitations of the research design. Since the data are based on stated preferences and a cross-sectional survey, the results will be interpreted as evidence about stated intentions and hypothetical choices rather than definitive proof of future real-world switching behavior.

## RESULTS AND DISCUSSION

### Respondent Characteristics

The proposed study examines passengers' willingness to switch to DAMRI shuttle bus services as an airport access mode. The analysis is designed to include respondents with different travel preferences, socioeconomic characteristics, and experiences with airport transportation. These characteristics are important because the attractiveness of a shuttle bus may vary according to passengers' current modes, travel frequency, budget constraints, and time sensitivity.

Table 2 respondent profile could be reported after data collection. The numbers are hypothetical and are not based on an actual survey.

**Table 2. Respondent characteristics**

| Characteristic | Category | Illustrative percentage |
|---|---|---|
| Current airport access mode | Private vehicle | 30.0% |
| | Ride-hailing service | 35.0% |
| | Conventional taxi | 15.0% |
| | DAMRI shuttle bus | 12.0% |
| | Other modes | 8.0% |
| Airport travel frequency | Occasional travellers | 60.0% |
| | Frequent travellers | 40.0% |
| Trip purpose | Leisure/personal | 55.0% |
| | Business/professional | 45.0% |

In the final manuscript, the respondent profile should be interpreted in relation to the sampling strategy. If purposive sampling is used, the sample composition should not be described



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as representative of all airport passengers without additional evidence. Particular attention should be given to respondents who currently use competing modes because they are central to understanding potential switching behavior.

**Measurement Model Assessment**

Before testing the structural relationships, the reliability and validity of the latent constructs should be assessed. Perceived service quality, perceived value, attitude toward DAMRI, perceived safety and comfort, perceived accessibility, trust, environmental concern, and willingness to switch are measured using multiple questionnaire items.

The measurement assessment should examine standardized factor loadings, composite reliability, average variance extracted (AVE), and discriminant validity. Commonly used guidelines include factor loadings around or above 0.70, composite reliability between 0.70 and 0.95, and AVE of at least 0.50. These guidelines should be interpreted alongside theoretical relevance and the quality of the individual indicators rather than applied mechanically (Hair et al., 2022).

**Table 3. Measurement model results**

| Construct | Composite reliability | AVE | Illustrative interpretation |
|---|---|---|---|
| Perceived service quality | 0.88 | 0.60 | Adequate |
| Perceived value | 0.86 | 0.62 | Adequate |
| Attitude toward DAMRI | 0.89 | 0.67 | Adequate |
| Perceived safety and comfort | 0.87 | 0.58 | Adequate |
| Perceived accessibility | 0.85 | 0.59 | Adequate |
| Trust | 0.88 | 0.65 | Adequate |
| Environmental concern | 0.84 | 0.57 | Adequate |
| Willingness to switch | 0.90 | 0.69 | Adequate |

If the actual results demonstrate satisfactory reliability and validity, the measurement model may be considered suitable for further analysis. Discriminant validity must also be established, for example using HTMT, because constructs such as perceived service quality, trust, and perceived value may overlap conceptually. If the constructs cannot be empirically distinguished, the structural relationships should not be interpreted as evidence of separate mechanisms.


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**Structural Relationships and Hypothesis Testing**

The structural model examines how service evaluations and psychological factors relate to willingness to switch to DAMRI. The proposed framework suggests that perceived service quality may influence willingness to switch directly and indirectly through perceived value and attitude. Perceived safety and comfort, accessibility, trust, and environmental concern may also influence switching intention through their relationships with attitude.

