



Evaluating the Level of the Shuttle Service Quality at Al al-Bayt University Campus Using the SERVQUAL Model

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ABSTRACT

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This paper mainly adopts descriptive analysis method and case study method and uses SERVQUAL model and statistical method to measure and evaluate the service quality level of shuttle bus of Al al-Bayt University. The study concluded that the order of the dimensions of measuring the quality of shuttle service was as follows: assurance, reliability, and empathy at a medium level; then tangibility followed by responsiveness at a low level for each. In general, the students' satisfaction level with the shuttle services provided at the campus was low, especially for the tangibility and responsiveness dimensions. This research is of value to transport service providers in understanding the gaps in and requirements of their service provision. To policy makers it highlights the dissatisfaction in the current levels of public transport service, as well as providing some indication of areas in which future interventions can be directed.

1. INTRODUCTION

The interest in the quality of services is equivalent or may exceed the interest in the quality of goods in many countries, especially the developed ones [1]. A good transportation system has a significant impact on the quality of life in the community. Through such a good transportation system it is possible to reach workplaces, economic and social service locations, commercial and recreational areas, and others. With the technological and technical development in the field of transportation, the means of transportation that passengers can use to move from one place to another has diversified. One of the most widely used means of transportation is public transportation which includes shared taxis, minibuses, and coaches. Public transportation is often subsidized by the state with regard to maintenance, operating costs, and others especially in developed countries. On the other hand, in developing countries the support provided to public transportation is often partial, which leads to large variation in the level of providing transportation services [2]. These services are characterized by the lack of planning and organization, which affects the quality of the transport service provided to passengers.

Most government-funded and subsidized public transport services in developing countries suffer from many problems and challenges such as poor planning and management, financial constraints, and neglect [3]. This is what the public transport sector in Jordan suffers from, which negatively affects the quality of the public transport service provided. Consequently, people are forced to turn to the private sector with high costs in order to get better transport services.

Governmental and private institutions, including higher education institutions such as universities, community colleges and others in most countries seek to provide good

transport services for their students within the university campus to meet their needs and facilitate their commuting between buildings, faculties, and teaching halls. Since many universities such as Al al-Bayt University, occupy large areas. Thus, buildings and faculties are far apart from each other, which constitutes an obstacle to students in reaching them on time for their lectures, knowing that these universities do not allow private vehicles to enter the university campus, especially in light of the large numbers of students that are constantly increasing.

Raising the level of the quality of transportation services provided on university campus is a major objective for the university administration, staff, and students alike. Hence came the importance of this study to evaluate and measure the dimensions of the quality of transportation services (assurance, tangibles, empathy, and responsiveness) provided at Al al-Bayt University from the students' point of view.

The quality of transport services has received great attention from individuals and institutions in terms of studies, clarification of concepts and all theoretical aspects of this subject. Therefore, the importance of this study also came to determine the concept of the quality of transportation services and to indicate the obstacles that may hinder providing a good level of transportation services. Moreover, this study sought to providing the appropriate recommendations that would help raise the level of transportation services quality at Al al-Bayt University.

Al al-Bayt University is one of the public universities in Jordan. Its faculties, teaching halls, and various buildings are characterized by their widespread and the long distances between them. Thus, increasing the suffering of the students while moving from one place to another within the university campus under harsh weather conditions, whether the scorching sun in the summer or freezing cold and heavy rain in the winter.

Therefore, the university administration provided a bus transportation service system for the students in order to alleviate their suffering while moving within the university campus. Based on the foregoing, it has been noted that the university's transportation buses are experiencing great pressure and overcrowding by users especially in the morning and evening peak times, due to the increasing numbers of students. This negatively affected the quality of the transportation services provided within the university campus, and as a result, students are being late for their lectures and other duties.

Al al-Bayt University was established in Al-Mafraq Governorate in 1992 under the directives of H.M. the King to meet the urgent need of the local community. The university is located to the east of the city of Mafraq and to the north-east of the capital, Amman, at a distance of about 65 km, (see in Figure 1). Its total area is about 7,539 km². The university consists of ten faculties, four academic institutes, and sixteen administrative units and departments.

Based on the foregoing, the current study aims to achieve the following:

- 1) Measuring the quality of the shuttle service within the university campus according to the students' point of view at Al al-Bayt University and determining the relative weight of each dimension of the transportation service quality.
- 2) Applying the dimension of the SERVQUAL model to measure the gap between the actual provided transportation service and the expected transportation service within Al al-Bayt University campus according to the students' point of view.
- 3) Analyzing the degree of variance in the students' assessment of the transportation service quality provided within the university campus based on the study variables and the gaps model.
- 4) Identifying the most important positive and negative aspects of the transportation service provided based on the five dimensions of the (SERVQUAL) model used in this study according to the students' point of view.

