# Factors Influencing Students' Satisfaction towards Campus Bus Services at UTeM

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## ABSTRACT

Transportation services within university campuses are essential for ensuring smooth academic, social, and extracurricular engagement. As student populations grow, campus bus services play a central role in facilitating mobility, yet issues such as unreliable schedules, overcrowding, and inadequate facilities remain common. The research objective about the factors influencing students' satisfaction towards campus bus services at Universiti Teknikal Malaysia Melaka (UTeM), focusing on two service quality dimensions derived from the SERVQUAL model: facilities of bus and responsiveness. A quantitative descriptive research design was adopted, with data collected from 120 UTeM students through stratified random sampling to ensure representation across faculties and study years. The survey instrument, structured on a 5-point Likert scale, measured student perceptions of bus facilities, responsiveness, and overall satisfaction. Data analysis was conducted using SPSS, incorporating descriptive statistics, reliability tests, normality tests, and Spearman's rank correlation analysis. The results demonstrated that both facilities and responsiveness significantly affect students' satisfaction, with facilities showing a very strong relationship correlation ($r = 0.708$, $p < 0.01$) and responsiveness reflecting a strong relationship correlation ($r = 0.598$, $p < 0.01$). These findings indicate that tangible aspects such as cleanliness, seating comfort, and safety features, alongside intangible aspects like timely communication and attentive driver behavior, are critical to shaping positive student commuting experiences. The study contributes academically by filling the research gap on UTeM's campus transport system and practically by offering actionable insights for university administrators and transport service managers. Enhancements in bus facilities and improvements in service responsiveness are expected to increase student trust, reduce reliance on private vehicles, and support UTeM's sustainability objectives.

**Keywords:** student satisfaction; bus facilities; responsiveness; campus bus; UTeM.

## INTRODUCTION

Transportation services within university campuses are essential for supporting students' academic and social activities. Efficient mobility allows students to attend lectures, access facilities, and participate in extracurricular programmers. As student populations increase, campus bus services play a crucial role in ensuring smooth daily operations and enhancing overall satisfaction. However, prior studies in Malaysia and Southeast Asia reveal recurring problems such as unreliable schedules, overcrowding, and poor bus facilities that negatively impact the student experience (Sapiri et al., 2021; Hussin et al., 2024).

One of the most common challenges is inconsistent bus scheduling, which results in prolonged waiting times and missed classes. Md Yusof et al. (2014) found that delays and timetable non-compliance created frustration among students and disrupted their daily routines. Overcrowding has also been widely reported, particularly during peak hours, forcing students to wait for multiple buses before securing a seat, thereby reducing comfort

and raising safety concerns (Hussin et al., 2024). Facility-related issues, such as limited seating capacity, poor ventilation, and lack of cleanliness, further reduce service quality (UUM et al., 2023). In addition, the professionalism and attitudes of drivers have been identified as key factors influencing satisfaction, with unsafe driving and poor communication leading to complaints (Jeevaniswaran et al., 2019).

Technology-related shortcomings also contribute to dissatisfaction. Zulkefly and Hamsa (2018) highlighted that the absence of real-time bus tracking systems and reliable service information left students uncertain about arrival times, resulting in longer waiting periods and increased stress. Recognizing these issues, both the Ministry of Higher Education Malaysia (MOHE) and the Land Public Transport Agency (APAD) have stressed the importance of efficient and safe campus transport systems as part of higher education quality planning (MOHE, 2020; APAD, 2023).

Despite the importance of campus transport, research in Malaysia has largely focused on institutions such as Universiti Utara Malaysia (UUM), Universiti Putra Malaysia (UPM), Universiti Teknologi MARA (UiTM), and Universiti Teknologi Malaysia (UTM) (Hashim et al., 2013; Yusof et al., 2014). Due to differences in campus design and transport management, findings from those universities cannot be fully generalised. At Universiti Teknikal Malaysia Melaka (UTeM), buses operate daily from 6:00 a.m. to 11:00 p.m. on weekdays with service every half hour (2024). However, anecdotal evidence suggests that students still face long waiting times, overcrowding, and unclear schedules issues that mirror those reported in other universities. Yet, there is limited academic research that specifically examines the determinants of satisfaction in the UTeM context.

From an academic perspective, there is a clear research gap in studies focusing on UTeM. Most prior work centers on larger institutions, meaning unique aspects of UTeM's bus system remain unexplored (Hashim et al., 2013; Dzulkalnine et al., 2024). From an industry standpoint, operational inefficiencies such as poor scheduling, overcrowding, and safety risks reflect weaknesses in route planning, demand forecasting, and transport coordination (Halim et al., 2022). A tragic case at Universiti Utara Malaysia in 2023, where a student lost their life in a transport-related incident, further underlines the importance of ensuring both safety and reliability in campus bus systems (Berita RTM, 2023). For UTeM, failure to address such issues could undermine student trust, reduce satisfaction, and increase institutional risks.

To address this gap, the present study investigates the factors influencing students' satisfaction with campus bus services at UTeM. The objectives of the study are to analyze the relationship between bus facilities and student satisfaction; and to investigate the relationship between responsiveness and student satisfaction. Findings from this research are expected to guide improvements in UTeM's bus services and contribute to the broader understanding of campus mobility in Malaysia.