**Table 4. Structural model results**

| Hypothesis | Relationship | Illustrative standardized coefficient, β | Illustrative p-value | Illustrative status |
|---|---|---|---|---|
| H1 | Service quality → Perceived value | 0.48 | < .001 | Supported |
| H2 | Service quality → Attitude | 0.24 | .003 | Supported |
| H3 | Service quality → Willingness to switch | 0.15 | .021 | Supported |
| H4 | Perceived value → Attitude | 0.35 | < .001 | Supported |
| H5 | Perceived value → Willingness to switch | 0.19 | .008 | Supported |
| H6 | Safety and comfort → Attitude | 0.22 | .006 | Supported |
| H7 | Safety and comfort → Willingness to switch | 0.10 | .087 | Not supported |
| H8 | Accessibility → Attitude | 0.28 | .001 | Supported |
| H9 | Accessibility → Willingness to switch | 0.17 | .014 | Supported |
| H11 | Trust → Attitude | 0.20 | .009 | Supported |
| H12 | Trust → Willingness to switch | 0.12 | .064 | Not supported |



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| | | | | |
|---|---|---|---|---|
| H13 | Environmental concern → Attitude | 0.13 | .041 | Supported |
| H14 | Environmental concern → Willingness to switch | 0.06 | .318 | Not supported |
| H15 | Attitude → Willingness to switch | 0.39 | < .001 | Supported |

**Service Quality, Perceived Value, and Switching Intention**

Perceived service quality has a positive relationship with perceived value and attitude toward DAMRI. This pattern would suggest that passengers who evaluate the shuttle bus favorably also tend to perceive greater benefits relative to its costs and develop a more positive evaluation of switching.

The relationship between service quality and willingness to switch may be interpreted through the practical requirements of airport access. Reliability, punctuality, vehicle condition, and staff responsiveness can reduce uncertainty during journeys in which arrival time matters. This interpretation is consistent with the service quality framework of Parasuraman et al. (1988) and the role of perceived value in consumers' evaluations of services (Zeithaml, 1988).

However, a positive association between service quality and willingness to switch would not establish that service quality alone causes passengers to change modes. The decision may also depend on fare differences, travel time, route accessibility, and competing services. The final discussion should therefore distinguish the statistical relationship estimated by the model from broader causal claims.

**Perceived Value and Attitude Toward DAMRI**

The results indicate a positive relationship between perceived value and attitude, as well as between perceived value and willingness to switch. If this pattern is observed in actual data, it would imply that passengers assess DAMRI in terms of the overall benefits received relative to the costs and inconveniences involved.

A relatively low fare may increase perceived value, but the effect should not be interpreted as a simple preference for the cheapest alternative. Passengers may accept higher fares when competing services offer substantially shorter journey times, easier boarding, or


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greater reliability. This interpretation is consistent with Zeithaml's (1988) conceptualization of value as a trade-off between benefits and sacrifices.

From a managerial perspective, DAMRI could benefit from communicating the overall value of its services rather than relying exclusively on price competition. Nevertheless, such a recommendation should be strengthened using actual estimates of fare sensitivity and the relative importance of service attributes.

**Accessibility and Switching Intention**

The model also suggests that perceived accessibility may be positively associated with attitude and willingness to switch. This relationship is plausible because passengers may be reluctant to use a shuttle bus when reaching the boarding point requires multiple transfers, substantial additional travel time, or uncertain connections.

Accessibility should therefore be considered beyond the physical location of a bus stop. It may also involve feeder connections, schedule coordination, the availability of boarding information, and the ease of transferring between modes. The accessibility framework developed by Geurs and van Wee (2004) supports the broader view that transport opportunities depend on the interaction between transport systems, land use, and the opportunities individuals seek to reach.

In the actual study, perceived accessibility should be distinguished from objective attributes such as access time and transfer time. This distinction will help determine whether passengers' subjective evaluations provide explanatory information beyond the measurable characteristics of their journeys.

**Attitude as a Predictor of Willingness to Switch**

In the results, attitude toward DAMRI has the strongest standardized coefficient among the direct predictors shown in Table 4. If confirmed empirically, this would indicate that passengers' overall evaluations of switching are closely associated with their stated intentions.

This finding would be consistent with the Theory of Planned Behavior, which identifies attitude as an important predictor of behavioral intention (Ajzen, 1991). In the airport access context, a favorable attitude may reflect the belief that DAMRI offers an acceptable balance of affordability, convenience, accessibility, and service reliability.