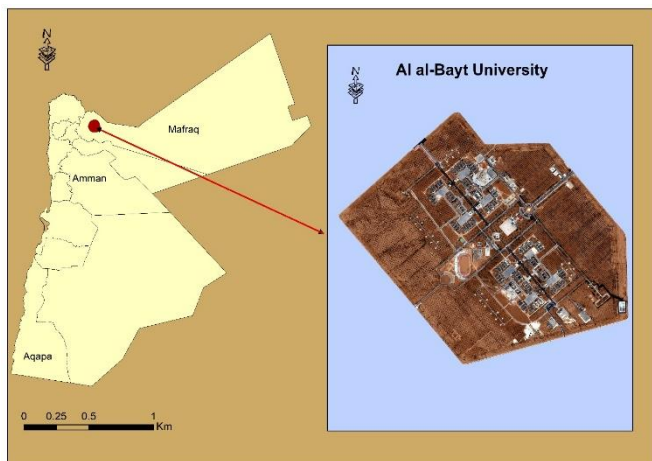


Figure 1. Study area

2. HYPOTHESES

- 1) There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university

campus attributed to the gender variable.

- 2) There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the marital status variable.
- 3) There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the faculty variable.
- 4) There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the academic level variable.
- 5) There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the frequency of bus usage variable.

3. LITERATURE REVIEW

Over the past two decades, the quality of service has been the subject of numerous research studies and has received increased academic interest by scholars [4]. Many of those studies were concerned with the level of satisfaction with the quality of transportation services by means of public transportation, whether at the local or global level. Studies conducted by several countries have reported that passengers are not satisfied with the public transportation bus service for various reasons manifested by feeling bored as a result of the delay and long waiting period [5]. In a survey study that was conducted on public transport users in Amman, Jordan, to measure the satisfaction level with the services provided; the study showed that all public transport users are not satisfied with those services provided by public transportation, which requires a review of the public transportation system in the city of Amman in order to improve its level because of its positive impact in reducing the problems of pollution, traffic jams, accidents and fuel consumption [6]. A study conducted in Scotland indicates that measuring the attitude of passengers toward transport buses is very important for the service providers in order to monitor changes in the levels of satisfaction with the quality of transportation service by buses from time to time. Accordingly, more appropriate measures and decisions will be taken that would take the passengers' opinions and needs about transportation service into account [7].

A survey study was also conducted on nine European cities, in which four factors that affect passenger satisfaction with public transportation were highlighted, including traffic, reliability, bus stops, and the employees' skill in dealing with passengers [8]. Maintaining the safety of students who use buses within the university campus is one of the important issues that university administrators must focus on and take into account. For example, a study was conducted at the Universiti Kebangsaan Malaysia using GIS and RFID system to monitor public buses and vehicles passing through the campus. These systems work as cameras that capture images and store them in a special database that can be referred to in case of unexpected incidents such as accidents, for example [9].

Evaluating the performance of the bus transportation system is of great importance in managing the operations associated with it and finding appropriate additional ways to improve the

quality of the transportation service. For this purpose, the performance of the shuttle bus service at the University of Johannesburg campus was evaluated based on waiting time, journey time, accuracy in providing the service, and the extent to which buses adhere to their schedule system [10]. A survey study was conducted in the Ethiopian universities of Dilla and Wolayita Sodo to assess the quality of transportation service and its impact on employee satisfaction. The study showed that all the proposed dimensions of transportation services quality, that is, reliability, safety, empathy and comfort have a direct positive impact on the employees' satisfaction with transportation services [11]. Moreover, the SERVQUAL model was applied to assess the quality of higher education service in the Faculty of Science at the Serbian University of Belgrade and compare it with other faculties through a survey study that included the dimensions of the model. The study showed that the service quality was negative, especially with regard to the reliability dimension [12]. The level of student satisfaction with shuttle bus services at the University of Cape Coast in Ghana was also measured using the SERVQUAL model to analyze the relationship between service quality and student satisfaction. It was found that most of the students use the shuttle bus service on the campus because of its low fares and for educational reasons. The result of all the dimensions of the model were negative and the students were not satisfied with the transportation services at the university [13].

Furthermore, a pilot study was conducted in the city of Kaliningrad in the far west of Russia in order to measure the gap between the actual and expected quality of public transport services based on the customers point of view using the gaps model. The study showed that there is a large gap in the public transport services regarding the tangibility dimension. While it was found that the other dimensions came with a moderate degree of variance except for the assurance dimension, which negatively affects the overall assessment of the public transport service quality in the city [14]. In a study on Johannesburg, which suffers from poor public transport services that are funded by the government and relatively low levels of mobility. The service quality of public transportation was measured by comparing the passengers' perceptions of current service levels with their expectations. The study showed that the service quality level was not as high as required and that the gap degrees tend to be relatively high due to the lack of interest in public transport services by the government in general [15].