## LITERATURE REVIEW

### 2.1 Facilities of bus

Facilities of buses refer to the physical and infrastructural components that support the comfort and effectiveness of campus transportation, such as vehicle condition, seating capacity, cleanliness, air-conditioning, safety features, accessibility, and bus stop quality. At Universiti Teknikal Malaysia Melaka (UTeM), where many students depend on buses for mobility, the standard of these facilities significantly affects satisfaction levels. Omar et al. (2021) found that transport facilities play a crucial role in shaping students' campus experience, with inadequate or outdated buses leading to dissatisfaction and even reduced attendance or punctuality. Similarly, Mustaffa, Sakhiah, and Aziz (2022) emphasized that university bus systems also reflect institutional commitment to sustainability, with well-planned routes and stops improving both convenience and eco-friendly practices. Poor planning, particularly the "last-mile problem," can create fatigue and frustration if bus stops are far from destinations.

Beyond physical condition, the frequency and reliability of buses are also essential. Timely services aligned with academic schedules help reduce congestion and delays (Omar et al., 2021). In the SERVQUAL framework,

facilities fall under the "Tangibles" dimension (Parasuraman et al., 1988), which strongly influences first impressions. Clean, modern, and well-maintained buses convey professionalism and enhance satisfaction, while visible neglect diminishes service quality perceptions. In conclusion, bus facilities form a key dimension of service quality at UTeM. Providing clean, safe, and frequent services, along with strategically placed stops, not only improves student satisfaction but also strengthens the university's image and supports sustainability goals.

### 2.2 Responsiveness

Responsiveness is a key dimension of service quality in the SERVQUAL framework, referring to the willingness and ability of providers to offer prompt assistance and address customer needs efficiently (Leong et al., 2015). In the context of campus bus services, this includes how quickly drivers and management handle delays, schedule changes, overcrowding, or safety concerns. For UTeM students, responsiveness strongly influences satisfaction, as they depend on reliable services to manage tight academic schedules. Zeithaml et al. (2006) emphasized that responsiveness must be evaluated from the customer's perspective. Poor communication, long waiting times, or lack of real-time updates can create dissatisfaction, even if the provider believes the issue is resolved (Harr, 2008). Conversely, simple actions such as explaining delays, updating students via apps, or responding empathetically to complaints build trust and confidence. Studies also show that responsiveness directly impacts public transport satisfaction in developing contexts (Ubaidillah et al., 2022) and enhances service reputation when users feel their concerns are valued (Njelita & Opara, 2023).

Importantly, responsiveness is not only reactive but also proactive. By adjusting schedules based on demand or providing alternatives during breakdowns. Staff behavior plays a central role; respectful, empathetic communication can offset inconveniences and shape positive perceptions of service quality (Blose & Tankersley, 2004). In conclusion, responsiveness is both a functional and relational factor that affects how UTeM students perceive bus service quality. By improving communication, training staff in empathy, and adopting real-time updates, the university can strengthen student trust and overall satisfaction with its transport services.

### 2.3. Dependent Variable (Students' Satisfaction Towards Campus Bus Services)

Student satisfaction in campus transportation refers to students' overall evaluation of bus services based on expectations and actual experiences such as punctuality, safety, comfort, accessibility, and driver behavior. It represents both cognitive and emotional responses, making it a multidimensional construct that requires holistic assessment rather than relying on a single factor (Jou et al., 2023; Charbatzadeh et al., 2016). In the context of UTeM, understanding satisfaction is crucial as it directly influences students' daily commute, academic punctuality, and overall campus experience. The importance of student satisfaction lies in its impact on well-being, academic performance, and institutional reputation. A reliable and efficient bus system encourages greater reliance on campus transportation, reduces congestion, and supports sustainability efforts, while dissatisfaction often leads to complaints, lower service usage, and pressure on administrators to implement changes (Arif Khan et al., 2023; Rasheed & Rashid, 2024). Furthermore, satisfied students are more likely to express positive feedback, strengthening the university's image and attracting future students.

Several factors shape satisfaction, particularly the service quality dimensions of reliability, responsiveness, assurance, empathy, and tangibles. For example, consistent schedules, prompt communication, professional driver behavior, and well-maintained buses significantly enhance satisfaction, while deficiencies in these areas may push students toward private or less sustainable transport options (Amponsah & Adams, 2016; Etminani-Ghasrodashti et al., 2023). To measure satisfaction effectively, structured surveys such as SERVQUAL are commonly used to evaluate gaps between expectations and perceptions. At UTeM, customized questionnaires that address punctuality, cleanliness, seating, and driver behavior provide valuable insights, while open-ended responses allow for deeper understanding of individual experiences. Regular measurement not only identifies service gaps but also ensures continuous improvement, aligning transportation services with student needs and expectations (Charbatzadeh et al., 2016; Arif Khan et al., 2023).

### 2.4 Theoretical Framework

This theoretical framework based on independent variables and dependent variables. This framework contains two independent variables; facilities of buses and responsiveness are from SERVQUAL theory. For the dependent variables, there are one which is students' satisfaction towards campus bus services at UTeM.