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However, attitude should not be treated as a substitute for the discrete choice outcome. A respondent may evaluate DAMRI positively yet choose another mode in a scenario where the alternative provides a substantially shorter journey or a more convenient departure time. This is precisely why the proposed research distinguishes switching intention from stated mode choice.

**Mediation Analysis**

The proposed model treats perceived value and attitude as potential mediators of the relationships between service evaluations and willingness to switch. Mediation analysis should estimate indirect effects and their confidence intervals, preferably using a bootstrap procedure or an appropriate method consistent with the final hybrid model.

**Table 5. Mediation results**

| Indirect relationship | Illustrative indirect effect | Illustrative interpretation |
|---|---|---|
| Service quality → Perceived value → Willingness to switch | 0.09 | Positive indirect association |
| Service quality → Attitude → Willingness to switch | 0.09 | Positive indirect association |
| Accessibility → Attitude → Willingness to switch | 0.11 | Positive indirect association |
| Trust → Attitude → Willingness to switch | 0.08 | Positive indirect association |
| Environmental concern → Attitude → Willingness to switch | 0.05 | Positive indirect association |

If the indirect effects are statistically supported, the findings would suggest that certain service attributes may influence switching intentions partly through passengers' evaluations of value and attitude. For example, improved accessibility may make DAMRI easier to use, which can improve the overall evaluation of switching and subsequently strengthen intention.

It is important to distinguish the existence of an indirect effect from the type of mediation. Partial mediation, full mediation, and unsupported mediation cannot be determined from the indirect-effect estimates alone; the direct paths and confidence intervals must also be examined.


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The final manuscript should report the estimated indirect effects, standard errors or confidence intervals, and the corresponding statistical evidence.

### 4.5. Discrete Choice Model Results

The stated preference component is intended to estimate the influence of observable travel attributes on the probability of choosing DAMRI relative to competing modes. The choice model will incorporate attributes such as travel cost, travel time, waiting time, service frequency, and access connectivity.

**Table 6. Expected signs for the discrete choice component**

| Attribute | Expected coefficient sign | Interpretation |
|---|---|---|
| Travel cost | Negative | Higher cost reduces DAMRI utility, all else equal. |
| Travel time | Negative | Longer journeys reduce DAMRI utility, all else equal. |
| Waiting time | Negative | Longer waits reduce DAMRI utility, all else equal. |
| Service frequency | Positive | More frequent departures increase DAMRI utility, all else equal. |
| Access connectivity | Positive | Easier connections increase DAMRI utility, all else equal. |

In the final analysis, the estimated coefficients will indicate how respondents trade off differences in travel attributes when choosing between alternatives. Where the model specification and units permit, the estimated ratios of coefficients can be used to calculate measures such as the value of travel-time savings. Such calculations must account for the units of the variables and the model's assumptions.

The hybrid choice component will then examine whether latent psychological variables explain additional variation in utility beyond the observable travel attributes. If the integrated model performs better than the benchmark model under appropriate fit and predictive criteria, this would support the practical value of incorporating psychological factors into airport access mode choice analysis. It would not, by itself, establish universal superiority of hybrid choice models across all transport contexts.


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**Policy Implications**

The proposed analytical framework has several potential policy applications, subject to the actual empirical results. First, estimates of fare, travel-time, and waiting-time sensitivity can help identify which operational improvements are most likely to increase DAMRI's attractiveness. Second, findings on perceived accessibility can inform decisions about boarding locations, feeder services, transfer arrangements, and schedule coordination. Third, the role of perceived service quality, trust, and attitude can help the operator prioritize service consistency, passenger information, and reliability.

Scenario simulation may also be used to compare alternative service configurations, such as reducing waiting time, increasing departure frequency, or improving access connectivity. These simulations can support evidence-based prioritization, provided the scenarios remain within a plausible range of the data used to estimate the model. The results should be interpreted as model-based predictions of stated preferences, not guaranteed forecasts of actual ridership.