4. THEORETICAL FRAMEWORK

4.1 The service

Despite the many definitions of the concept of service, there is a disagreement between researchers and specialists in management science about a single and comprehensive definition of it. Like all human sciences, this is a normal, due to the characteristics that are unique to services compared to physical goods. The American Marketing Association has defined service as "Activities, benefits and satisfactions which are offered for sale or are provided in connection with the sale of goods" [16]. Others defined service as "Intangible products that mainly aim to satisfy the needs and desires of the consumer and achieve a benefit for him [17]. also defined service as "Actions, activities or performance provided by one party to another; these activities are considered intangible and

do not entail the transfer of ownership of anything; and the provision of the service may or may not be related to a tangible physical product [18].

4.2 The service quality

Disagreement over the definition of the concept of service has extended to the concept of service quality. The service quality in general has received great attention by many researchers and professionals, as it is an important tool for competitiveness between companies and institutions in providing a service. By determining the quality of the service provided, companies and institutions can provide services at a high level of quality, which is reflected in increased customer satisfaction with those services [19]. There are several elements that must be taken into consideration when determining the level of service quality such as frequency of service, hours of service provision, accuracy of service performance, the extent of service coverage, and others.

The concept of service quality can be defined as the difference between the customers' expectation and perception of the service before receiving it on the one hand and the actual service provided on the other hand. Customer expectation is considered as a basis for assessing service quality. If the service performance exceeds the expectation, the service quality is high; while if the service performance is less than the expectation, the service quality is low [20]. The measurement and analysis of service quality is of great importance in identifying problems and setting appropriate standards when providing a service. Several measures and models have been used to measure quality, including the SERVQUAL model, the SERVPERF model, the number of complaints scale, the satisfaction scale, and others.

4.3 Transportation service quality

Giving a specific definition of the transportation service quality is not easy because it is an intangible service like the rest of the other services and because there are no standard criteria to judge the quality of service, as is the case with goods [21]. Therefore, defining the concept of the transportation service quality is subject to different opinions, including the opinions of the users of the means of transport and the opinions of the elements of the transport system. Each of these has their own opinion about the concept of the transportation service quality, and these opinions do not necessarily reflect a similar tendency. The quality of the transportation service from a professional perspective is to provide the best services in accordance with the latest scientific and professional developments, and this is governed by the ethics of practicing the profession. As for the administrative perspective, it means how to use the available resources and the ability to attract more resources to cover the needs necessary to provide a distinguished service. As for the perspective of the beneficiaries of the transport service, which is the most important, the quality of the transportation service means the method of obtaining it and its ultimate result. The quality of transportation services is based on what the customer can expect and determining the extent to which this service is able to meet the customer's real needs. Thus, the quality of transportation services indicates the extent to which the actual performance of the transportation service matches the expectations of its customers [22].

It can be said that the quality of transportation services is

based on the extent of which the transportation system is capable of meeting the requirements of the individuals, the labor market, the society and all internal and external beneficiary parties by directing all resources to facilitate the mobility of people and materials and to achieve the spatial and temporal benefit of different products [23].

4.4 The shuttle service

Shuttle service is one of the public transportation services that depends on using trucks or minibuses for short road trips [24]. Many cities around the world such as Hong Kong, Calcutta, Istanbul, Cairo, and others use these minibuses as a shuttle service between their districts and neighborhoods [25].

The urgent need of having a shuttle service within the university campus stems from two factors. First, most of students' residents are located outside the university campus, therefore students have to use the shuttle service to commute between their residents and the university. Second, the relatively long distance between the lecture halls and between the buildings within the university campus, as is the case at Al al-Bayt University [26]. This type of transportation is an alternative to using private vehicles. Moreover, shuttle transportation is characterized by enabling the students to arrive at different places within the university campus quickly in a relatively shorter time thus increasing their participation in various university and local community activities. In addition, shuttle transportation is less expensive compared to other types of transportation [27].