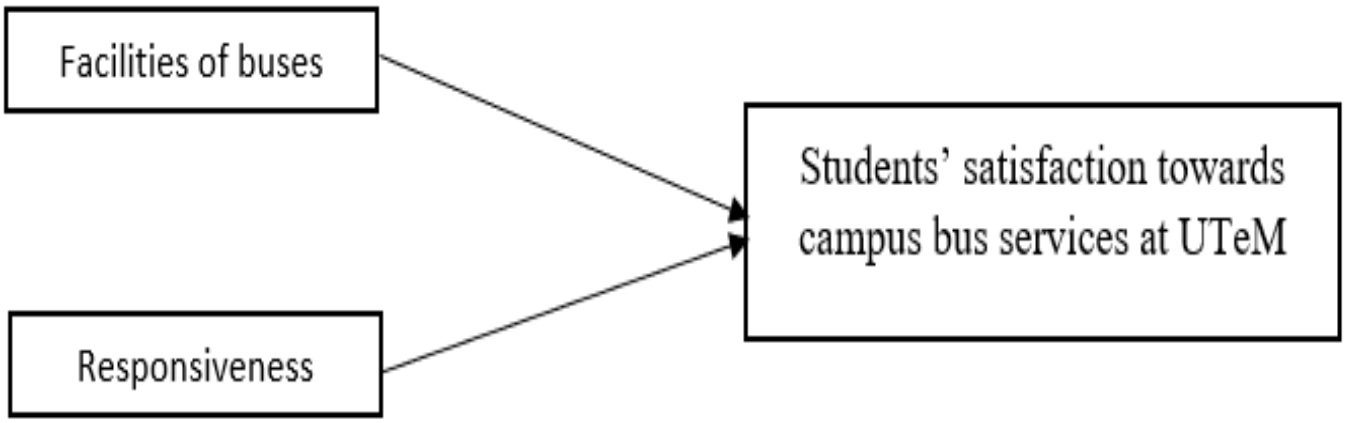


**Figure 1:** Theoretical Framework

## METHODOLOGY

This study adopts a quantitative descriptive design to examine factors influencing students' satisfaction with campus bus services at Universiti Teknikal Malaysia Melaka (UTeM). Quantitative research allows precise measurement of service quality variables of facilities of bus, and responsiveness, adapted from the SERVQUAL model and their impact on satisfaction (Goertzen, 2017). A descriptive design provides a clear snapshot of students' current perceptions without altering the study environment (Babbie, 2010), offering practical insights for university transport planning.

A quantitative research approach is applied, focusing on structured data and statistical analysis to assess how SERVQUAL-based dimensions affect student satisfaction (Grover, 2015). Data will be collected using survey questionnaires distributed to UTeM students who use the campus shuttle bus. This approach ensures objective analysis, generalizable findings, and actionable recommendations for improving bus services.

The study employs quota sampling to ensure proportional representation across UTeM faculties and study years. Unlike stratified random sampling, which requires a complete list of the population, quota sampling allows proportional representation even without access to student name lists. Respondents are divided into strata such as faculty and year of study, and data are collected until each group reaches its predetermined quota. This approach ensures balanced input from different student groups, captures diverse perspectives, and strengthens the validity of the results (Etikan & Bala, 2017).

Data will be collected via a structured online questionnaire distributed through Google Forms. The survey consists of three sections: demographics, service quality variables (facilities of bus and responsiveness), and overall satisfaction. The variables and overall satisfaction are measured using a 5-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree (Joshi et al., 2015), while the demographic section uses categorical questions such as gender, faculty, year of study, mode of transport and bus usage frequency. Finally, responses will be analyzed using SPSS, applying descriptive, correlation, and regression techniques to identify the strongest predictors of satisfaction. Ethical considerations, including informed consent and anonymity, will be strictly observed.

# RESULT AND DISCUSSION

## 4.1 Demographic Characteristic Analysis

As shown in Figure 2, the gender distribution was relatively balanced, with 53.3% female and 46.7% male respondents. The slightly higher proportion of female participants may reflect either the actual student composition or greater survey participation willingness among female students.

Respondents were drawn from multiple faculties across Universiti Teknikal Malaysia Melaka, ensuring diverse perspectives (Figure 3). The largest share came from the Faculty of Technology Management and Technopreneurship (FPTT) (55.8%), followed by the Faculty of Electrical Engineering (FTKEK) (11.7%), Faculty of Information and Communication Technology (FTMK) (9.2%), Faculty of Mechanical Engineering (FTKM) (8.3%), Faculty of Education and Social Sciences (FTKIP) (8.3%), and the Faculty of Electronic and Computer Engineering (FTKE) (6.7%). This distribution mirrors faculty size and participation levels, while also ensuring representation of students with varied schedules, campus locations, and commuting needs.

In terms of study level, Figure 4 shows that the majority were senior students, with 40.0% in their final year and 34.2% in their third year, while 13.3% were second-year and 12.5% were first-year students. The higher proportion of senior students suggests stronger familiarity with campus facilities and transportation systems, making their input valuable for assessing service satisfaction. Regarding commuting choices (Figure 5), the largest groups relied on either the campus bus (40.0%) or private cars (40.0%), followed by motorcycles (17.5%), while a smaller percentage traveled by walking (1.7%) or other modes (0.8%). This balance between bus and car usage highlights different student preferences, shaped by affordability, flexibility, and accessibility.

Finally, Figure 6 illustrates the frequency of bus usage. While 30.0% of respondents used the bus daily, and 10.8% used it three to four times per week, a significant 55.8% reported using the bus rarely, and 3.3% only once a week. These findings indicate that although the bus remains an essential daily service for a portion of students, many rely on alternative modes such as cars or motorcycles. Improving scheduling, frequency, and coverage could encourage wider and more consistent bus usage. Overall, the demographic profile demonstrates a diverse and balanced sample across gender, faculty, study level, and transport mode, strengthening the validity of the findings on factors influencing satisfaction with campus bus services at UTeM.