**Summary of the Discussion**

The proposed research framework brings together behavioral intention and attribute-based mode choice to investigate passengers' willingness to switch to DAMRI shuttle bus services. The latent-variable component examines how service quality, perceived value, safety and comfort, accessibility, trust, environmental concern, and attitude relate to switching intentions. The stated preference component evaluates how variations in travel attributes affect the probability of choosing DAMRI over competing airport access modes.

The principal contribution will depend on the actual empirical evidence. If the hypothesized relationships are supported, the study could show that switching intentions reflect both psychological evaluations and practical travel considerations. If some relationships are not supported, those results would also be valuable because they could reveal that certain perceptions are less important than objective travel attributes in the selected airport corridor. In either case, integrating the two components offers a structured basis for understanding airport access preferences and developing targeted service improvements.



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## CONCLUSION, IMPLICATIONS, AND FUTURE RESEARCH

### Conclusion

This study proposes an integrated framework for examining passengers' willingness to switch to DAMRI shuttle bus services as an airport access mode. By combining latent psychological constructs with observable travel attributes within a Hybrid Choice Model (HCM), the research seeks to advance understanding of how passengers evaluate the possibility of changing from their current airport access modes to a shared public transport alternative.

The proposed framework considers perceived service quality, perceived value, attitude toward DAMRI, perceived safety and comfort, perceived accessibility, trust, and environmental concern as potential determinants of switching intention. It also incorporates travel cost, travel time, waiting time, service frequency, and access connectivity into a stated preference experiment. This combination enables the analysis to distinguish between passengers' general intentions to switch and their choices under specific hypothetical travel conditions.

The principal contribution of the study lies in its integrated analytical perspective. Rather than examining switching intention exclusively through psychological variables or investigating mode choice solely through observable travel attributes, the proposed framework connects these dimensions to provide a more comprehensive representation of airport access preferences. The approach also offers a basis for evaluating how alternative service configurations may affect the probability of choosing DAMRI.

The substantive conclusions, however, must be established through empirical estimation. In particular, the relative importance of psychological factors, the sensitivity of passengers to changes in travel attributes, and the presence of indirect relationships through perceived value and attitude remain questions to be resolved using actual survey and stated preference data. Consequently, the proposed framework should be regarded as an empirically testable model rather than evidence that any specific factor has already been demonstrated to influence switching behavior.

### Theoretical Implications

The study has the potential to contribute to transport behavior research in three ways. First, it extends the application of the Theory of Planned Behavior (TPB) to the context of airport access mode switching. Ajzen (1991) emphasizes the role of attitudes and other behavioral determinants in shaping intentions. By examining willingness to switch to DAMRI, the study


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applies this behavioral perspective to a specific transport transition rather than considering only general attitudes toward public transportation. The distinction between switching intention and stated mode choice further clarifies the relationship between psychological evaluations and transport decisions.

Second, the study advances the analysis of perceived value in airport access decisions. Following Zeithaml (1988), perceived value represents an evaluation of the benefits received relative to the sacrifices incurred. In the proposed framework, this construct may help explain why passengers' evaluations of service quality do not necessarily translate directly into switching intentions. Empirical testing can establish whether perceived value provides an indirect pathway linking service quality to willingness to switch.

Third, the study contributes methodologically by applying the Hybrid Choice Model to an airport shuttle service context. Hybrid choice modelling provides a framework for integrating latent psychological constructs with observable attributes in discrete choice analysis (Ben-Akiva et al., 2002). This approach offers the opportunity to investigate whether perceptions and attitudes explain additional variation in passengers' choices beyond differences in fares, travel times, waiting times, and service frequency. The contribution will be strongest if the latent-variable and choice components are estimated within a coherent integrated framework and compared with an appropriate benchmark model.

**Managerial and Policy Implications**

The proposed research has several potential implications for DAMRI, airport operators, and transport policymakers. These implications should be prioritized according to the empirical results rather than assumed to be equally important before estimation.

First, service quality management. If perceived service quality emerges as an important determinant of switching intention, DAMRI could prioritize punctuality, schedule reliability, vehicle cleanliness, passenger information, and staff responsiveness. Improvements should be directed toward service attributes that passengers identify as important and that can be implemented operationally.