4.5 The SERVQUAL model

The SERVQUAL Model, or what is known as the Gaps Model, is one of the most prominent and most common models for measuring service quality in general. It is a multi-dimension scale developed by Parasuraman and others in 1985 and they called it the Gaps Model. They applied it to the services of retail companies in order to evaluate the quality of those services according to customers and determine the gap between the reality of the services provided and the expectations of customers or beneficiaries of those services [28]. Initially, this model consisted of 97 dimensions for measuring the quality of services provided [29]. In 1988, for more reliability, those dimensions were tested in two stages, and accordingly were reduced to ten and then to only five dimensions [30]. This model has earned the acceptance of a large number of researchers due to its proven credibility and its ability to be used and applied in a scientific manner. The five dimensions included in the SERVQUAL model are as follow [31]:

- 1) **Reliability:** Reliability is the ability to commit to performing the required service accurately and dependably; such as fulfilling obligations, solving problems, ensuring accuracy in performance, and being committed to time.
- 2) **Assurance:** Assurance is the ability to deal with customers with kindness and consideration and conveying confidence and trust to them; so that customers feel secure while interacting with employees.
- 3) **Tangibility:** Tangibility is the facilities, tools, physical equipment, modernity and the physical appearance of service providers.
- 4) **Empathy:** Empathy is the degree of personal caring and attention provided to customers by service providers, and

the appropriateness of the firm's working hours to suit all beneficiaries and customers.

- 5) **Responsiveness:** Responsiveness is the complete willingness to help customers, provide service to them as soon as possible, and respond to their requests and inquiries.

5. METHODOLOGY

This study adopted the descriptive analytical approach to describe the SERVQUAL model, describe the study population and sample, extract frequencies, percentages, arithmetic averages, standard deviations, and build statistical tables. This approach also included analyzing the data related to the study and analyzing the relationship and correlation between the quality level of the shuttle service and students' satisfaction with that service.

The study also relied on the case study approach, which is concerned with studying all aspects related to the shuttle bus service at Al al-Bayt University in order to present a comprehensive and clear picture of the studied phenomenon and collect data and information related to it by distributing questionnaires to students to benefit from them in diagnosis, treatment and analysis in a sound scientific manner.

5.1 Statistical methods used in data analysis

The study used the service quality measurement and evaluation model known as the SERVQUAL (gaps) model, which includes five dimensions: reliability, assurance, tangibility, empathy and responsiveness as shown in (Table 1). Each of these dimensions has a set of distinctive characteristics that were used to determine the difference or gap between the reality of the transportation service (what students receive from the service) and the students' expectations (what students expect from the service) in order to measure students' satisfaction with the service provided.

Table 1. Characteristics of SERVQUAL model dimensions

Dimension	Characteristics
Reliability	• Busses arrive at the desired destination on time.
	• Busses do not stop frequently on the road.
	• Buses have regular traffic schedules.
	• Drivers are always polite.
	• Ensuring that the service is provided in an accurate and satisfactory manner.
Assurance	• Ensuring that transportation service issues are always resolved.
	• Students feel safe when employees interact with them
	• Drivers have good professional knowledge of their jobs.
	• Drivers treat students politely and courteously.
	• The behavior of drivers instills confidence in students.
Tangibility	• The university transportation service has a good reputation among students.
	• Drivers are dressed elegantly and decently.
	• Buses have spacious seats.
	• Buses are always clean and maintained.

Empathy	- Buses are modern and have the required facilities. - Drivers commit to place directional boards inside the buses for students.
	- Drivers and transport workers deal with students with a cheerful spirit and a cheerful face. - Easy access to bus stops and stations. - The drivers take care of the students and provide them with individual assistance.
	- Drivers always value students' conditions. - The transport company always informs students of its services and the most important changes that occur to them.
	- The transportation company provides its services in an efficient and timely manner. - Immediate response to students' needs. - Drivers are in constant contact with students to provide the best services. - Drivers are always ready to cooperate with students. - Prompt response to inquiries and complaints submitted. - Bus drivers inform students of accurate service delivery times.
Responsiveness	

Source: Ojo et al. [13].

This study also used the cartographic method in preparing the maps through the program (ArcGIS 10.2), as well as the statistical method through the Statistical Package for Social Sciences (SPSS), which was used to extract the following statistical tests:

- 1) Descriptive statistics that include the arithmetic average, the standard deviation, percentages, frequency, and the relative importance which are determined by the following formula:

$$\text{Period} = \frac{\text{the upper limit} - \text{the lower limit}}{\text{number of levels}} = \frac{5 - 1}{3} = 1.33 \quad (1)$$

The number of levels is as shown in (Table 2).

Table 2. The statistical standard for the interpretation of the arithmetic averages of the study variables

Level	Period
Low	1 – 2.33
Medium	2.34 – 3.67
High	3.68 - 5

- 2) One-way ANOVA
- 3) Independent Sample t-Test
- 4) Cronbach's alpha Test

5.2 Study population and study sample

The study population consisted of all undergraduate students at Al al-Bayt University, with total number of about (17,837) students during the year 2020 from all faculties of the university. In view of the difficulty of studying the entire study population due to the high cost, long duration and high effort required, the researcher relied on Bayles' table in selecting a random, stratified sample of 380 male and female students out

of the total number of the students at the university with a confidence degree of 0.95 and an accuracy degree of 5%. (Table 3) shows the characteristics of the study sample members.