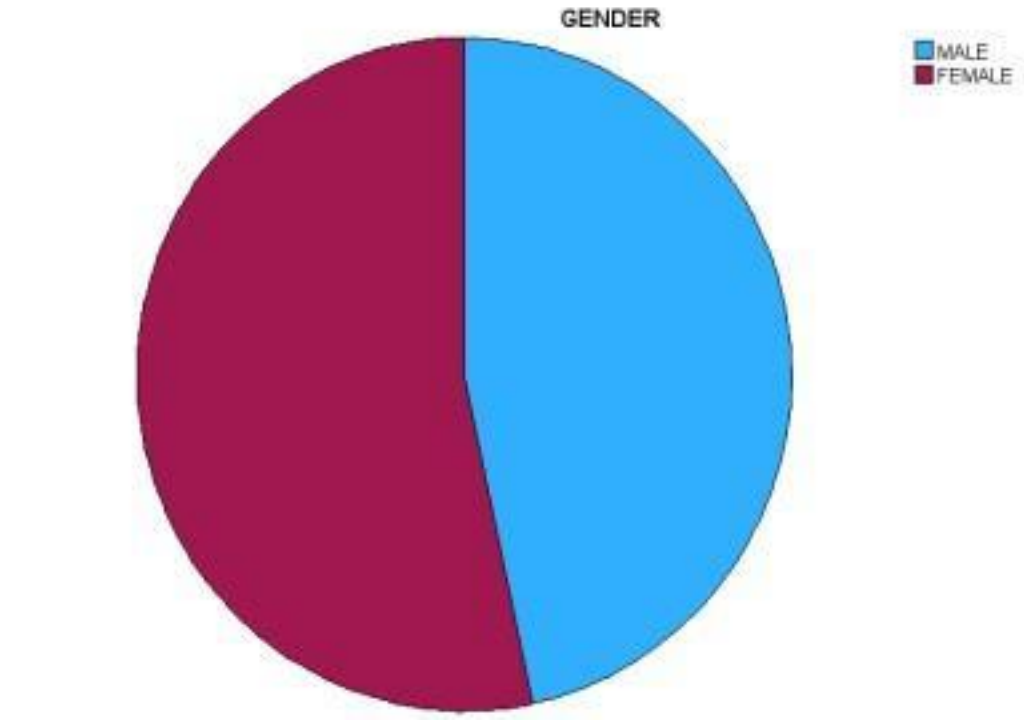


**Figure 2: Gender**

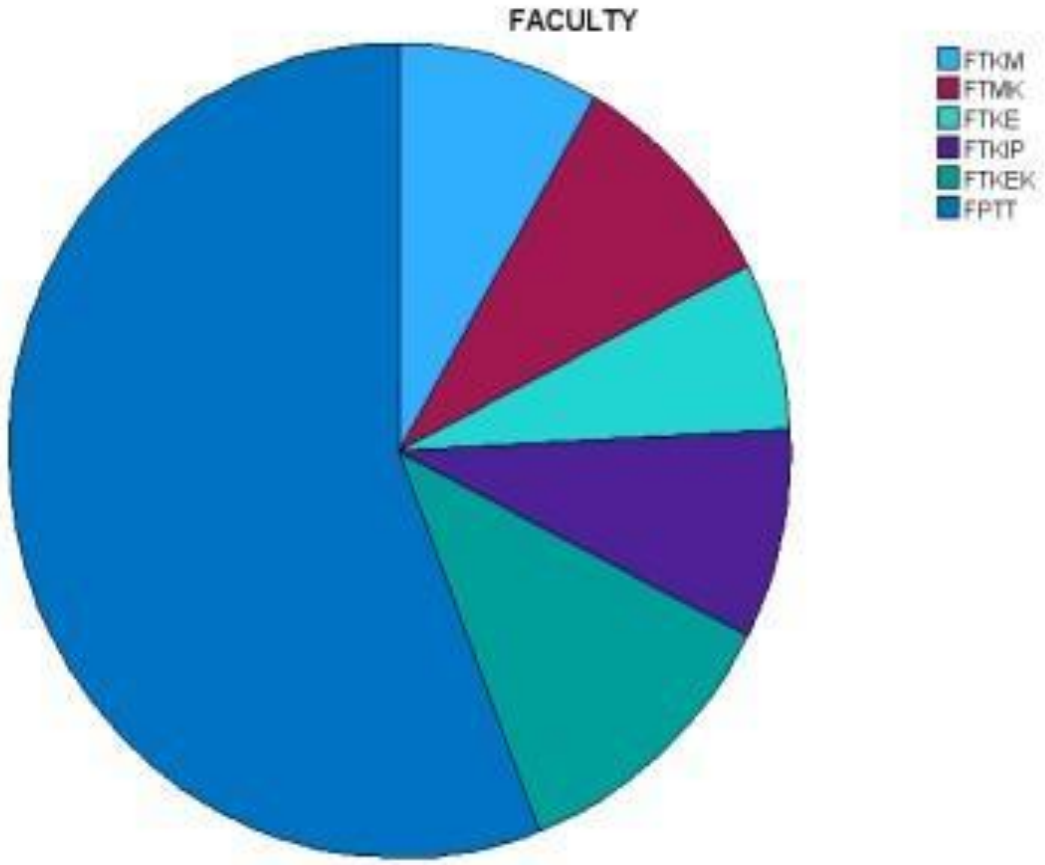


**Figure 3: Faculty**

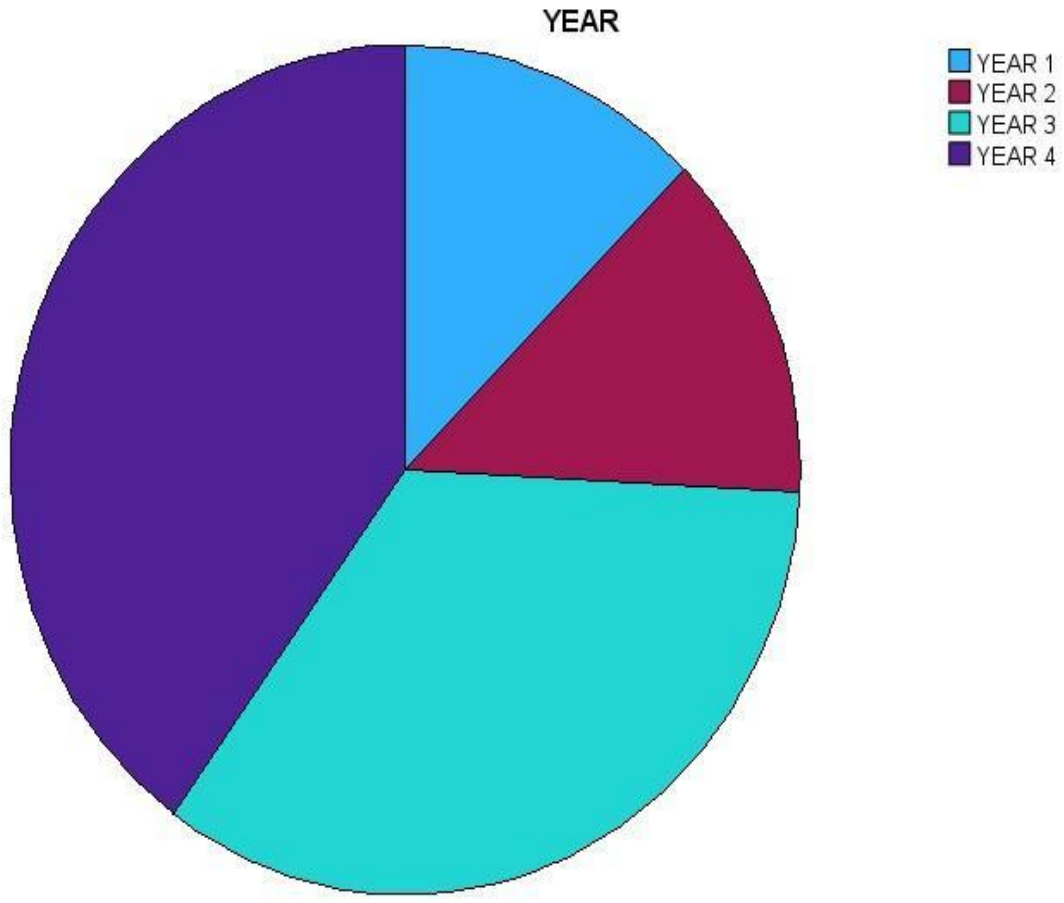


**Figure 4: Year of study**

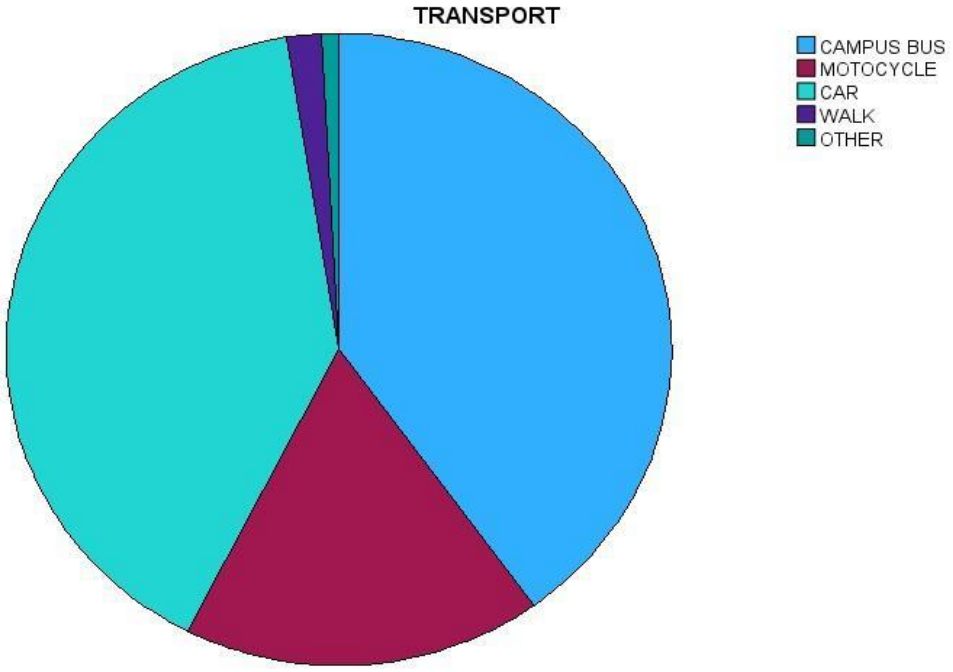


**Figure 5: Mode of Transport**

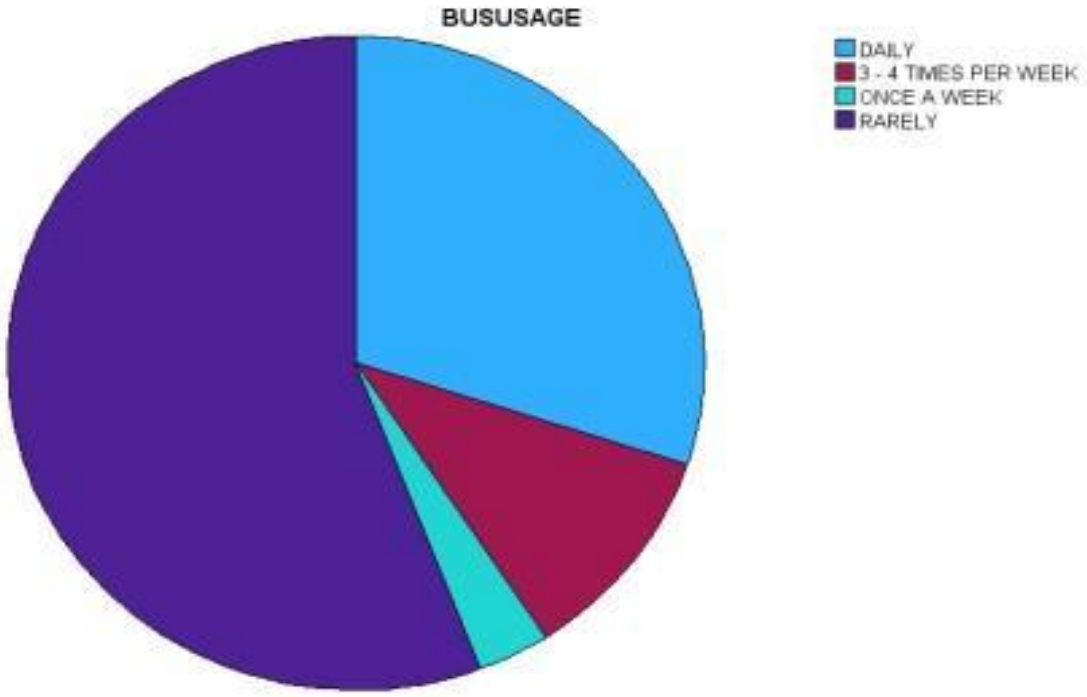


**Figure 6: Bus Usage Frequency 4.2 Descriptive Statistic Analysis**

The descriptive statistics include means, standard deviations.

Based on the descriptive statistics presented in Table 1, the analysis shows that the mean score for Facilities of Bus is 3.8550 with a standard deviation of 0.710. According to the interpretation scale, this falls within the range of 3.5 and close to 4, which is categorized as moderately high. This indicates that students generally perceived the facilities provided by the campus bus positively, with responses showing relatively low variation.

Meanwhile, the mean score for Responsiveness is 3.6183 with a standard deviation of 0.877, which also falls under the moderately high category. This finding suggests