Second, fare and service-value strategies. If perceived value is found to be an important predictor, the operator should evaluate affordability in relation to the overall travel experience. Competitive fares may be attractive, but passengers also consider waiting time, access costs, transfer requirements, and reliability. A value-based strategy would therefore assess the total


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cost and convenience of the airport journey rather than focusing exclusively on the shuttle bus fare.

Third, accessibility and intermodal integration. If access connectivity is associated with higher DAMRI choice probabilities, transport planners could consider improving feeder connections, coordinating departure schedules, simplifying transfers, and providing clearer information about boarding points. These measures may reduce the additional effort required to switch from private vehicles or ride-hailing services to public transportation.

Fourth, targeted passenger segmentation. Differences in income, trip purpose, current transport mode, and airport travel frequency may indicate that a uniform service strategy is not equally attractive to all passenger groups. For example, the relative importance of travel time and cost may differ between business travelers and leisure travelers. Such differences should be verified through model estimates and interaction tests before being used to justify differentiated operational strategies.

Fifth, evidence-based scenario planning. The estimated choice model could support comparisons between alternative combinations of fares, waiting times, service frequency, and accessibility. These simulations may help identify which improvements are associated with the largest predicted increase in DAMRI choice probability. Nevertheless, simulated changes in stated preferences should not be interpreted as guaranteed increases in actual ridership; operational feasibility, implementation costs, and observed passenger responses should also be considered.

**Limitations and Future Research**

Several limitations should be considered when interpreting the proposed research. First, a stated preference experiment measures choices under hypothetical scenarios. Respondents may express preferences that differ from their actual behavior when facing real travel constraints, including flight schedules, unexpected delays, luggage requirements, and competing transport availability. Future research could combine stated preference data with revealed preference data obtained from actual travel behavior, ticket purchases, or observed mode use. Such integration could improve understanding of the relationship between stated intentions and realized switching behavior.

Second, a cross-sectional survey provides information about respondents' perceptions and intentions at a particular point in time. It cannot establish whether willingness to switch subsequently results in actual adoption of DAMRI. Longitudinal research could follow passengers


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over time to examine whether intentions translate into repeated use and whether experiences with the service change subsequent preferences.

Third, the use of purposive sampling may limit the generalizability of the findings. Future studies could use stratified or probability-based sampling, where feasible, to improve representation across passenger groups and transport modes. Replication across airports with different accessibility conditions, transport alternatives, and passenger characteristics would also help establish the extent to which the model can be generalized beyond the original study location.

Fourth, the proposed model includes several psychological constructs, and their effects may vary across individuals. Future research could investigate preference heterogeneity using mixed logit models, latent-class choice models, or other suitable extensions. Such approaches may reveal distinct passenger segments with different priorities concerning affordability, reliability, convenience, and environmental considerations.

Fifth, future research could extend the policy analysis by incorporating operating costs, vehicle occupancy, emissions, and other sustainability indicators. Linking passenger preferences with operational and environmental data would help assess not only whether a policy is likely to increase the attractiveness of DAMRI but also whether it is economically and environmentally desirable.

Finally, future studies could evaluate the effects of actual service interventions, such as revised departure frequencies, improved feeder connections, or changes in ticketing arrangements. Quasi-experimental designs or before-and-after evaluations could provide stronger evidence about the consequences of implemented policies than hypothetical choice scenarios alone.

**Final Remarks**

Overall, this study establishes a framework for investigating willingness to switch to DAMRI as an airport access mode by integrating behavioral intention, psychological evaluations, and attribute-based transport preferences. Its value lies in connecting the question of why passengers may consider switching with the question of which service conditions make DAMRI a more attractive choice.

Once estimated using actual empirical data, the framework could support a more targeted understanding of passenger preferences and provide a basis for evidence-informed


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improvements to airport shuttle services. Its broader contribution will depend on the robustness of the empirical findings, the validity of the integrated model, and the extent to which the resulting insights can be translated into practical improvements in airport ground access.

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