Table 3. Distribution of the study sample

Variable	Category	Number	Percentage
Gender	Male	95	25%
	Female	285	75%
Marital Status	Married	85	22.37
	Single	295	77.63%
Faculty	Science	158	41.58%
	Humanities	222	58.42%
Academic level	First year	59	15.53%
	Second year	108	28.42%
	Third year	120	31.58%
	Fourth year	93	24.47%
Frequency of bus usage	Daily	150	39.47%
	Every other day	163	42.89%
	Never	67	17.64%
Total		380	100%

Through the results shown in (Table 3), the distribution of the study sample members was as follows:

- 1) The percentage of male students in the study sample was (25%), while the percentage was (75%) for female students.
- 2) 44.74% of the study sample members were married, and (55.26%) were unmarried.
- 3) 41.58% of the study sample members were from scientific colleges, and (58.42%) were from humanities colleges.
- 4) Students of the third year formed the largest percentage of the study sample (31.58%), followed by the students of the second year (28.42%), then came students of the fourth year (24.47%) and finally the students of the first year (15.53%).
- 5) The percentage of the study sample members who use the bus daily was (39.47%); the percentage of those who use it every other day was (42.89%), and for those who do not use it at all was (17.64%).

5.3 Study tool

A questionnaire in line with the study's objectives was distributed to a sample of students as the main tool for data collection for this study. The questionnaire consisted of two sections:

The first section: contained the personal data of the sample members such as: gender, marital status, college, academic level, and bus usage.

The second section: included (27) items distributed on all five dimensions included in the SERVQUAL model in order to measure the quality of the shuttle service within the university campus at Al al-Bayt University. Then, these items were placed on the 5-point Likert scale, which consists of five weighting degrees that ranges between strongly agree and strongly disagree.

5.4 Credibility of the tool

In order to ensure the credibility of the study tool and its ability to test the hypotheses of the study, it was presented to a group of arbitrators with methodological and scientific experience prior to its adoption and application in the field;

with the aim of guiding researchers to weaknesses and shortcomings in terms of the nature, logicality and formulation of the questions. The arbitrators' opinions and observations were taken into consideration and the tool had been reformulated based on their feedback and suggestions.

5.5 Reliability of the tool

The reliability of the tool was tested by distributing the questionnaire to a random sample consisting of (50) students in the study community, and after two weeks the questionnaire was redistributed to the same sample. The Cronbach's alpha coefficients were calculated to test the reliability of the study tool. The results of the Cronbach's alpha coefficient were as shown in (Table 4).

Table 4. Cronbach's alpha reliability coefficients

Dimension	Cronbach's alpha reliability coefficient
Reliability	0.85
Responsiveness	0.89
Assurance	0.86
Tangibility	0.94
Empathy	0.87
Dimensions of measuring the quality of the shuttle transport service	0.88

The results in Table 4 show that the Cronbach's alpha coefficients ranged between (0.85 - 0.94), and all values exceed (0.6) which indicates the stability of the study tool [32].

6. RESULTS OF ANALYSIS AND DISCUSSION

To measure the level of the quality of the shuttle transport service at Al al-Bayt University campus from the students' point of view, the arithmetic averages and the standard deviations were found as shown in (Table 5).

The statistical data in the above table indicate that all the dimensions for measuring the quality of the shuttle transport service at Al al-Bayt University campus from the students' point of view have received low levels ranging between (2.86-3.42). The order of those dimensions was as follows: assurance came first followed by reliability in second

place, then came sympathy in third place and tangibility in fourth place, and finally responsiveness. The total average (rate) of the dimensions combined was (3.12), which indicates that the level of the quality of the shuttle transport service at Al al-Bayt University campus from the students' point of view is below the required level.

6.1 Reliability

The items expressing the dimension of reliability obtained arithmetic averages ranging between (2.75 - 3.65), which are of medium levels as shown in (Table 6). The item 'Drivers are always polite' got the highest average while the item 'Drivers show special attention to students' problems and inquiries' got the lowest average. The total average reached (3.22), which is of medium level. This indicates that the level of reliability for the shuttle transport service at Al al-Bayt University campus from the students' point of view came was medium.

6.2 Responsiveness

All item expressing the dimension of responsiveness obtained arithmetic averages ranging between (2.05 - 3.50), which are of low level as shown in (Table 7). The item 'Drivers are always ready to cooperate with students' got the highest average, while the item 'Bus drivers inform students of accurate service delivery times' got the lowest average. The overall average was (2.49) which is of a low level. This indicates that the level of responsiveness for the shuttle transport service at Al al-Bayt University campus from the students' point of view was low.