that students acknowledged the responsiveness of bus services as fairly good, although the higher standard deviation compared to facilities reflects greater variability in student opinions.

In terms of Student Satisfaction, the mean score is 3.8267 with a standard deviation of 0.705, placing it in the moderately high range as well. This implies that overall, students were moderately satisfied with the campus bus services, and responses were fairly consistent. Taken together, these findings demonstrate that students hold a moderately high level of satisfaction across facilities, responsiveness, and overall bus service quality. However, since the mean scores did not reach 4.0 or above, there remains potential for further improvement to elevate students' perceptions from moderately high to high satisfaction.

**Table 1:** Descriptive Statistics

| | N | Mean | Std. Deviation |
|---|---|---|---|
| FACILITIESOFBUS | 120 | 3.8550 | 0.710 |
| RESPONSIVENESS | 120 | 3.6183 | 0.877 |
| STUDENTSATISFACTION | 120 | 3.8267 | 0.705 |
| Valid N (listwise) | 120 | | |

### 4.3 Reliability and Normality test

The reliability test in table 2, recorded a Cronbach's Alpha of 0.932 for the 15 items, which indicates excellent internal consistency. As values above 0.70 are acceptable (Nunnally & Bernstein, 1994), this high score confirms that the questionnaire items reliably measured the constructs facilities of bus, responsiveness, and student satisfaction towards campus bus services. The strong reliability ensures that the data collected is consistent and suitable for further statistical analysis.

**Table 2:** Reliability Test

| Reliability Statistic | |
|---|---|
| Cronbach's Alpha | N of Items |
| .932 | 15 |

As shown in Table 3, the Kolmogorov–Smirnov test was applied since the sample size exceeded 50 respondents (n = 120). The results revealed that all independent variables and dependent variables recorded pvalues < 0.001, which are lower than the 0.05 significance threshold. This indicates that the data significantly deviates from a normal distribution. Therefore, the null hypothesis of normality is rejected.