6.3 Assurance

Most of the items expressing the assurance dimension obtained arithmetic averages that ranged between (2.05 - 3.62), which are of medium level as shown in (Table 8). The item 'You feel safe while on the bus' had the highest arithmetic average, while the item 'University transportation has good reputation among students' had the lowest. The overall average was (3.06), which is of medium level. This indicates that the level of assurance for the shuttle service at Al al-Bayt University campus from the students' point of view was medium.

Table 5. The arithmetic averages and standard deviations of the quality of the shuttle transport service at the campus

Dimension	Arithmetic average	Standard deviation	Percentage	Order
Reliability	3.16	.932	62.2	2
Responsiveness	2.86	.950	56.1	5
Assurance	3.42	.971	67.3	1
Tangibility	3.05	.939	60.5	4
Empathy	3.15	.869	61.1	3
Dimensions of measuring the quality of the shuttle transport service	3.12	.932	61.4	

Table 6. The arithmetic averages and standard deviations of the items expressing the 'reliability' dimension

Item	Arithmetic average	Standard deviation	Percentage	Level
Drivers are always polite	3.65	1.285	69	Medium
Busses do not stop frequently on the road	3.54	1.277	67.8	Medium
Ensuring that the service is provided in an accurate and satisfactory manner.	3.30	1.225	64.2	Medium
Buses have regular traffic schedules.	3.18	1.242	61.4	Medium
Busses arrive at the desired destination on time.	2.33	1.412	56.6	Low
Ensuring that transportation service issues are always resolved.	2.25	1.265	54.2	Low
Reliability	3.22	.945	62.2	Medium

6.4 Tangibility

Most of the items expressing the tangibility dimension had arithmetic averages that ranged between (1.22-3.55), which are of low to medium level, as shown in (Table 9). The item 'Buses are always clean and maintained' was the highest, while the item 'Drivers commit to place directional boards inside the buses for students' was the lowest. The overall average was (2.31) which is of low level. This indicates that the level of tangibility of the shuttle service at Al al-Bayt University campus from the students' point of view of was low.

6.5 Empathy

Most of the items expressing the empathy dimension had arithmetic averages that ranged between (2.15-3.54), which are of medium level as shown in (Table 10). The paragraph "drivers and transport workers are characterized by a sense of humor, tact and smile in the face of students" was the highest, and the paragraph "students' interests are placed at the forefront of the administration and drivers' concerns" was the

lowest, and the overall average was (2.77), which is moderately average, which indicates that the level of Empathy for the campus shuttle service from the students' point of view at Al al-Bayt University was moderate.

6.6 Testing the hypotheses of the study

- **First hypothesis:** There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the gender variable.

Statistical data shown in (Table 11) indicate that there are no statistically significant differences in the level of students' satisfaction with the shuttle service at Al Albayt University attributed to the gender variable. This is due to the significance level of (0.299) for all service quality measurement dimensions that exceed the adopted significance level (0.05). This result requires acceptance of the null hypothesis which states that there are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university attributed to the gender variable.

Table 7. The arithmetic averages and standard deviations of the items expressing the 'responsiveness' dimension

Item	Arithmetic average	Standard deviation	Percentage	Level
Drivers are always ready to cooperate with students.	3.50	1.111	63.8	Medium
The transportation company provides its services in an efficient and timely manner	2.30	1.213	60.6	Low
Prompt response to inquiries and complaints submitted	2.28	1.103	57	Low
Drivers are in constant contact with students to provide the best services	2.33	1.128	54.6	Low
Immediate response to students' needs.	2.05	1.114	52.6	Low
Bus drivers inform students of accurate service delivery times	2.28	1.136	48.2	Low
Responsiveness	2.49	.950	56.1	Low

Table 8. The arithmetic averages and standard deviations of the items expressing the 'Assurance' dimension

Item	Arithmetic average	Standard deviation	Percentage	Level
Students feel safe when employees interact with them.	3.50	1.090	70.6	Medium
Drivers have good professional knowledge of their jobs	3.62	1.111	69.4	Medium
Drivers treat students politely and courteously	2.60	1.249	68.2	Medium
The behavior of drivers instills confidence in students	3.55	.966	60.6	Medium
The university transportation service has a good reputation among students	2.05	1.316	57.8	Low
Assurance	3.06	.971	65.3	Medium

Table 9. The arithmetic averages and standard deviations of the items expressing the 'Tangibility' dimension

Item	Arithmetic average	Standard deviation	Percentage	Level
Buses are always clean and maintained	3.55	1.229	70	Medium
Buses have spacious seats	1.36	1.313	64	Low
Buses are modern and have the required facilities	3.15	1.361	63.2	Medium
Drivers are dressed elegantly and decently	2.25	1.245	61.2	Low
Drivers commit to place directional boards inside the buses for students.	1.22	1.139	49.2	Low
Tangibility	2.31	.939	61.5	Low

Table 10. The arithmetic averages and standard deviations of the items expressing the 'Empathy' dimension

Item	Arithmetic average	Standard deviation	Percentage	Level
Drivers and transport workers deal with students with a cheerful spirit and a cheerful face	2.88	1.310	67	Medium
The drivers take care of the students and provide them with individual assistance	3.54	1.209	64.6	Medium
Easy access to bus stops and stations	3.04	1.377	63.8	Medium
Drivers always value students' conditions	2.15	1.469	60.2	Low
The transport company always informs students of its services and the most important changes that occur to them	2.24	1.237	59.8	Low
Empathy	2.77	.969	63.1	Medium

- **Second hypothesis:** There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the marital status variable.

To find out the effect of the marital status variable on students' satisfaction with the shuttle service at the university campus, the independent sample T-test was also used as shown in (Table 12). It was found that all T values were not statistically significant at a level less than 0.05 except for the reliability dimension, where the T value was (-2.656) at the significance level (0.420), which is less than the adopted significance level. This indicates that there are no statistically significant differences at the significance level ($\alpha \leq 0.05$) for the quality measurement dimensions responsiveness, assurance, tangibility, and empathy in students' satisfaction with the shuttle service at the campus attributed to the marital status variable. While there are statistically significant differences at the significance level ($\alpha \leq 0.05$) for the reliability dimension in students' satisfaction with the shuttle service at the university campus attributed to the marital status

variable. The differences were in favor of married students, and this could be due to the fact that married students are more likely to use shuttle buses inside the university compared to other students, especially female students.

- **Third hypothesis:** There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the faculty variable.

Statistical data shown in (Table 13) indicate that there are no statistically significant differences in the level of students' satisfaction with the shuttle service at Al Albayt University attributed to the faculty variable. This is due to the significance level of (0.325) for all service quality measurement dimensions that exceed the adopted significance level (0.05). This result requires acceptance of the null hypothesis which states that there are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university attributed to the faculty variable.

Table 11. Results of independent sample T-test for the effect of the gender variable

Dimension	Gender	Number	T value	Degree of freedom	Significance level
Reliability	Male	95	1.224	48	0.457
	Female	285			
Responsiveness	Male	95	1.698	48	0.258
	Female	285			
Assurance	Male	95	0.925	48	0.666
	Female	285			
Tangibility	Male	95	1.753	48	0.290
	Female	285			
Empathy	Male	95	0.888	48	0.715
	Female	285			
Dimensions of measuring the quality of shuttle service	Male	95	1.689	48	0.299
	Female	285			

Table 12. Results of independent sample T-test for the effect of the marital status variable

Dimension	Marital status	Number	T value	Degree of freedom	Significance level
Reliability	Single	295	-2.656	48	.420
	Married	85			
Responsiveness	Single	295	-1.254	48	.325
	Married	85			
Assurance	Single	295	-1.550	48	.190
	Married	85			
Tangibility	Single	295	-1.350	48	.302
	Married	85			
Empathy	Single	295	-.250	48	.910
	Married	85			
Dimensions of measuring the quality of shuttle service	Single	295	-1.625	48	.188
	Married	85			

Table 13. Results of independent sample T-test for the effect of the faculty variable

Dimension	Faculty	Number	T value	Degree of freedom	Significance level
Reliability	Science	158	-.860	48	.451
	Humanities	222			
Responsiveness	Science	158	-.990	48	.356
	Humanities	222			
Assurance	Science	158	-1.250	48	.262
	Humanities	222			
Tangibility	Science	158	-.963	48	.623
	Humanities	222			
Empathy	Science	158	-1.888	48	.152
	Humanities	222			
Dimensions of measuring the quality of shuttle service	Science	158	-1.352	48	.325
	Humanities	222			

- **Fourth hypothesis:** There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the academic level variable.

To find out the effect of the academic level variable on students' satisfaction with the shuttle service at the campus, the

One-way ANOVA was used as shown in (Table 14). Where the statistical data indicate that there are no statistically significant differences in the level of students' satisfaction with the shuttle service at Al Albayt University attributed to the academic year variable, due to the high tabulated F value at the significance level (0.05). The F value calculated for all dimensions was (2.028) at the significance level (0.187).