Because the data is not normally distributed, parametric tests such as Pearson correlation are unsuitable. Instead, a non-parametric alternative was chosen. In this study, Spearman's rank correlation was applied to examine the strength and direction of relationships between the facilities of bus, responsiveness and students' satisfaction towards campus bus services. This approach ensures valid and reliable results despite the nonnormality of the data.

**Table 3:** Normality Test

| Variables | KolmogorovSmirnov[a] Statistic | Sig. |
|---|---|---|
| IV31 | .268 | <.001 |
| IV32 | .273 | <.001 |
| IV33 | .248 | <.001 |
| IV34 | .315 | <.001 |
| IV35 | .290 | <.001 |

| | | |
|---|---|---|
| IV41 | .238 | <.001 |
| IV42 | .289 | <.001 |
| IV43 | .201 | <.001 |
| IV44 | .208 | <.001 |
| IV45 | .206 | <.001 |
| DV1 | .264 | <.001 |
| DV2 | .316 | <.001 |
| DV3 | .263 | <.001 |
| DV4 | .243 | <.001 |
| DV5 | .252 | <.001 |

Note: Kolmogorov–Smirnov test with df = 120 (Lilliefors Significance Correction applied).

### 4.4 Correlation

Spearman's rank correlation was chosen in this study because the data did not meet the assumption of normality, as shown by the Kolmogorov–Smirnov test results. Unlike Pearson's correlation, which requires normally distributed data, Spearman's correlation is a non-parametric test that measures the strength and direction of the monotonic relationship between two variables (Corder & Foreman, 2014). This method is appropriate for ordinal or non-normally distributed data as it is based on ranked values rather than raw scores. In this context, Spearman's correlation is used to examine the relationships between service quality dimensions (such as facilities and responsiveness) and students' satisfaction with campus bus services at UTeM, ensuring reliable results despite the non-normality of the dataset.

#### 4.4.1 Correlation between IV and DV

Based on Table 4, the Spearman's correlation analysis reveals that both independent variables are positively and significantly associated with students' satisfaction towards campus bus services at UTeM. The Facilities of Bus recorded the strongest correlation ($r = 0.708$, $p < 0.01$), indicating a very strong positive relationship. This suggests that improvements in facilities such as cleanliness, comfort, and seating availability substantially enhance overall student satisfaction. Meanwhile, Responsiveness demonstrated a strong positive correlation ($r = 0.598$, $p < 0.01$), highlighting that prompt, courteous, and helpful responses from bus drivers or staff also play a vital role in shaping students' perceptions of service quality. Although the relationship between responsiveness and satisfaction is not as strong as that of facilities, it still represents a critical factor in ensuring a positive commuting experience. Overall, these findings emphasize that both facilities of bus responsiveness significantly influence satisfaction. However, facilities appear to have a slightly greater impact in the context of UTeM's campus bus services.

**Table 4:** Correlation between IV and DV

| Independent Variables | Students' satisfaction towards campus bus services at UTeM | p-value | Interpretation |
|---|---|---|---|
| Facilities of bus | 0.708 | $p < 0.01$ | Very Strong Relationship |
| Responsiveness | 0.598 | $p < 0.01$ | Strong Relationship |

### 4.4.3 Hypothesis Testing

Table 5 presents the hypothesis testing results using Spearman's correlation analysis, which examined the relationships between service quality dimensions and students' satisfaction with campus bus services at UTeM. The results confirm that both hypotheses are supported at the 0.01 significance level ($p < 0.01$). Specifically, H1 is supported, as the facilities of buses show a very strong positive correlation with student satisfaction ($r = 0.708$, $p < 0.01$). This means that better facilities such as cleanliness, seating comfort, and airconditioning significantly contribute to higher satisfaction levels. Similarly, H2 is supported, as responsiveness demonstrates a strong positive correlation with satisfaction ($r = 0.598$, $p < 0.01$). This indicates that prompt assistance, effective communication, and attentiveness from bus drivers or staff also play a crucial role in shaping positive student experiences. Overall, the findings highlight that both facilities and responsiveness are significant predictors of student satisfaction, with facilities having a slightly greater influence.

**Table 5:** Hypothesis Testing

| Hypothesis | Status |
|---|---|
| H1: There is a significant relationship between facilities of buses and students' satisfaction. | Supported |
| H2: There is a significant relationship between responsiveness and students' satisfaction. | Supported |

## DISCUSSION

The first hypothesis (H1) in this study states that "There is a significant relationship between facilities of buses and students' satisfaction." The results show a very strong positive correlation ($r = 0.708$, $p < 0.01$) showing that bus facilities like air-conditioning, seating capacity, cleanliness, and comfort significantly influence students' satisfaction at UTeM. This result is supported by a recent Malaysian study in Samarahan, Sarawak, which found that tangibility (facilities) was among the most critical factors influencing public bus users' satisfaction (Ubaidillah et al., 2022). Similarly, in UiTM Cawangan Selangor, aspects related to facilities, reliability, and timeliness were found to strongly affect students' satisfaction with bus service quality (Hasan, Anuar, Mansor, & Besir, 2024). These findings underline the importance of observable aspects of service quality by showing that improving amenities not only improves comfort but also boosts confidence in campus bus services.

The second hypothesis (H2) states that "There is a significant relationship between responsiveness and students' satisfaction." The findings indicate a substantial positive correlation ($r = 0.598$, $p < 0.01$) indicating that bus drivers' or staff members' attentiveness, clear communication, and prompt help all significantly contribute to students' satisfaction. This is consistent with findings from the University Public Bus Service study in Kota Samarahan, where responsiveness was a significant predictor of satisfaction (Ubaidillah et al., 2022). In addition, UiTM Cawangan Selangor showed reliability and timeliness (which often relate closely with responsiveness) were significant in shaping student satisfaction (Hasan et al., 2024). In the UTeM context, this means that quick updates about delays, proactive communication, and attentive driver behavior are essential in enhancing the overall student experience. These results collectively demonstrate that responsiveness and facilities both significantly influence student satisfaction, with facilities having a slightly greater impact. This finding aligns with recent studies using the SERVQUAL model in Malaysia, which emphasize that both tangible facilities and responsiveness dimensions are important service quality attributes (Ubaidillah et al., 2022; Hasan et al., 2024).

In summary, this study shows that a combination of staff responsiveness and physical facilities determines UTeM students' satisfaction with campus bus services. Improvements in responsiveness such as improved communication, timely updates, and more attentive service could further boost satisfaction and promote more frequent bus travel, even though students generally give the services positive ratings.

## CONCLUSION

This study investigated the factors influencing students' satisfaction towards campus bus services at Universiti Teknikal Malaysia Melaka (UTeM), focusing on two main service quality dimensions derived from the SERVQUAL model facilities of buses and responsiveness. The findings revealed that both factors significantly affect students' satisfaction, with bus facilities demonstrating a very strong positive relationship ($r = 0.708$) and responsiveness showing a strong positive relationship ($r = 0.598$). These results confirm that tangible aspects such as seating comfort, cleanliness, and safety features, as well as intangible aspects like communication and attentiveness from staff, are crucial in shaping students' overall commuting experience. From an academic perspective, this research contributes to the growing body of literature on campus transportation by specifically examining UTeM, an institution with unique structural and operational contexts that have previously received little scholarly attention. By applying the SERVQUAL framework, this study provides empirical evidence that both tangible (facilities) and intangible (responsiveness) dimensions are vital in ensuring student satisfaction, as supported by recent studies (Ubaidillah et al., 2022; Hasan, Anuar, Mansor & Besir, 2024; Dzulkalnine, Anuar & Hafit, 2023). Practically, the findings offer actionable insights for university administrators and transport service managers. Enhancements in bus facilities and improvements in responsiveness can help foster a more reliable, comfortable, and student-centered transportation system, ultimately supporting academic punctuality, safety, and campus sustainability goals (Ezanee et al., 2022; Ubaidillah et al., 2022).

From an industry perspective, university bus services are crucial not only for campus mobility but also for ensuring student punctuality, safety, and satisfaction. However, challenges such as unreliable schedules, overcrowding, and lack of real-time information continue to affect student experiences and raise safety concerns (Sapiri et al., 2021; Hussin et al., 2024; Berita RTM, 2023). Research shows that both tangible factors like seating, cleanliness, and safety facilities, as well as intangible factors such as driver professionalism and communication, strongly shape satisfaction and ridership (Hasan et al., 2024; Rosni, Teh, & Mohd Nor, 2023). Improving these services directly supports Malaysia's Sustainable Development Goals, particularly SDG 11 (Sustainable Cities and Communities), SDG 3 (Good Health and Well-Being), and SDG 13 (Climate Action) by promoting safer, more sustainable, and inclusive transport (Ubaidillah et al., 2022). The adoption of digital innovations, such as real-time tracking and route optimisation, also advances SDG 9 (Industry, Innovation and Infrastructure) (Zulkefly & Hamsa, 2018). For UTeM, investing in better facilities and responsiveness is therefore not just an operational need but also a step towards aligning campus transport with Malaysia's sustainability agenda.

Despite its contributions, this study is subject to several limitations. First, the research employed a cross-sectional design, which only captures student perceptions at one point in time, limiting the ability to observe changes over different semesters or service adjustments. Second, the study focused solely on two SERVQUAL dimensions (facilities of bus and responsiveness), while other dimensions such as reliability, assurance, and empathy may also play significant roles in influencing satisfaction but were not assessed here. Third, the reliance on self-reported survey data may introduce biases such as social desirability or recall bias. Lastly, the study was conducted exclusively within UTeM, which may restrict the generalizability of findings to other universities with different campus layouts, bus operations, or student demographics.

To build on the current findings, future studies could adopt a longitudinal approach to track changes in satisfaction levels over time and in response to service improvements. Expanding the research to include other SERVQUAL dimensions and integrating additional factors such as environmental sustainability, cost efficiency, and technological innovations (e.g., real-time bus tracking apps) could provide a more holistic understanding of satisfaction drivers. Comparative studies across multiple Malaysian universities would also strengthen the generalizability of the results and highlight institution-specific challenges. Furthermore, incorporating qualitative methods such as interviews or focus groups could offer deeper insights into students' lived experiences, complementing the quantitative data.

In conclusion, this study highlights that the effectiveness of campus bus services at UTeM depends not only on physical facilities but also on the responsiveness of service providers. Improvements in these areas can substantially increase student satisfaction, reduce dependence on private vehicles, and enhance the university's reputation for providing safe, reliable, and sustainable transportation. While limitations exist, the findings cover the way for future research and provide practical recommendations for improving campus mobility. Ultimately, by addressing identified gaps and implementing responsive transport strategies, UTeM can ensure that its bus services continue to meet the evolving needs of its students.

## ACKNOWLEDGEMENT

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