Table 14. Results of independent sample T-test for the effect of the academic level variable

Dimension	Academic level	Number	F value	Degree of freedom	Significance level
Reliability	First year	59	.847	2	.548
	Second year	108			
	Third year	120			
	Fourth year	93			
	Total	380			
Responsiveness	First year	59	3.654	2	.215
	Second year	108			
	Third year	120			
	Fourth year	93			
	Total	380			
Assurance	First year	59	1.325	2	.526
	Second year	108			
	Third year	120			
	Fourth year	93			
	Total	380			
Tangibility	First year	59	.921	2	.453
	Second year	108			
	Third year	120			
	Fourth year	93			
	Total	380			
Empathy	First year	59	2.950	2	.062
	Second year	108			
	Third year	120			
	Fourth year	93			
	Total	380			
Dimensions of measuring the quality of shuttle service	First year	59	2.028	2	.187
	Second year	108			
	Third year	120			
	Fourth year	93			
	Total	380			

Table 15. Results of independent sample T-test for the effect of the frequency of bus usage variable

Dimension	Frequency of bus usage	Number	F value	Degree of freedom	Significance level
Reliability	Daily	150	.336	22	.852
	Every other day	163			
	Never	67			
	Total	380			
	Daily	150			
Responsiveness	Every other day	163	.907	2	.498
	Never	67			
	Total	380			
	Daily	150			
	Every other day	163			
Assurance	Never	67	.001	2	.999
	Total	380			
	Daily	150			
	Every other day	163			
	Never	67			
Tangibility	Total	380	1.856	2	.325
	Daily	150			
	Every other day	163			
	Never	67			
	Total	380			
Empathy	Daily	150	1.369	2	.430
	Every other day	163			
	Never	67			
	Total	380			
	Daily	150			
Dimensions of measuring the quality of shuttle service	Every other day	163	.009	2	.998
	Never	67			
	Total	380			
	Daily	150			
	Every other day	163			

- **Fifth hypothesis:** There are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at the university campus attributed to the frequency of bus usage variable.

To find out the effect of the frequency of bus usage variable on students' satisfaction with the shuttle service at the university campus, the One-Way ANOVA test was also used, as shown in Table 15. It was found that the F values were not statistically significant at a level less than 0.05, where the F value calculated for all criteria was (0.009). This indicates that there are no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the level of students' satisfaction with the shuttle service at Al al-Bayt University campus attributed to the frequency of bus usage variable.

7. CONCLUSIONS

Through this study, the quality level of the transportation shuttle service at Al al-Bayt University has been identified. According to the students' point of view, the level of shuttle service ranged between low and medium in general which means that the transportation service provided is not at the required level, especially with regard to drivers, their behavior and their dealings with students while providing the service. The gap between the service actually provided and the expected service at the university campus based on the reliability, assurance, and empathy dimensions was, to some extent, limited. While the gap based on the responsiveness and tangibility dimensions was larger.

This study also concluded that the level of transportation services provided was equal for all students since there were no statistically significant differences at the significance level ($\alpha \leq 0.05$) in the students' level of satisfaction with the provided service attributed to the variables of gender, academic level, faculty, or frequency of bus usage based on the dimensions of measuring the quality of shuttle service. On the other hand, there were statistically significant differences at the significance level ($\alpha \leq 0.05$) for the reliability dimension in students' satisfaction with the transportation service attributed to the marital status variable. Those differences were in favor of married students, especially female students who used buses most.

The statistical analysis showed that the order of the dimensions of measuring the quality of shuttle service was as follows: assurance, reliability, and empathy at a medium level; then tangibility followed by responsiveness at a low level for each.

In general, the students' satisfaction level with the shuttle services provided at the campus was low, especially for the tangibility and responsiveness dimensions.

The researcher(s) emphasize the importance of the Gap model in measuring and evaluating the level of services quality in general and the transportation services in particular; and its applicability to other various service sectors.

The management of the shuttle bus service should work on all the dimensions revealing poor perceived quality as the students had higher expectations than what they received. Moreover, the differences in gender perceived functional quality should be a yardstick to measure shuttle service. This is borne by the fact that, males' expectations and perceptions differ from females.

This research is of value to the transport service providers

in understanding the gaps in and requirements of their service provision. It is also of value to policy makers in understanding the dissatisfaction in the current levels of public transport service, as well as providing some indication of the areas in which future interventions can be directed. Although this research has provided new perspectives on the use of the service level dimensions, it has some limitations, such as the sample size, the inherent weaknesses associated with the SERVQUAL methodology and the limited geographic area which was investigated. These limitations also provide considerable scope for future research. It is suggested that the current research be expanded to include other major metropolitan areas in Jordan, as well as smaller towns, villages and rural areas to determine whether the results are generalizable to the population or whether other areas have different service level concerns. Generally speaking, the study of service quality is both important and challenging. Future efforts should continue to advance the understanding of the concept and the means to measure and improve service quality.

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